FLUCTUATIONS
OF
GLACIERS
1995–2000

(Vol. VIII)

A contribution to the
Global Terrestrial Network for Glaciers (GTN-G)
as part of the Global Terrestrial/Climate Observing System (GTOS/GCOS),

the Division of Early Warning and Assessment and the Global Environment Outlook
as part of the United Nations Environment Programme (DEWA and GEO, UNEP),

and the International Hydrological Programme (IHP, UNESCO)

Prepared by the
World Glacier Monitoring Service (WGMS)

IUGG (CCS) – UNEP – UNESCO
2005

FLUCTUATIONS OF GLACIERS 1995–2000
with addenda from earlier years

This publication was made possible by support and funds from

the Federation of Astronomical and Geophysical Data Analysis Services (FAGS),
the Swiss Academy of Sciences (SCNAT),
the United Nations Environment Programme (UNEP),
the United Nations Educational, Science and Cultural Organisation (UNESCO),
and the University of Zurich (UNIZ)

This volume continues the earlier
works published under the titles

FLUCTUATIONS OF GLACIERS 1959–1965
Paris, IAHS (ICSI) – UNESCO, 1967

FLUCTUATIONS OF GLACIERS 1965–1970
Paris, IAHS (ICSI) – UNESCO, 1973

FLUCTUATIONS OF GLACIERS 1970–1975
Paris, IAHS (ICSI) – UNESCO, 1977

FLUCTUATIONS OF GLACIERS 1975–1980
Paris, IAHS (ICSI) – UNESCO, 1985

FLUCTUATIONS OF GLACIERS 1980–1985
Paris, IAHS (ICSI) – UNEP – UNESCO, 1988

FLUCTUATIONS OF GLACIERS 1985–1990
Paris, IAHS (ICSI) – UNEP – UNESCO, 1993

FLUCTUATIONS OF GLACIERS 1990–1995
Paris, IAHS (ICSI) – UNEP – UNESCO, 1998

FLUCTUATIONS OF GLACIERS
1995–2000
(Vol. VIII)

A contribution to the
Global Terrestrial Network for Glaciers (GTN-G)
as part of the Global Terrestrial/Climate Observing System (GTOS/GCOS),
the Division of Early Warning and Assessment and the Global Environment Outlook
(DEWA and GEO, UNEP),
and the International Hydrological Programme (IHP, UNESCO)

Compiled for the
World Glacier Monitoring Service
by Wilfried Haeberli, Michael Zemp,
Regula Frauenfelder, Martin Hoelzle and Andreas Kääb

Department of Geography
University of Zurich
Zurich

wgms

International Union of Geodesy and Geophysics
(Commission on Cryospheric Sciences)
and
United Nations Environment Programme
and
United Nations Educational, Scientific and Cultural Organisation

2005

Published jointly by the

Commission on Cryospheric Sciences of the
International Union of Geodesy and Geophysics
and the
United Nations Environment Programme
P.O. Box 30552, Nairobi, Kenya
and the
United Nations Educational,
Scientific and Cultural Organisation
7 Place de Fontenoy, 75700 Paris, France

Printed by
FOTOROTAR
Egg/ZH, Switzerland

For bibliographic and reference purposes this publication should be referred to as:

IUGG (CCS) – UNEP – UNESCO (2005). Fluctuations of Glaciers 1995–2000, Volume VIII. World Glacier Monitoring Service, Zurich.

IUGG
UNEP
UNESCO

PREFACE UNEP

Fluctuations of glaciers have been reported and documented in an internationally coordinated way for more than a century. They have now become a key indication of global climate and environmental change. The possibility to observe the often dramatic changes in the geometry of perennial surface ice within a lifetime period, combined with the easily understandable principle of ice melting under the influence of high air temperatures, makes the retreat of glacier tongues and ice margins a unique climate change demonstration object for the public at large. In fact, future generations will be able to judge what climate scenario will have taken place by looking at the form, size and sheer existence of glaciers around the world.

Modern worldwide glacier monitoring as coordinated by the World Glacier Monitoring Service (WGMS) with its Global Terrestrial Network for Glaciers (GTN-G) as part of the Global Climate Observing System/Global Terrestrial Observing System (GCOS/GTOS) aims at the quantification of the changes in terrestrial glaciers. The monitoring system uses a multilevel strategy, which combines a) in-situ measurements for process understanding and model calibration with b) remote sensing and geo-informatics for large/representative sampling and c) numerical simulations for extrapolation of measured data in space and time.

Through WGMS, scientifically-sound data and information on the state and trends of glaciers are provided, required as a basis for global environmental assessments in support of decision-making processes. As such, this effort also contributes to the strengthening of the scientific basis of UNEP's assessment activities, requiring that sound assessments must be based on reliable data. As a key component, the Global Environment Outlook reporting process greatly benefits from the continued data collection on changes in glacier mass and volume. UNEP very much welcomes the possibility to use such information in its reporting activities in support of improved information availability and better informed decision-making.

The present volume "Fluctuations of Glaciers 1995–2000" continues the series of reports about in-situ measurements of glacier fluctuations and completes the reports for the 20th century. It mainly presents data measured in the field, but also contains a number of high-precision maps from various regions of the earth. In addition, summary comments and references can be found about results from numerical modelling and satellite-based glacier inventory work. The latter is now being strengthened – in close collaboration with WGMS and GTN-G – by the international "Global Land Ice Measurement from Space" (GLIMS) project led by the US Geological Survey in Flagstaff, Arizona, USA. In view of recent scientific insights and modern technological means, the development of new formats for data collection and presentation is one of the primary challenges for the first years of our century.

Marion Cheatle
Officer-in-Charge
Division of Early Warning and Assessment, UNEP

PREFACE UNESCO

Glaciers contribute significantly to the human needs for good quality water. They are also highly sensitive indicators of global climate change and fresh water reservoirs.

Our knowledge of the state of glaciers worldwide remains very incomplete despite considerable publicity to accelerating melting rates in various global climate change scenarios. However, increased melting rates will have disastrous consequences to flooding and sea level rise as glaciers react in a complex manner to climatic variations. Their advances leave behind landscape markers as moraines, which serve to help us reconstruct past glacial conditions and past climate. As water reservoirs they are essential to regional water supply. The understanding of their changes with changing climate is vital for future water policy and water management. To understand and interpret these different aspects it is necessary to study the mass exchange and growth/shrinkage of glaciers.

Despite such important contributions there are many parts of the world where either too few glaciers are monitored or where glaciers are not monitored at all. In the last few years UNESCO has initiated a programme of mass balance measurements in both the Hindu Kush Himalayas and the Andes to improve our knowledge of the glaciers. The International Hydrological Programme (IHP) of UNESCO, now in its 6th phase aims to improve our knowledge of the complex scientific processes that govern the interactions within the water cycle. Under the theme devoted to Mountains, activities have been promoted in several regions of the world. Obviously the complex nature of glaciers and their inaccessibility make it a necessity that the global scientific community cooperate in planning and organising activities. The contribution of the WGMS is greatly recognised and appreciated. It is only through the efforts of such scientific bodies that we can mobilise global efforts to improve our scientific knowledge.

UNESCO is pleased to support this publication. Wilfried Haeberli and his team are to be congratulated for accomplishing this task. This volume will be a major contribution towards providing information for interpreting the health of glaciers for the period 1995–2000.

Lalji Mandalia
Programme Specialist in Water Sciences
International Hydrological Programme, UNESCO

FOREWORD

The Intergovernmental Panel on Climate Change (IPCC) has recently pointed out that glaciers and ice caps are one of the key indicators of ongoing climatic change. Glaciers and ice caps are components of the Earth's Cryosphere and the continual wasting of these ice bodies contributes to global sea level rise. Glaciers are also an integral part of the hydrological cycle in mountainous regions and the discharge from higher rates of melt water production can lead to an increase in the occurrence of natural hazards in glacier-fed basins. Knowledge of the changes in the balance of glacier ice is thus of prime importance in modelling the interactive processes between climate and the Earth's global dynamic systems, and in the prediction of water availability in more specific regions of the Earth's surface.

Fluctuations of glaciers and ice caps in cold mountain areas have been systematically observed for more than a century in various parts of the world. Change in glacier extent is a strongly enhanced and easily measured parameter, which provides an indirect, filtered signal of climate change. Although each glacier has its own geometry and dynamic behaviour, glacier extent represents an intuitively understood and most easily observed phenomenon to illustrate the reality and impacts of climate change. Long-term mass balance measurements provide a direct signal of changes in climate as glaciers tend toward a new balance with climate by losing or gaining mass. In addition to being indicators of climate change, fluctuations of glaciers and ice caps are monitored in water resource management, natural hazard assessments, and with respect to community planning for tourism and recreation.

The objectives of the World Glacier Monitoring System (WGMS) are to collect in-situ data, to maintain a worldwide database of observations on the mass balance and extent of glaciers, and to establish an efficient system to store and exchange such data. One of the most important tasks for WGMS has been to collect and publish standardised data on glacier fluctuations. The importance of this information with monitoring and long time series has been confirmed in several authoritative and international climate-change assessment reports and in plans for future research programs. These include IPCC, the Arctic Climate Impact Assessment (ACIA) and the World Climate Research Programme on Climate and Cryosphere (WCRP/CliC).

This is volume VIII in the series of publications of the "Fluctuations of Glaciers". Each volume covers a five-year period and the present volume covers the end of the Twentieth Century, 1995–2000. The International Commission on Snow and Ice (ICSI) of the International Association for Hydrological Sciences (IAHS) was the parent organisation of WGMS. The importance of the Cryosphere is mirrored in the recent decision by the International Union of Geodesy and Geophysics (IUGG) to change the status of ICSI from that of an association commission on snow and ice to that of a new IUGG Commission for the Cryospheric Sciences (CCS). The CCS is an interim step in the establishment of a new IUGG International Association of Cryospheric Sciences (IACS) in the near future. Glacier monitoring is, and will be, an important part of IACS activities.

CCS is most grateful to Professor W. Haeberli and his staff at WGMS that they have been able to publish this volume of the "Fluctuation of Glaciers" in spite of a difficult funding situation. We are also grateful to the Federation of Astronomical and Geophysical Data Analysis Services (FAGS), the Swiss Academy of Sciences (SCNAT) and the University of Zurich (UNIZ) for their financial assistance in producing this work.

For the Bureau of CCS by J.O. Hagen, H.G. Jones, and G. Kaser.

PRELIMINARY REMARKS AND THANKS

The present Volume VIII of the "Fluctuations of Glaciers" focuses primarily on the time period from 1995 to 2000. It was prepared by the World Glacier Monitoring Service (WGMS) and is the most recent addition to the continuing series of publications containing internationally collected and standardised data on current changes in glaciers throughout the world, i.e.,

Vol.	I	:	Fluctuations of Glaciers 1959–1965 (P. Kasser)
Vol.	II	:	Fluctuations of Glaciers 1965–1970 (P. Kasser)
Vol.	III	:	Fluctuations of Glaciers 1970–1975 (F. Müller)
Vol.	IV	:	Fluctuations of Glaciers 1975–1980 (W. Haeberli)
Vol.	V	:	Fluctuations of Glaciers 1980–1985 (W. Haeberli and P. Müller)
Vol.	VI	:	Fluctuations of Glaciers 1985–1990 (W. Haeberli and M. Hoelzle)
Vol.	VII	:	Fluctuations of Glaciers 1990–1995 (W. Haeberli, M. Hoelzle, S. Suter and R. Frauenfelder)

The World Glacier Monitoring Service was formed in 1986, by the merger of the Permanent Service on the Fluctuations of Glaciers (PSFG) with the Temporary Technical Secretariat for the World Glacier Inventory (TTS/WGI). It is one of the permanent services of the Federation of Astronomical and Geophysical Data Analysis Services of the International Council of Scientific Unions (FAGS/ICSU), operating at the University of Zurich under the auspices of the Commission on Cryospheric Sciences of the International Union of Geodesy and Geophysics (CCS/IUGG), the former International Commission on Snow and Ice of the International Association of Hydrological Sciences (ICSI/IAHS). The objective of the publication of the "Fluctuations of Glaciers" at 5-yearly intervals is to reproduce a global set of data which

- affords a general view of glacier changes,
- encourages more extensive measurements,
- invites further processing of results,
- facilitates consultation with the other data sources, and
- serves as a basis for research.

In fact, this standardised data set should be regarded as a working tool for the scientific community, especially with regard to the fields of glaciology, climatology, hydrology, and quaternary geology. The following guidelines and instructions are most relevant for the present volume (Volume VIII) of the "Fluctuations of Glaciers":

1. Variations of Existing Glaciers. A Guide to International Practices for their Measurement. Technical Papers in Hydrology No. 3, UNESCO 1969, which has in part been superseded and made more specific by: Instructions for Submission of Data for "Fluctuations of Glaciers 1990–1995", issued by the WGMS in June 1996 (cf. also the Appendix in the present volume).

2. Perennial Ice and Snow Masses. A Guide for Compilation and Assemblage of Data for the World Glacier Inventory. Technical Papers in Hydrology No. 1, UNESCO – IAHS 1970, which has been superseded in part by: Müller, F., Caflisch, T. and Müller, G. (1977): Instructions for Compilation and Assemblage of Data for a World Glacier Inventory, and by: TTS/WGI (1983): Guidelines for Preliminary Glacier Inventories, both issued by the former Temporary Technical Secretariat for the World Glacier Inventory, now WGMS, Department of Geography, University of Zurich.

3. Combined Heat, Ice and Water Balances at Selected Glacier Basins. Part I: A Guide for Compilation and Assemblage of Data for Glacier Mass Balance Measurements. Part II: Specifications, Standards and Data Exchange. Technical Papers in Hydrology No. 5, UNESCO – IAHS 1970 and 1973.

Modern concepts for integrated climate-related glacier observations have been developed for the Global Terrestrial Network for Glaciers (GTN-G) within the Global Terrestrial/Climate Observing Systems (GTOS/GCOS; Haeberli and others 2000, 2002). Such concepts combine the in-situ measurements reported primarily in the present volume with results and information obtained from numerical modelling and remote sensing. The Chapter "General Comments and Perspectives for the Future" provides more detail on this important development with a view to the outstanding challenges of the coming years and decades. Especially important efforts are being made within the US Geological Survey-led ASTER/GLIMS project. Chapter 9 gives an overview of the Global Land Ice Measurements from Space Project (GLIMS).

The data published in the present volume are also available in digital form. An overview of the available data and of the guidelines for data submission and data order can be found on the recently revised homepage of WGMS (http://www.wgms.ch). The decision to print out the data and distribute them to several hundred places in the world was made by the International Commission on Snow and Ice (ICSI/IAHS), now CCS/IUGG, on the premise that the security of the collected data can be best assured in this way. At the same time, the presentation of modern glacier maps continues to be an important part of internationally coordinated glacier monitoring and can be most easily achieved by inclusion in printed volumes.

The present volume was successfully completed thanks to the cooperation and efforts of the national correspondents and their collaborators. In addition to this work of glaciologists all over the world, the main burden of the undertaking had once more to be borne by the Department of Geography, University of Zurich. L. Mandalia (UNESCO), J. van Woerden (UNEP) and the president of CCS, G. Jones, assisted in ensuring proper international administration and funding. K. Echelmeyer (Fairbanks), M. Kuhn (Innsbruck), M.F. Meier (Boulder), J. Oerlemans (Utrecht), G. Østrem (Oslo), V.V. Popovnin (Moscow), L. Reynaud (Grenoble) and R.S. Williams (Reston) are acting as scientific consultants to the WGMS, covering the important fields of energy balance at the glacier surface, glacier dynamics, modelling of glaciers, glacier mass balance, glacier inventories, statistical analysis of glacier fluctuations and remote sensing of perennial surface ice. S. Braun-Clarke edited the English.

The printing of this volume was made possible by generous grants from the Swiss Academy of Sciences (SCNAT), the United Nations Environment Programme (UNEP) and the United Nations Educational, Scientific and Cultural Organisation (UNESCO).

TABLE OF CONTENTS

LIST OF ANNEXED MAPS

CHAPTER 1 **INTRODUCTION**

1.1 Preparation of Volume VIII of "Fluctuations of Glaciers"

Early in the year 2002, preparation of the present volume began with the distribution of data sheets and instructions to the national correspondents. In addition, completed, revised and updated data sets on glacier mass balance (Dyurgerov 2002) and length change (Dischl 1999, Hoelzle and others 2003), as well as fluctuation series collected within the framework of the EU project ALP-IMP (http://www.zamg.ac.at/ALP-IMP/) were used to check, correct and expand the existing data set. Addenda in this volume consist of reported information by the national correspondents only. However, the WGMS database now contains additional glacier fluctuation records which were not published in earlier volumes of "Fluctuations of Glaciers", but are available on request.

Computer work was done using facilities at the Department of Geography at the University of Zurich. Proofs of the tables were sent to the national correspondents in summer 2004.

In order to ensure maximum continuity and comparability within the published data series, only minor changes were introduced relating to the format and content of Volume VIII. The information stored in the WGMS database is the most complete of all, more so even than the data printed in the tables of this volume.

The present Volume VIII of the "Fluctuations of Glaciers" contains information on 780 glaciers from 26 countries. Data on "Variations in the Positions of Glacier Fronts" during the period 1995–2000 were received for 546 glaciers in 20 countries, with "Addenda from Earlier Years" for 205 glaciers in 11 countries. "Mass Balance Study Results – Summary Data" for the period 1995–2000 were submitted for a total of 100 glaciers in 20 countries with "Addenda from Earlier Years" for 14 glaciers in 6 countries. Detailed information on "Mass Balance versus Altitude" was made available for 55 glaciers in 13 countries and data relating to "Changes in Area, Volume and Thickness" are presented for 22 glaciers in 7 countries.

A section was again included to represent information which does not fit into the standardised format of the tables. It contains index measurements and information on special events for 25 glaciers in 9 countries.

Following a well-established tradition, 19 special glacier maps are included in the back pocket of this volume. The World Glacier Monitoring Service is again grateful for the donation of all these maps. Brief comments on each can be found in Chapter 8 of the present volume.

1.2 Organisation of the present volume

The following types of data are presented in this volume:

Table A	General Information on the Observed Glaciers
Table B	Variations in the Position of Glacier Fronts, 1995–2000
Table BB	Variations in the Position of Glacier Fronts – Addenda from Earlier Years
Table C	Mass Balance Summary Data, 1995–2000
Table CC	Mass Balance Summary Data – Addenda from Earlier Years
Table CCC	Mass Balance versus Altitude for Selected Glaciers
Table D	Changes in Area, Volume and Thickness
Table F	Index Measurements and Special Events presented in Chapter 7

Sources of data and comments can be found in Chapters 2 to 7. Within each data type, the glaciers are organized according to the country where they are situated. Table A provides the user with general information on the glaciers of a particular country or region, and also lists which data are available for these glaciers in other tables. An alphabetic index of glaciers is given at the end of this volume to allow easy location of the data for any glacier within the various tables.

The identification system for glaciers consists of:

(1) a name of up to 15 alphabetical and numerical characters,
(2) a PSFG number of five digits with an alphabetical prefix denoting the country.

Although in some cases it was necessary to abbreviate the names of glaciers, it should always be possible to compare data for any particular glacier in the present volume with data in previous volumes. The PSPG number helps to identify glaciers with the same, unknown or changing names. The number has to remain the same for every glacier through all the volumes of the "Fluctuations of Glaciers". In most cases the numbers were given to glaciers in some historical sequence and may therefore appear to be somewhat unsystematic. The alphabetical prefix denoting the country was adapted from a historically evolved one- or two-digit country code to the ISO 2-digit-country code (ISO 3166-1-alpha-2), as proposed by the International Organisation for Standardisation (ISO). However, the abbreviation SU has been maintained for C.I.S. in order to facilitate comparison with former volumes of "Fluctuations of Glaciers".

It is strongly recommended that all data tabulated in Tables A to D be used in consultation with the relevant sections in the text; in the case of Table F, the data are given within the text of Chapter 7. Furthermore, when citing data from this volume, references to the original sources of the data – given in the relevant chapters of the text – should be quoted wherever possible.

In contrast to the previously used system in the "Fluctuations of Glaciers" of classifying the countries according to geographical location, the data in the current volume are arranged alphabetically according to country name and glacier name.

Country	*Prefix*	*Country*	*Prefix*
Argentina	AR	Italy	IT
Austria	AT	Japan	JP
Bolivia	BO	Kenya	KE
Bulgaria	BG	Mexico	MX
Canada	CA	Nepal	NP
Chile	CL	New Zealand	NZ
China	CN	Norway	NO
C.I.S.	SU	Peru	PE
Colombia	CO	Poland	PL
Ecuador	EC	Spain	ES
France	FR	Sweden	SE
Germany	DE	Switzerland	CH
Iceland	IS	U.S.A.	US

CHAPTER 2 GENERAL INFORMATION ON THE OBSERVED GLACIERS

2.1 The Parameters

The parameters published constitute a useful minimum of information about each observed glacier. Emphasis is placed upon basic information available from a national glacier inventory carried out according to specifications agreed upon internationally. A list of the parameters given in Table A, together with the abbreviations used there, can be found on the cover page of Table A. Latitude and longitude are no longer quoted as sexagesimal (minutes ranging from 0 to 59) but in decimal degree. Elevation, area and length correspond to the latest reported values and may not originate from the same year. The 3-digit classification of each glacier (CODE) is based on the following scheme (UNESCO 1970):

Digit 1: Primary Classification

0	Miscellaneous
1	Continental ice
2	Ice field
3	Ice cap
4	Outlet glacier
5	Valley glacier
6	Mountain glacier
7	Glacieret or snowfield
8	Ice shelf
9	Rock glacier

Digit 2: Form

0	Miscellaneous
1	Compound basins – two or more glaciers coalescing
2	Compound basin – two or more accumulation basins
3	Simple basin
4	Cirque
5	Niche
6	Crater
7	Ice apron
8	Group
9	Remnant

Digit 3: Frontal Characteristics

0	Miscellaneous
1	Piedmont
2	Expanded foot
3	Lobed

4	Calving
5	Coalescing, non contributing
6	Irregular, mainly clean ice
7	Irregular, mainly debris-covered
8	Single lobed, mainly clean ice
9	Single lobed, mainly debris-covered

2.2 Sources of Data and Comments for the Various Countries

When reported, the names of the individual investigators and their sponsoring agencies are given for each country in Chapters 3, 4 and 5. The addresses of the sponsoring agencies and organisations holding original data are given in Chapter 6.

Argentina (AR)
Data of mass balance measurements and frontal fluctuations of Glaciar de los Tres, located in the Patagonian Andes in the Mt. Fitz Roy Region, are presented by V.V. Popovnin (MGU), who organized and headed the Russian glaciological expedition to Patagonia in 1996–1998. Continuous records of air temperature and precipitation near the snout as well as of liquid glacier-derived runoff are also available for austral summer seasons (Popovnin and others 1999). In March 1998, Glaciar de los Tres was mapped (scale 1:10,000) by means of a terrestrial photogrammetrical survey conducted by D.G. Tsvetkov (IGRAN) and V.V. Popovnin (MGU). The map is available at the Moscow State University, Russia.

The results of frontal fluctuations and area changes of Martial Glacier and Martial Este Glacier, located on the Argentinean side of Cordillera Fueguina, were presented by J. Strelin and R. Iturraspe (CADI–CONICET and IAA–DNA).

Austria (AT)
Information on Austrian glaciers was received from W. Schöner (ZAMG) and M. Kuhn (IMGI).

Bolivia (BO)
Information on Bolivian glaciers was received from B. Francou (IRD-CNRS).

Bulgaria (BG)
Information on the Sneshnika Snow Patch was received from F. Haubold (DUT).

Canada (CA)
Information on Canadian glaciers was received from M. Demuth (GSC) and J. Sekerka (GSC).

Chile (CL)
Data for glaciers from Chile were submitted by M. Schnirch (IPG), C. Schneider (IPG), G. Casassa (CECS), C. Acuña (CECS) and R. Kilian (FGUT).

China (CN)
Data for Chinese glaciers were submitted by Y. Baisheng (CAREERI).

C.I.S. (SU)
The data for 205 glaciers from the C.I.S. contribution to Volume VIII were collected, prepared and submitted by the Glacier Monitoring Working Group of C.I.S. Glaciological Association chaired by V.V. Popovnin (MGU) and consisting of D.A. Petrakov (MGU), O.V. Rototayeva (IGRAN) and D.G. Tsvetkov (IGRAN). Compilation of the most important scientific achievements of the Soviet and post-USSR glaciologists is presented by Kotlyakov and others (1996, 1997). New results from observations undertaken by five institutions of the former USSR (state universities and academies of sciences) are summarised. Geographically, the data represent the regions of Caucasus (27 glaciers), Altai (7), Kamchatka (5), Tien-Shan (2), Dzhungarian Alatau (1) and Pamirs (163).

The 163 glaciers in the Eastern Pamirs are mostly unnamed. To identify them, their names are given as their numbers in the Catalogue of Glaciers of the USSR, v. 14, issue 3, parts 8 (1979), 13 (1978), 14 (1979), 15 (1979), 17 (1975) and 18 (1975). The accepted denotation system consists of 4 groups of digits separated by dots: the first group (up to 3 digits) signifies a glacier number in the Catalogue, the next groups are the Catalogue volume (14), issue (3) and part (8,13,14,15,17 or 18).

Mizhirgi Glacier is the more conventional name for Mizhirgichiran Glacier, as it was named in earlier volumes of "Fluctuations of Glaciers".

Note that the former elevation of the Kyukyurtlyu Glacier terminus, erroneously printed in "Fluctuations of Glaciers", Vol. VI, as 2,788 m a.s.l., should be 2,768 m a.s.l.

Colombia (CO)
Information on glaciers from Colombia was submitted by J. Ramírez Cadenas (OVSM).

Ecuador (EC)
Information on glaciers from Ecuador was submitted by B. Francou (IRD-CNRS).

France (FR)
Data for 7 French glaciers were received from C. Vincent (CNRS).

Germany (DE)
Information on glaciers from Germany was submitted by L. Braun (CGBAS).

Iceland (IS)
Data were submitted by O. Sigurdsson (NEAHS).

Italy (IT)
Information on 77 Italian glaciers was submitted by G. Zanon (DGUP) and on Fontana Bianca (Weissbrunnferner) by G. Kaser (CGI/DGI).

Japan (JP)
Information on glaciers from Japan was submitted by K. Fujita (IAHS) and Y. Ageta (IAHS).

Kenya (KN)
General information on Lewis glacier was taken from the previous volume of "Fluctuations of Glaciers".

Mexico (MX)
Information on glaciers in Mexico was submitted by H. Delgado Granados (UNAM).

Nepal (NP)
Information on glaciers from Nepal was submitted by K. Fujita (IAHS) and Y. Ageta (IAHS).

New Zealand (NZ)
Data for 70 glaciers were received from T.J. Chinn (APPC), 20 Muir Rd, Lake Hawea, RD2 Wanaka, Otago 9192. APPC is contracted to the sponsoring authority NIWA.

References: Chinn (2001), Fitzharris and Chinn (1999), Lamont and others (1999), Fitzharris and others (1997).

Norway (NO)
Information on glaciers from Norway was submitted by J.O. Hagen (DGUO), B. Kjøllmoen (NVE), J. Kohler (NPI), I. Sobota (NCU), M. Grzes (NCU) and K.R. Lankauf (NCU).

Peru (PE)
Data were submitted by M. Zapata (INRENA) and J. Gomez (INRENA).

Poland (PL)
Information on glacierets from Poland was submitted by A. Wislinski (MPG).

Spain (ES)
Data for Maladeta glacier, the only instrumented glacier in the Pyrenees, were submitted by E. Martinez de Pisón (UAM) and J. Navarro (AMINSA).

Sweden (SE)
Information on glaciers from Sweden was submitted by P. Holmlund (INK).

Switzerland (CH)
Data on 114 Swiss glaciers were compiled by M. Hoelzle (GIUZ). As with Vol. IV, V, VI and VII, the main source of general information was the Swiss Glacier Inventory by Müller and others (1976).

U.S.A. (US)

Information on glaciers from the U.S.A. was submitted by R. March (USGS). More complete information on South Cascade glacier has been published in reports by Krimmel (1985–91 USGS WRIR 00-4006, 1992 USGS OFR 93-640, 1993 USGS WRIR 94-4139, 1994 USGS WRIR 95-4162, 1995 USGS WRIR 96-4174, 1996 USGS WRIR 97-4143, 1997 USGS WRIR 98-4090, 1998 USGS WRIR 99-4049, 1999 USGS WRIR 00-4265, 2000 USGS in preparation).

CHAPTER 3 **VARIATIONS IN THE POSITION OF GLACIER FRONTS 1995–2000 AND ADDENDA FROM EARLIER YEARS (TABLES B AND BB)**

3.1 The Data

Data relating to the position of glacier fronts are given in Table B for the period 1995–2000. The data for periods preceding 1995 which were not included in earlier volumes of the series are given in Table BB; in some cases Table BB also gives data which appeared in earlier volumes but which have now been corrected or updated.

A list of the type of data given in each of the Tables B and BB, together with an explanation of the abbreviations and symbols used, can be found on the cover sheet of each table. Quantitative data represent the variation in the position of the glacier front in metres. Qualitative data are also given for cases where no measurements were made although there was some frontal activity observed in the reported period:

ST = glacier appears to be stationary;
+X = glacier appears to advance;
- X = glacier appears to retreat;
SN = glacier tongue is covered with snow, making the survey impossible.

In all cases, the qualitative data should refer to the preceding year for which either quantitative or qualitative data are available. On the other hand, quantitative data following a series of qualitative observations should be understood as referring to the whole period since the last quantitative measurement.

The data given in Table B is not homogeneous with respect to the method of observation used. In some cases, the measurements are made by regular annual or biennial surveys following methods similar to those recommended by the former Glacier Commission of the Swiss Academy of Sciences (IAHS/UNESCO 1967). In other cases, the measurements are more sporadic or casual and are often based upon photogrammetric methods rather than on theodolite survey. The accuracy of the data will rarely be better than about 0.5 m and may be much worse, depending on the method used.

Dates of survey are omitted from Table B simply because of shortage of space. In almost all cases it can be assumed that the surveys are made at or near the end of the balance year, i.e., in the boreal or austral autumn seasons. Deviation from a time interval of 365 days between annual surveys will cause errors in the calculation of annual rates of changes, but they will usually lie within the limit of errors caused by other factors.

For front variation observation the glacier is surveyed in the *survey year*. The variation of the glacier tongue is measured between *reference* and *survey year*. Thereby, the *reference year* marks the previous survey or the year associated with a former position of the glacier tongue (e.g., fixed point or 1850 moraine).

In Table B of earlier volumes the attribute 1ST SURVEY was defined as “year when glacier was first surveyed". Depending on the observation method and national peculiarities, this could lead to ambiguities. Therefore, the definition of the attribute 1ST SURVEY has been changed slightly in the present volume to "year when first front variation data are available (at WGMS)". Thus, the 1ST SURVEY in the present volume may differ significantly from earlier volumes, in the case of certain glacier reports which were lacking in data for the historical *survey years*.

3.2 Sources of Data and Comments for the Various Countries

Argentina (AR)
Frontal variations in Glaciar de los Tres in Patagonia were presented by V.V. Popovnin (MGU). The glacier terminus calves into a small proglacial lake, and the changes in the glacier front were measured along the longitudinal alignment in its orographically right margin, where an eroded rocky outlier emerges from under the water level. Consecutive benchmarks were hewed out on the outlier.

Data from Martial Glaciers were submitted by J. Strelin and R. Iturraspe (CADIC–CONICET and IAA–DNA).

Austria (AT)
Data were submitted by W. Schöner (ZAMG) and L.N. Braun (CGBAS).

Bolivia (BO)
Data were submitted by B. Francou (IRD) and J. Mendoza (IHH).

Chile (CL)
Data were submitted by C. Acuña (CECS), G. Casassa (CECS), A. Rivera (CECS), C. Schneider (IPG) and M. Schnirch (IPG).

China (CN)
Data were submitted by Y. Huian (CAREERI) and J. Zhefan (CAREERI).

C.I.S. (SU)
Frontal variations for 42 ex-USSR glaciers are presented in Table B with Addenda from earlier years for 6 glaciers in the Caucasus and 163 glaciers in the Pamirs, Tajikistan, contributing Table BB.

Seven glaciers in the selection presented in Table B also have parallel mass balance estimates, and almost all of them were monitored by terrestrial surveys annually or with the gaps of only one year during the reported period. Retreat or advance values during the past 10–14 years (38 years, in one case) for sixteen glaciers flowing down along the volcanic cone of Mt. Elbrus were derived in MGU in the course of digital photogrammetry of airborne images (Zolotaryov and Kharkovets 2000).

Changes in the spatial position of the glacier fronts in the Caucasus were examined in detail by V.D. Panov (1993).

Changes in the position of 163 glacier termini from the Eastern Pamirs, Tajikistan, included in Table BB were measured with the help of a stereo-comparator, using satellite imagery at a scale of 1:200,000–1:275,000, obtained in the course of cosmic flights of Soviet satellites in 1972–1991 and taken by photo cameras KFA-1000 with the focal length of 1 m. Accuracy of estimated frontal variations is 5–10 m. This work was accomplished in IGRAN with the support of the Russian Foundation of Basic Research and a special grant entitled, "Long-term regimen of glaciation and of glacial runoff in mountain regions with continental and maritime climate" (Osipova and Tsvetkov 2000).

Individual investigators and their sponsoring agencies are as follows:
Caucasus (27 glaciers): Djankuat – A.A. Aleynikov, V.V. Popovnin and Ye.A. Zolotarov (MGU); Bolshoy Azau, Maliy Azau, Terskol, Irik, Irikchat, Chungurchatchiran, Birdzhalychiran, Mikelchiran, Ullumalienderku, Ullukol, Karachaul, Ulluchiran, Bityuktyube, Kyukyurtlyu, Ullukam, Garabashi – Ye.A. Zolotaryov and Ye.G. Kharkovets (MGU); Bezengi, Khakel, Kozytsiti, Kulak Nizhniy, Marukhskiy, Mizhirgi, Skazka, Tseya, Yugo-Vostochniy, Yuzhniy – Yu.G. Ilyichov, V.D. Panov (SKGM).

Altai (7 glaciers): Dzhelo, Korumdu, Leviy Aktru, Leviy Karagemskiy, Maliy Aktru, No.125 (Vodopadniy), Praviy Karagemskiy – Yu.K. Narozhniy (TGU).

Kamchatka (5 glaciers): Kozelskiy, Koryto, Mutnovskiy NE, Mutnovskiy SW, Kropotkin – Ya.D. Muravyov (IVRAN).

Tien Shan (2 glaciers): Tsentralniy Tuyuksuyskiy – P.A. Cherkasov (IGK), Kara-Batkak – A.N. Dikikh (KGM).

Pamirs (163 glaciers): G.B. Osipova (IGRAN) and D.G. Tsvetkov (IGRAN).

Colombia (CO)
Data were submitted by L.F. Guarnizo (INGEOMINAS) and J. Ramírez (INGEOMINAS).

Ecuador (EC)
Data were submitted by B. Francou (IRD) and B. Cáceres (INAMHI).

France (FR)
Data for 7 French glaciers were received from C. Vincent (CNRS) and from E. Thibert (PNE).

Iceland (IS)
Data were submitted by O. Sigurdsson (NEAHS).

Italy (IT)
Frontal variation data for 73 Italian glaciers are given. The sponsoring agency for these observations is the "Comitato Glaciologico Italiano" (CGI, Italian Glaciological Committee) in Turin, with financial support from the "Consiglio Nazionale delle Ricerche" (CNR, National Research Council), the "Ministero dell'Università e della

Ricerca Scientifica e Tecnologica" (MURST, Ministry of Universities and Scientific and Technological Research), the "Regione Lombardia" in Milan, and with the collaboration of the "Club Alpino Italiano" (CAI, Italian Alpine Club).

The individual investigators for the glaciers listed in Table B are as follows: Agnello – M. Tron; Alta (Vedr.), Antelao Sup., Antelao Inf., Cevedale, Forcola, Lunga (Vedr.), Monache Or. – G. Perini; Amola, Cornisello Mer., Lares, Lobbia, Mandrone, Nardis Occ., Niscli, Presanella – F. Marchetti and other observers CAI; Andolla Nord, Aurona, Belvedere, Hohsand Sett. – A. Mazza, R. Ossola, P. Valisa; Barbadorso D., Vallelunga – G. Zanon; Basei – F. Fornengo, L. Mercalli, V. Bertoglio; Bessanese – F. Rogliardo; Brenva – A. Cerutti; Caspoggio – L. Arzuffi, M. Maccagni; V. Paneri, R. Peja; Chavannes – A. Albertelli, A. Viotti; Ciardoney – F. Fornengo, L. Mercalli; Collalto, Gigante Centr., Gigante Occ. – G. Cibin; Croda Rossa, Tessa – M. Meneghel; Dosdé Or. – F. Galluccio, G. Mainardi, S. Ratti; Dosegù – D. Affer, B. Bonantoni, A. Galluccio, V. Villa; Fellaria Occ. – G. Catasta; Forni – G. Casartelli, G. Cola, A. Pollini; Fradusta, Travignolo – M. Cesco Cancian; Goletta – F. Pollicini; Grandes Murailles, Tza de Tzan – M.C. Rosazza Gat; Gran Pilastro, Neves Or., Quaira Bianca – G.L. Franchi, U. Mattana; La Mare, Rossa (Vedr.), Venezia (Vedr.) – C. Voltolini; Lana, Rosso Destro, Valle del Vento – R. Serandrei Barbero; Lauson – V. Bertoglio, P. Borre, S. Cerise, C. Ferrero, A. Morino; Lex Blanche, Pré de Bar – A. Cerutti, A. Fusinaz; Lys – L. Mercalli, W. Monterin; Malavalle, Pendente – G. L. Franchi; Marmolada – U. Mattana; Piode – W. Monterin, Pisgana Occ. – P. Battaglia, M. Pala; Pizzo Scalino – G. Casartelli; Rosim, Zai di D., Zai di M., Zai di F. – U. Ferrari; Rutor – R. Garino; Sforzellina – S. Rossi, C. Smiraglia; Toules – A. Fusinaz; Tresero – L. Bolognini, A. Galluccio; Valtournenche – A. Giorcelli; Venerocolo – L. Bonardi, P. Caprara, A. Gigliuto, G. Gorni; Ventina – C. Smiraglia, G. Stella; Vitelli – F. Righetti.

Mexico (MX)
Data were submitted by H. Delgado Granados (UNAM).

Nepal (NP)
Data were submitted by K. Fujita (IHAS) and Y. Ageta (IHAS).

New Zealand (NZ)
Data were provided by T.J. Chinn (APPC). Frontal variation data for 70 glaciers in New Zealand are given in Table B. The assessments have been made from oblique aerial photographs taken from annual light aircraft flights made for annual end-of-summer surveys of the glacier snowlines (ELAs) on a set of index glaciers. The flights are performed at about 3000 m and during the March 2000 flight many additional glacier frontal positions were photographed for this survey. Other data come from occasional photographs taken over various years.

Norway (NO)
Frontal variation data are provided by NVE, submitted by L.M. Andreassen. Frontal variation data for Midtdalsbreen originate from A. Nesje (DES), and were submitted by NVE. Frontal variation data on Waldemarbreen glacier were submitted by K.R. Lankauf (NCU).

Peru (PE)
Data were submitted by M. Zapata (INRENA) and J. Gomez (INRENA).

Poland (PL)
Frontal variation data from the Mieguszowieckie, Pod Bula and Pod Cubryna glacierets in the Polish Tatra Mountains are being investigated mainly by A. Wislinski (MPG), Z. Kijkowska-Wislinska (MPG) and M. Wislinski (MPG). In 1998 B. Gadek (SUP) resumed photogrammetric measurements of the Mieguszowiecki glacieret, begun in 1989 by J. Jania (SUP) and L. Kolondra (SUP).

Sweden (SE)
Data were submitted by P. Holmlund (INK).

Switzerland (CH)
Frontal variation data for 114 Swiss glaciers, submitted by M. Hoelzle (GIUZ), are given in Table B. The programme of observations is largely supported by the Swiss Glaciological Commission of the Swiss Academy of Sciences and operated by the VAW and in collaboration with many Cantonal Forestry Services, hydro-electric power companies, private persons and universities. Individual observers involved in this programme are as follows:

VAW – A. Bauder (Gries, Silvretta, Rhône, Giétro, Corbassière Grosser Aletsch, Rhône, Findelen), VAW – H. Bösch (Schwarzberg, Allalin, Kessjen), UNIBA/UNIZH – D. Vonder Mühll (Fiescher, Ried, Oberaletsch); SLF – M. Laternser (Scaletta); Forestry Service of Canton Valais – U. Andenmatten (Fee), S. Walther (Gorner), M. Schmidhalter (Kaltwasser), F. Pfammatter (Rossboden), H. Henzen (Lang), M. Barmaz (Zinal, Moming, Moiry), J. Guex (Valsorey, Tseudet, Boveyre, Saleina), S. Seppey (Cheillon, En Darrey), F. Vouillamoz (Grand Dèsert, Mt. Fort), J.D. Brodard (Tsanfleuron), F. Pralong (Ferpècle, Mt. Miné, Arolla, Tsidjiore Nouve), P. Tscherrig (Turtmann, Brunegg, Bella Tola); Forestry Service of Canton Vaud – J. Binggeli (Sex Rouge, Prapio), J.P. Marlètaz (Paneyrosse, Grand Plan Névé); Forestry Service of Canton Bern – C. von Grünigen (Rätzli), R. Straub (Gauli, Stein, Steinlimmi), U. Vogt (Schwarz, Lämmern), R. Descloux (Gamchi), U. Fuhrer (Alpetli, Blümlisalp), R. Zumstein (Eiger, Tschingel); Forestry Service of Canton Glarus – T. Rageth (Sulz); Forestry Service of Canton Obwalden – R. Imfeld (Firnalpeli, Griessen); Forestry Service of Canton St. Gallen – A. Hartmann (Pizol, Sardona); Forestry Service of Canton Graubünden – C. Barandun (Porchabella), G. Berchier (Palü), R. Hefti (Vorab), O. Hugentobler (Paradies, Suretta), H. Klöti (Punteglias), M. Stadler (Tiatscha), C. Mengelt (Forno), G. Bott (Calderas, Roseg, Tschierva, Morteratsch), B. Parolini (Lenta), L. Rauch (Sesvenna, Lischana), A. Sialm (Lavaz), M. Maikoff (Verstankla); Forestry Service of Canton Ticino – C. Valeggia (Basòdino, Val Torta, Cavagnoli, Corno, Croslina, Bresciana, Valleggia); Forestry Service of Canton Uri – M. Planzer (Kehlen, Damma, Rotfirn), P. Kläger (Wallenbur), B. Annen (Griess), J. Marx (Brunni, Tiefen, St. Anna), A. Arnold (Hüfi); Flotron AG (Oberaar, Unteraar); private investigators – J.L. Chabloz (Otemma, Mt. Durand, Breney), H. Boss jun. (Ober Grindelwald, Unter Grindelwald), A. Godenzi (Cambrena, Paradisino), E. Hodel (Ammerten), J. Ehinger (Trient), H.P. Klauser (Biferten, Glärnisch), O. Lüthi (Trift), U. Steinegger (Limmern, Plattalva),

U. Wittdorf (Mutt), not observed (Bis, Ofental, Rosenlaui, Tälliboden, Zmutt).

U.S.A. (US)
Data were submitted by K. Echelmeyer (UAF) and R. Krimmel (USGS).

CHAPTER 4 MASS BALANCE STUDY RESULTS 1995–2000 AND ADDENDA FROM EARLIER YEARS (TABLES C, CC, AND CCC)

4.1 The Data

Mass balance study results are presented in the following tables: in Table C summary data are given for the years 1995–2000, Table CC contains data from years prior to 1995 which have not been published in a “Fluctuations” volume, or corrected/updated values of previously published data. More detailed data for mass balance versus altitude are given in Table CCC.

In some cases mass balance data for the period 1995–2000 from national correspondents is supplemented with data from:

Dyurgerov, M. (2002): Glacier mass balance and regime: Data of measurements and analysis. INSTAAR Occasional Paper No. 55, ed. MEIER, M. and ARMSTRONG, R., Bolder, CO: Institute of Arctic and Alpine Research, University of Colorado.

A list of the type of data given in each of the Tables C, CC and CCC, together with an explanation of the abbreviations and symbols used can be found on the cover sheet of each table. Balance quantities relating to BW and BS concern the area of the entire glacier; hence, BN in the stratigraphic measurement system (SYS = STR) is the difference between BW and BS. For SYS = FXD (fixeddate system), BA is the annual balance. In cases where SYS is given as OTH (other) or “blank” (unspecified) the situation is admittedly ambiguous. For practical reasons (data format) and in order to avoid rounding-off errors in cumulative balance calculations, balance values are being reported in millimetres. The accuracy of the given data, however, is in most cases closer to the centimetre or even decimetre range.

4.2 Sources of Data and Comments for the Various Countries

Argentina (AR)
Results of detailed mass balance studies of Glaciar de los Tres in Patagonian Andes, obtained during three consecutive balance years by a Russian expedition, were submitted by V.V. Popovnin (MGU). Besides summary mass balance information for the reported years (Table C), its distribution by altitudinal spans is also presented in Table CCC. See also Popovnin and others (1999).

Austria (AT)
Data were submitted by G. Markl (IMGI), M. Kuhn (IMGI), N. Span (IMGI), W. Schöner (ZAMG), H. Slupetzky (GIUS), L.N. Braun (CGBAS) and H. Rentsch (CGBAS), supplemented with data from Dyurgerov (2002). L.N. Braun (CGBAS) submitted winter and summer balance from Vernagt Ferner, calculated from net balance and winter accumulation (see Table C and CC).

Bolivia (BO)
Data were submitted by B. Francou (IRD) and J. Mendoza (IHH).

Canada (CA)
Data were submitted by M. Demuth (GSC), R.M. Koerner (GSC) and J. Sekerka (GSC), supplemented with data from Dyurgerov (2002).

Chile (CL)
Data were submitted by F. Escobar (DGA) and C. Garin (DGA).

China (CN)
Data were submitted by Y. Huian (CAREERI), W. Chunzu (CAREERI), J. Keqin (CAREERI) and L. Shiyin (CAREERI).

C.I.S. (SU)
Mass balance data for 9 glaciers are given in Table C. All of these glaciers were monitored throughout the entire period of 1995–2000, except Kozelskiy Glacier in the Kamchatka and Kara-Batkak Glacier in the Tien Shan where observation series were discontinued after 1997 and 1998, respectively. The present state and evolutionary tendencies of the Altai glaciers are analysed by Narozhniy (2001a, 2001b). Mass balance monitoring of Djankuat Glacier in the Caucasus (Popovnin 1998) was supported by the Russian Foundation of Basic Research (grant numbers 94-05-17092, 97-05-65092 and 00-05-64825).

It should be noted that mass balance of Koryto Glacier in Kamchatka was calculated in 1998/99, not by the BW/BS, but by the "net accumulation/net ablation" approach. Therefore the correspondimg mass balance value is calculated as the AAR-weighted mean between the accumulation above the ELA and ablation below the ELA; the value in the BN/BA column is apparently not the arithmetic difference between those presented in the BW column (that is "net accumulation" in this case) and in the BS column (that is "net ablation" here).

Mass balance versus altitude data are given for 6 glaciers in Table CCC, supplemented with addenda on vertical mass balance distribution for one of them (Tsentralniy Tuyuksuyiskiy) and addenda from earlier years for one more (Shumskiy). As in the case of Koryto Glacier, mass balance of Tsentralniy Tuyuksuyiskiy Glacier in the Tien Shan was calculated in 1990/91 and 1991/92 not by the BW/BS, but by the AC/AA approach. Therefore the corresponding values in the BW column represent total accumulation (not winter balance) and those in the BS are total ablation (and not summer balance).

The individual investigators are as follows:
Caucasus (2 glaciers): Djankuat – V.V. Popovnin (MGU) and D.A. Petrakov (MGU) in 1995–1999, V.V. Popovnin (MGU) and A.V. Rozova (MGU) in 2000; Garabashi – O.V. Rototayeva (IGRAN) and I.F. Khmelevskoy (IGRAN).

Altai (3 glaciers): Leviy Aktru, Maliy Aktru, No.125 (Vodopadniy) – Yu.K. Narozhniy (TGU).

Kamchatka (2 glaciers): Kozelskiy – Ya.D. Muravyov (IVRAN); Koryto – Ya.D. Muravyov (IVRAN) and T. Shiraiwa (ILTS, Japan).

Tien Shan (2 glaciers): Tsentralniy Tuyuksuyskiy – K.G. Makarevich in 1990–1992, P.A. Cherkasov in 1993–2000 (IGK); Kara-Batkak – A.N. Dikikh (KGM).

Dzhungarian Alatau (1 glacier): Shumskiy – P.A. Cherkasov (IGK).

Ecuador (EC)
Data were submitted by B. Francou (IRD) and B. Cáceres (INAMHI).

France (FR)
Information is given on the mass balance of Saint Sorlin Glacier, investigated by C. Vincent (CNRS) and on the mass balance of Sarennes Glacier, investigated by F. Valla (CEMAGREF).

Iceland (IS)
Data were submitted by O. Sigurdsson (NEAHS) and supplemented with data from Dyurgerov (2002).

Italy (IT)
Mass balance data from 1996 to 2000 are given for 5 glaciers; mass balance versus altitude data are submitted for Caresèr, Fontana Bianca-Weissbrunn and Pendente-Hangender glaciers. The main investigators were G. Zanon (DGUP, CGI) for Caresèr, L. Mercalli (CGI) for Ciardoney, G. Kaser (CGI/DGI) for Fontana Bianca-Weissbrunn, G.L. Franchi (CGI) and G.C. Rossi (CGI) for Pendente-Hangender, C. Smiraglia (CGI) for Sforzellina.

Japan (JP)
Data were submitted by K. Fujita (IHAS) and Y. Ageta (IHAS).

Kenya (KE)
Data were submitted by S. Hastenrath (UWAOS). The monitoring programme that started in 1978 had to be terminated in March 1996.

Mexico (MX)
Data were submitted by H. Delgado Granados (UNAM).

Nepal (NP)
Data were submitted by K. Fujita (IHAS) and Y. Ageta (IHAS).

Norway (NO)
Data were submitted by B. Kjøllmoen (NVE) and J. Kohler (NPI). Data on Hansbreen glacier were provided by P. Glowacki (SUP), J. Jania (SUP), B. Gadek (SUP) and coworkers from SUP. Data on Waldemarbreen glacier were provided by I. Sobota (NCU). Supplementary data came from Dyurgerov (2002).

Spain (ES)
Data for the Maladeta glacier were submitted by E. Martinez de Pisón (UAM) and J. Navarro (AMINSA).

Sweden (SE)
Data were submitted by P. Holmlund (INK), supplemented with data from Dyurgerov (2002).

Switzerland (CH)
Mass balance data and mass balance versus altitude data for 3 glaciers, submitted by M. Hoelzle (GIUZ), are presented in Table C, CC and CCC, respectively. The investigators and their sponsoring agencies are as follows: Gries (M. Funk, VAW), Silvretta (A. Bauder, VAW) and Basòdino (G. Kappenberger, METEOSWISS). For the first time data from Ghiacciaio del Basòdino are included in the data sheet. Ghiacciaio del Basòdino is a glacier situated in the Ticino area in the Southern Swiss Alps. Some information about thickness changes using 8 different topographic maps dating back to 1851 are published in Kappenberger and others (1995), Aellen and others (1996) and Kappenberger and Aellen (1998). For Gries, Silvretta and Basòdino the glaciological method is still being applied. The stake number on Gries is 11, on Silvretta 8 and on Basòdino 11. A detailed description of the measurements can be found in the biannual reports of the Swiss Glaciological Commission of the Swiss Academy of Sciences (e.g. Herren and others 2002).

U.S.A (US)
Data were submitted by K. Echelmeyer (UAF) and R. Krimmel (USGS), supplemented with data from Dyurgerov (2002).

CHAPTER 5 **CHANGES IN AREA, VOLUME AND THICKNESS OF GLACIERS**

5.1 The Data

Data relating to changes in area, volume and thickness are given in Table D for periods up to 2000. A list of the type of data tabulated and the units used can be found on the cover sheet of this table.

5.2 Sources of Data and Comments for the Various Countries

Argentina (AR)
Data were submitted by J. Strelin and R. Iturraspe (CADIC–CONICET and IAA–DNA).

Austria (AT)
Data were submitted by L.N. Braun (CGBAS).

Bolivia (BO)
Data were submitted by B. Francou (IRD) and J. Mendoza (IHH).

Chile (CL)
Data were submitted by C. Schneider (IGP), M. Schnirch (IGP), C. Acuña (CECS), G. Casassa (CECS) and A. Rivera (CECS).

China (CN)
Data were submitted by Y. Huian (CAREERI) and J. Zhefan (CAREERI).

C.I.S.(SU)
Information about two glaciers is presented here.

Data for Djankuat Glacier in the Caucasus for three time intervals (1992–1996, 1996–1998 and 1998–1999) within the reported period of 1995–2000 were submitted by A.A. Aleynikov and V.V. Popovnin (MGU). Changes in spatial position of the glacier were derived by using a digital terrain model of the surface topography, based on 3 maps 1:10,000 made in 1996, 1998 and 1999 as a result of terrestrial photogrammetrical survey (Aleynikov and others 2001). Considerable changes in area in the uppermost altitudinal belts of Djankuat Glacier are explained by the continuous migration of ice divide along the vast Djantugan firn plateau, located in the crestal zone of the Great Caucasus Ridge, that redistributes ice fluxes to both adjacent macro-slopes and changes shares of ice catchment areas between contacting Djankuat glacier in Russia and Lexyr glacier in Georgia (Popovnin 1995, Aleynikov and others 2002).

Data on annual changes in the area, volume and thickness of Tsentralniy Tuyuksuyskiy Glacier were submitted by P.A. Cherkasov (IGK). In contrast to the above-mentioned measurements, these ones represent changes registered at the snout and not on the entire glacier surface.

Data from Abramov glacier were provided by Dr. Kamnyansky (SANIGMI).

Colombia (CO)
Data were submitted by L.F. Guarnizo (INGEOMINAS).

Ecuador (EC)
Data were submitted by B. Francou (IRD) and B. Cáceres (INAMHI).

Germany (DE)
Data were submitted by L.N. Braun (CGBAS).

Italy (IT)
Data were submitted by G. Kaser (CGI/DGI).

Nepal (NP)
Data were submitted by K. Fujita (IHAS) and Y. Ageta (IHAS).

CHAPTER 6 **SPONSORING AGENCIES AND NATIONAL CORRESPONDENTS FOR THE GLACIER FLUCTUATION STUDIES**

6.1 General Remarks

The information in the present volume was supplied by national correspondents of the WGMS and individual glaciological workers. For operational and efficiency reasons, the number of correspondents per country must be limited to one. In each country, the national correspondent is responsible for coordinating the collection and submission of data with individual investigators. Individual glaciologists are therefore asked to use this "channel" for submitting their data. Only in extraordinary cases can the WGMS accept data which did not arrive via the national correspondent.

The tabulations in Tables A to F are intended to be useful to the glaciological community. However, these data should not be used uncritically; it would be advisable for users to consult the WGMS about the existence of extra, unpublished, archival material and to consult with individual investigators and sponsoring agencies. In order to facilitate contacts with the various bodies involved, a key to abbreviations used in the text for sponsoring agencies, together with their addresses and those of the national correspondents is given in the following section. In almost all cases it can be assumed that the data are held by the sponsoring agencies.

6.2 Sponsoring Agencies and Sources of Data for the Various Countries

Antarctica (AN)

- APPC — See APPC – New Zealand

Argentina (AR)

- CADIC-CONICET — Centro Austral de Investigaciones Científicas
  Casilla de Correo 92
  AR–9410 Ushuaia, Tierra del Fuego

- CIIN — Centro de Investigaciones
  Interdisciplinarias de Neuquen
  Rivadiria 153, 6B
  AR–8300 Neuquen

- IAA-DNA — Instituto Antártico Argentino
  Cerrito 1248
  AR-1010 Ciudad de Buenos Aires

• IANIGLA	Instituto Argentino de Nivología, Glaciología y Ciencias Ambientales CONICET Casilla de Correo 330 AR–5500 Mendoza
• UHG	see UHG – Germany

Austria (AT)

• CGBAS	See CGBAS – Germany
• DGI	Department of Geography University of Innsbruck Innrain 52 AT–6020 Innsbruck
• GIUS	Geographical Institute University of Salzburg Hellbrunnerstrasse 34 AT–5020 Salzburg
• IHMR	Institute for High Mountain Research University of Innsbruck Innrain 52 AT–6020 Innsbruck
• IMGI	Institute for Meteorology and Geophysics University of Innsbruck Innrain 52 AT–6020 Innsbruck
• OEAV	Oesterreichischer Alpenverein (Austrian Alpine Club) Wilhelm Greil Strasse 15 AT–6020 Innsbruck
• ZAMG	Zentralanstalt für Meteorologie und Geodynamik Hohe Warte 38 AT–1190 Vienna

Bolivia (BO)

• IHH	Instituto de Hidraulica e Hidrología P.O. Box 9214 BO–La Paz

• IRD	Institut de Recherche pour le Développement P.O. Box 96 FR–38402 St-Martin d'Hères Cedex

Bulgaria (BG)

• DUT	see DUT – Germany

Canada (CA)

• BCH	British Columbia Hydro Hydrology Department 970 Burrard Street CA–Vancouver, BC, V6Z 1Y3
• GSC	Natural Resources Canada Geological Survey of Canada Terrain Sciences Division 601 Booth Street CA–Ottawa, ON, K1A 0E8
• MUN/G	Memorial University of Newfoundland Department of Geography CA–Saint John's, NF, A1B 3X9
• NHRI/CGVMAN	National Hydrology Research Institute Canadian Glacier Variations Monitoring and Assessment Network 11 Innovation Boulevard CA–Saskatoon, SK, S7N 3H5
• TU/G	Trent University Geography Department P.O. Box 4800 CA–Peterborough, ON, K9J 7B8
• WLU/CRRC	Wilfrid Laurier University Cold Regions Research Centre Department of Geography 75 University Avenue West CA–Waterloo, ON, N2L 3C5

Chile (CL)

• CECS	Centro de Estudios Científicos Avda. Prat 514 CL–Valdivia
• DGA	Dirección General de Aguas Morandé 59 CL–Santiago

China (CN)

• CAREERI	Cold and Arid Regions Environment and Engineering Research Institute, Chinese Academy of Sciences (CAS) 260 West Donggang Road CN–730 000 Lanzhou
• LIGG	Lanzhou Institute of Glaciology and Geocryology Chinese Academy of Sciences CN–730 000 Lanzhou

C.I.S. (SU)

• IGNANKaz	Institute of Geography National Academy of Sciences of Kazakh Republic Pushkin Str. 99 KZ–480100 Alma Ata
• IGNANKir	Institute of Geology National Academy of Sciences of Kirghiz Republic Erkindik Boulevard, 30 KG–720481 Bishkek
• IGRAN	Institute of Geography Russian Academy of Sciences Staromonetny, 29 RU–109017 Moscow
• IVRAN	Institute of Volcanology Russian Academy of Sciences Piyp Boulevard, 9 RU–683006 Petropavlovsk-Kamchatskiy

• KGM	State Agency for Hydrometeorology for the Government of the Krighiz Republic (Kirghizgidromet) Karasuyskaya 1 KG–720017 Bishkek
• MGU	Moscow State University Geographical Faculty Leninskiye Gory RU–119992 Moscow, Russia
• SANIGMI	Central Asian Regional Research Hydrometeorological Institute Observatorskaya, 72 UZ–700052 Tashkent
• SKGM	North Caucasian Regional Hydrometeorology Department (Sevkavgidromet) Yerevanskaya, 1/7 RU–344025 Rostov/Don
• TGU	Tomsk State University Laboratory of Glacioclimatology Lenin Str., 36 RU–634050 Tomsk

Colombia (CO)

• IDEAM	Instituto de Hidrología, Meteorología y Estudios Ambientales Subdirección de Geomorfología y Suelos Diagonal 97 No. 17–60, Piso 3 CO–Bogotá
• INGEOMINAS	INGEOMINAS Observatorio Vulcanológico y Sismológico de Manizales Grupo de Glaciología Av. 12 de Octubre No. 15–47 CO–Manizales
• UCALDAS	Universidad de Caldas Departamento de Geología Calle 65 No. 26–10 CO–Manizales

Ecuador (EC)

• INAMHI	Instituto Nacional de Meteorología y Hidrología P.O. Box EC–16 310 Quito
• IRD	Institut de Recherche pour le Développement P.O. Box 96 FR–38402 St-Martin d'Hères Cedex

France (FR)

• CEMAGREF	Snow Division – ETNA Ministry of Agriculture Domaine Universitaire, BP 76 FR–38402 Saint Martin d'Hères, Cedex
• CNRS	Laboratory of Glaciology and Environmental Geophysics (L.G.G.E.) Domaine Universitaire, BP 96 FR–38402 Saint Martin d'Hères, Cedex
• PNE	Parc National des Ecrins FR–38740 Entraignes

Germany (DE)

• CGBAS	Commission for Glaciology Bavarian Academy of Sciences Marstallplatz 8 DE–80539 Munich
• DUT	Dresden University of Technology Institut für Geographie Lehrstuhl Physische Geographie DE–01062 Dresden
• FGUT	Fachbereich Geowissenschaften University of Trier DE–54296 Trier
• IPG	Institut für Physische Geographie University of Freiburg Werderring 4 DE–79085 Freiburg

Greenland (GL)

- GEUS — The Geological Survey of Denmark and Greenland (GEUS)
  Thoravej 8
  DK–2400 Copenhagen NV

Iceland (IS)

- NEAHS — National Energy Authority
  Hydrological Service
  Orkustofnun
  Grensasvegi 9
  IS–108 Reykjavik

Italy (IT)

- CGI — Comitato Glaciologico Italiano
  Via Accademia delle Scienze 5
  IT–10123 Torino

- CNR — Consiglio Nazionale delle Ricerche
  Istituto di Ricerca per la Protezione Idrogeologica,
  Sezione di Torino
  Strada delle Cacce, 73
  IT–10135 Torino

- DGUP — Department of Geography
  University of Padua
  Via del Santo 26
  IT–35123 Padova

- UI/HA — Ufficio Idrografico / Hydrographisches Amt
  Provincia Autonoma di Bolzano
  Autonome Provinz Bozen Südtirol
  Mendelstrasse 24
  IT–39100 Bozen

Japan (JP)

- IHAS — Institute for Hydrospheric-Atmospheric Sciences
  Nagoya University
  Chikusa-Ku
  JP–Nagoya 464 01

Kenya (KE)

• UWAOS	see UWAOS – U.S.A.

Mexico (MX)

• UNAM	Instituto de Geofísica Universidad Nacional Autónoma de Mexico Circuito Cientifico MX–Coyoacan 04510 D.F.

Nepal (NP)

• IHAS	See IHAS – Japan

New Zealand (NZ)

• APPC	Alpine and Polar Processes Consultancy c/o Crown Research P.B. 1930 NZ–Dunedin
• NIWA	National Institute of Water and Atmospheric Research Ltd P.O. Box 6414 NZ–Dunedin.

Norway (NO)

• DES	Department of Earth Sciences University of Bergen Allegaten 41 NO–5007 Bergen
• DGUO	Department of Geosciences University of Oslo P.O. Box 1047, Blindern NO–0316 Oslo
• NCU	See NCU – Poland
• NPI	Norwegian Polar Institute Polar Environmental Centre NO–9296 Tromsø

• NVE	Norwegian Water Resources and Energy Administration (NVE) Hydrology Division – Glacier section P.O. Box 5091 Majorstua NO–0301 Oslo
• SUP	See SUP – Poland

Pakistan (PK)

• WLU	See WLU – Canada

Peru (PE)

• EP	Electroperú S.A. Sim Norte Unidad de Glaciología Av. Confraternidad Internacional s/n PE–Huaraz, Region Chavin
• HID	Hidrandina S.A. Av. Confraternidad Internacional s/n PE–Huaraz, Region Chavin
• INRENA	Unidad de Glaciología y Recursos Hídricos Av. Confraternidad Internacional Oeste No. 167 PE–Huaraz, Ancash

Poland (PL)

• MPG	Little Geographical Workshop ul. Wschodnia 19/6 PL–20 015 Lublin
• NCU	Department of Cryology and Polar Research Nicolaus Copernicus University ul. Fredry 6/8 PL–87 100 Torun
• SUP	Department of Geomorphology University of Silesia ul. Bedzinska 60 PL–41 200 Sosnowiec

Spain (ES)

• AMINSA	Agrupación Mediterranea de Ingenierìa c/ Guardia Civil 23, 2, 3 ES–Valencia 46020
• DGOH/MOPT	General Direction of Hydraulic Works Ministry of Public Works and Transports ES–Madrid
• UAM	Departamento de Geografia Fisica Universidad Autónoma Canto Blanco ES–Madrid

Sweden (SE)

• INK	Department of Physical Geography and Quaternary Geology Glaciology Section University of Stockholm SE–106 91 Stockholm
• KVA	The Axel Hamberg Foundation The Royal Swedish Academy of Sciences Box 50005 SE–104 05 Stockholm
• NFR	Swedish Natural Science Research Council Box 7142 SE–103 87 Stockholm

Switzerland (CH)

• GIUZ	Department of Geography University of Zurich-Irchel Winterthurerstrasse 190 CH–8057 Zurich
• METEOSWISS	MeteoSwiss Via ai Monti della Trinità 146 CH–6605 Locarno 5 Monti

• SCNAT	Glaciological Comission Swiss Academy of Sciences Schwarztorstr. 9 CH–3007 Bern
• VAW	Laboratory of Hydraulics, Hydrology and Glaciology ETH Zurich Gloriastr. 37/39 CH–8092 Zurich.

U.S.A. (US)

• NPSD	Denali National Park PO Box 9 US–Denali National Park, AK 99755
• NPSNC	North Cascades National Park 2105 Highway 20 US–Sedro Woolley, WA 98284
• UAF	Geophysical Institute University of Alaska Southeast 11120 Glacier Highway US–Juneau, AK 99801
• UAS	Geophysical Institute University of Alaska 903 Koyukuk Drive PO Box 757320 US–Fairbanks, AK 99775 7320
• USGS	US Geological Survey Water Resources Division, 3400 Shell Street US–Fairbanks, AK 99701 7245
• UW	Geophysics Program University of Washington, AK 50 US–Seattle, WA 98195
• UWAOS	Department of Atmospheric and Oceanic Sciences University of Wisconsin-Madison 1225 W. Dayton Street US–Wisconsin, MA 53706

6.3 National Correspondents of WGMS for Glacier Fluctuations

Antartica (AN): see Australia (AU) or New Zealand (NZ)

Argentina (AR):
L. Espizua
Instituto Argentino de Nivología, Glaciología y Ciencias Ambientales, (IANIGLA)
Consejo Nacional de Investigaciones Científicas y Técnicas (CONICET)
Casilla de Correo 330
AR – 5500 Mendoza.
E-mail: lespizua@lab.cricyt.edu.ar

Australia (AU):
A. Ruddell
4/17 Wellington Square
AU – North Adelaide, SA 5006
E-mail: andrew.ruddell@bigpond.com

Austria (AT):
M. Kuhn
Institute of Meteorology and Geophysics
University of Innsbruck
Innrain 52
AT – 6020 Innsbruck
E-mail: Michael.Kuhn@uibk.ac.at

Bolivia (BO):
J. Mendoza
IHH (Instituto de Haudraulica e Hidrología) and IRD
P.O. Box 9214
BO – La Paz
E-mail: jmendoza@senamhi.gov.bo

Canada (CA):
M.N. Demuth
Natural Resources Canada, Geological Survey of Canada
601 Booth Street
CA – Ottawa, ON K1A 0E8
E-mail: mdemuth@NRCan.gc.ca

Chile (CL):
G. Casassa
Centro de Estudios Científicos
Av. Prat 514
CL – Valdivia
E-mail: gcasassa@cecs.cl

China (CN): L. Zhongqin
Tianshan Glaciological Station / Cold and Arid Regions
Environment and Engineering Research Institute (CAREERI)
Chinese Academy of Sciences (CAS)
260 West Donggang Road
CN – 730 000 Lanzhou, Gansu
E-mail: lizq@ns.lzb.ac.cn

C.I.S. (SU): V.V. Popovnin
Moscow State University
Geographical Faculty
Leninskiye Gory
RU – 119 992 Moscow
E-mail: po@geogr.msu.ru

Colombia (CO): J. Ramírez Cadenas
INGEOMINAS
Observatorio Vulcanológico y Simológico de Manizales
Diagonal 53 No. 34–53
CO – Bogota
E-mail: jairamir@ingeominas.gov.co

Ecuador (EC): B. Cáceres
INAMHI (Instituto Nacional de Meteorología e Hidrología)
and IRD
P.O. Box
EC – 16 310 Quito
E-mail: bolivarc@inamhi.gov.ec

France (FR): C. Vincent
Laboratory of Glaciology and Environmental Geophysics (CNRS)
P.O. Box 96
FR – 38402 St. Martin d'Hères Cedex
E-mail: vincent@lgge.obs.ujf-grenoble.fr

Germany (DE): L.N. Braun
Commission for Glaciology, Bavarian Academy of Sciences
Marstallplatz 8
DE – 80539 Munich
E-mail: Ludwig.Braun@Lrz.badw-muenchen.de

Greenland (GL): C.E. Bøggild
Department of Quaternary Geology
The Geological Survey of Denmark and Greenland (GEUS)
Øster Voldgade 10
DK – 1350 Copenhagen K
E-mail: ceb@geus.dk

Iceland (IS): O. Sigurdsson
National Energy Authority, Hydrological Service
Grensásvegi 9
IS – 108 Reykjavík
E-mail: osig@os.is

India (IN): K.V. Krishnamurthy
Geological Survey of India
27, Jawaharlal Nehru Road
IN – 700 0l6 Calcutta

Indonesia (ID): see Australia (AU)

Italy (IT): G. Zanon
Department of Geography
University of Padua
Via del Santo, 26
IT – 35123 Padua
E-mail: giorgio.zanon@unipd.it

Japan (JP): K. Fujita
Department of Hydrospheric-Atmospheric Science (IHAS)
Graduate School of Environmental Studies
c/o Hydrospheric Atmospheric Research Center
Nagoya University
JP – Nagoya 464 8601
Email: cozy@ihas.nagoya-u.ac.jp

Kenya (KE): vacant

Mexico (MX): H. Delgado-Granados
Instituto de Geofísica
Universidad Nacional Autónoma de México
Circuito Exterior, C. U. Coyoacán
MX – México D. F. 04510
E-mail: hugo@geofisica.unam.mx

Mongolia (MN): vacant

Nepal (NP): see Japan (JP)

New Zealand (NZ): T.J. Chinn
Alpine and Polar Processes Consultancy
Rapid 20, Muir Rd. Lake Hawea, RD 2 Wanaka
NZ – Otago 9192
E-mail: t.chinn@xtra.co.nz

Norway (NO): J.O. Hagen
Department of Geosciences, Section of Physical Geography
University of Oslo
P.O. Box 1047, Blindern
NO – 0316 Oslo
E-mail: j.o.m.hagen@geo.uio.no

Pakistan (PK): K. Hewitt
Cold Regions Research Center
Wilfried Laurier University
100 University Avenue
CA – Waterloo, ON N2L 3C5
E-mail: khewitt@wlu.ca

Peru (PE): M. Zapata Luyo
Unidad de Glaciología y Recursos Hídricos, INRENA
Av. Confraternidad Internacional Oeste No. 167
PE – Huaraz, Ancash
E-mail: glaciologiahuaraz@terra.com.pe

Poland (PL): B. Gadek
University of Silesia, Department of Geomorphology
ul. Bedzinska 60
PL – 41 200 Sosnowiec
E-mail: jgadek@us.edu.pl

Spain (ES): E. Martinez de Pisón
Miguel Arenillas Parra
Ingeniería 75, S.A.
Velázquez 87–4° derecha
ES – 28006 Madrid
E-mail: eduardo.martinez@uam.es

Sweden (SE): P. Holmlund
Department of Physical Geography and Quaternary Geology
Glaciology, University of Stockholm
SE – 106 91 Stockholm
E-mail: pelle@natgeo.su.se

Switzerland (CH): M. Hoelzle
Department of Geography, University of Zurich
Winterthurerstr. 190
CH – 8057 Zurich
E-mail: hoelzle@geo.unizh.ch

United Kingdom (GB): vacant

U.S.A. (US):	R. March US Geological Survey, Water Resources Division 3400 Shell Street US – Fairbanks, AK 99701-7245 E-mail: rsmarch@usgs.gov
Uzbekistan (UZ):	A. Yakovlev Glaciology Department, SANIGMI 72, K. Makhsumov str. UZ – 700 052 Tashkent E-mail: andrey@rch-uzb.org
Venezuela (VE):	vacant

This chapter includes information which does not fit into the standard format. The intention is to document:

- index measurements on glacier fluctuations in cases where more complex observations are not possible, especially in relation to remote glaciers (polar ice sheets) and glaciers which are systematically studied using reduced stake networks in combination with statistical considerations or flow calculations.

- information on special events which may pose risks to human activites, such as glacier surges, oubursts of ice-dammed lakes, ice avalanches, drastic retreat of tidal glaciers due to calving instabilities or eruptions of ice-clad volcanos.

7.1 Index Measurements

It is not without hesitation that WGMS publishes isolated measurements, because they do not always directly relate to the other components (mass balance, length change, inventories) of the integrated and coherent approach used in modern international monitoring strategies. Experience shows that - over longer time periods - index measurements tend to disappear without leading to any results of major scientific interest or significance. WGMS is a service to collect standardised information for a coherent observation programme at highest possible scientific levels and - as a consequence - will not be able to publish further index measurements which lack a clear concept and relation to the central monitoring strategy. For the same reason, index measurements are published in the "Fluctuations of Glaciers" but not stored in the WGMS database.

BULGARIA (BG)

Sneshnika

F. Haubold and K. Grunewald (DUT)

Snow patch margin measurements made during photogrammetric investigations on Sneshnika started in 1987. Since 1996 the investigations have been combined with glaciological methods in order to understand the regional signal of snow patches in isolated cirques of glacier-free high mountains bordering the Mediterranean region. Observations of the surface area of a certain number of snow patches in different cirques of the Pirin mountains have been made either once a year or at least every two years at the end of the summer ablation period. Of all snow patches the Sneshnika is the most solid, i.e., it has existed continuously and is of the glacieret-type. Besides specific yearly changes, its interannual fluctuations in the surface area have varied by some 100 percent. Years of growth such as 1987 and 1996 are contrasted by years of decrease such as 1994, 2001 and 2002. Even though temporary losses sometimes were compensated by growth (e.g. in 2000), an overall balance of its size shows a general trend to reduction, i.e., since 1996 Sneshnika has been shrinking.

Variations in size of the surface of the snow patch Sneshnika:

Year	**Surface area (percent in relation to 1996)**
1994	43 %
1996	100 %
1998	84 %
1999	69 %
2000	90 %

References/most important data sources: Grunewald and others (1999).

COLOMBIA (CO)

J.L. Ceballos (IDEAM), C. Escátegui (IDEAM) and J. Ramírez (INGEOMINAS)

In Colombia, four mountain massifs covered by glaciers presently exist: Sierra Nevada de Santa Marta, Sierra Nevada de El Cocuy and the Cordillera Central including the glacier-clad volcanoes Nevado del Ruíz, Nevado Santa Isabel, Nevado del Tolima and Nevado del Huila. The reported measurements of the glacier area are based on moraine-derived glacier reconstructions (‘Little Ice Age’, around 1850), aerial photographs (1940es and 1950es) and satellite images (1980es until present). The glacier observation was initially performed by the Instituto Geográfico 'Agustín Codazzi' (IGAC) and has been continued since the 1990es by the Instituto de Hidrología, Meteorología, y Estudios Ambientales (IDEAM). The Instituto Colombiano de Geología y Minería (INGEOMINAS) has contributed to the glacier observation of those glaciers on top of volcanoes.

The Colombian glaciers lost about 50% of their area in the last 50 years. Glacier shrinkage continued to be strong in the last 15 years with an area loss of 10 to 50% though no clear acceleration trend could be observed so far. Glacier retreat in terms of length change is presently about 15 m per year on average. Several peaks in the Sierras of Colombia have even completely lost their glacier cover during the past decades. In relative terms, glacier loss has been particularly strong in recent years on Nevado Santa Isabel and Tolima whereas Nevado del Huila has been least suffered from glacier loss in this period.

Mountain range	**Year**	**Area** (km^2)	**Periodic area loss** (km^2)	**Annual area loss** ($km^2\ a^{-1}$)
Sierra Nevada de Santa Marta	1850	82.6		
			61.2	0.687
	1939	21.4		
			2.0	0.133
	1954	19.4		
			3.3	0.122
	1981	16.1		
			4.1	0.512
	1989	12.0		
			0.9	0.150
	1995	11.1		

Mountain range	Year	Area (km²)	Periodic area loss (km²)	Annual area loss (km² a⁻¹)
Sierra Nevada de El Cocuy	1850	148.7		
			109.8	1.046
	1955	38.9		
			7.5	0.240
	1986	31.5		
			7.8	0.970
	1994	23.7		
Volcan Nevado Del Ruiz	1850	47.5		
			26.5	0.243
	1959	21.0		
			1.4	0.087
	1975	19.6		
			0.9	0.090
	1985	18.7		
			1.7	1.700
	1986	17.0		
			2.9	0.725
	1990	14.1		
			2.8	0.400
	1997	11.8		
Volcan Nevado Santa Isabel	1850	27.8		
			17.0	0.177
	1946	10.8		
			1.4	0.108
	1959	9.4		
			3.0	0.107
	1987	6.4		
			1.1	0.122
	1995	5.3		
Volcan Nevado Del Tolima	1850	8.6		
			5.5	0.057
	1946	3.1		
			0.4	0.033
	1958	2.7		
			1.1	0.038
	1987	1.6		
			0.4	0.042
	1997	1.2		
Volcan Nevado Del Huila	1850	33.7		
			16.2	0.148
	1959	17.5		
			1.2	0.200
	1965	16.3		
			0.9	0.056
	1981	15.4		
			1.5	0.167
	1990	13.9		
			0.6	0.100
	1996	13.3		
Total area	1994–97	66.3		

SWITZERLAND (CH)

Clariden (CH0141)

G. Kappenberger (METEOSWISS)

Measurements of the snow and firn accumulation, as well as of precipitation values in the accumulation area of Clariden Glacier (upper Linth Valley), have been undertaken by various researchers since 1914. By digging a snow pit down to the layer of ochre applied the previous autumn and measuring the water equivalents, local balance values have been determined every autumn since 1957 and also regularly in spring at two plateau locations at altitudes of 2,700 and 2,900 m a.s.l.

The reports dealing with the years 1914 to 1978 are published in Kasser and others (1986). The method of measurement and the results from the period 1914–1984 are published in Müller and Kappenberger (1991). Later data were published in the glaciological reports of the Swiss glacier monitoring network (Herren and others 2002).

Snow and firn accumulation (m w.e.) at the upper and lower stakes at 2,900 m a.s.l. and 2,700 m a.s.l., respectively:

Year	**Upper Stake (spring)**	**Upper Stake (autumn)**	**Lower Stake (autumn)**
1915	2.20	2.00	1.20
1916	2.60	2.40	1.60
1917	2.20	1.80	0.07
1918	2.00	2.00	0.93
1919	2.60	2.00	1.10
1920	2.60	1.60	0.60
1921	1.10	-0.25	-1.40
1922	2.50	1.60	0.66
1923	2.30	1.70	0.77
1924	2.70	2.20	1.30
1925	2.40	1.50	0.32
1926	2.50	2.40	0.76
1927	2.70	1.80	0.82
1928	2.20	0.14	-0.94
1929	2.50	0.79	-0.43
1930	2.10	1.20	0.29
1931	2.50	2.20	1.10
1932	2.20	0.77	0.00
1933	2.20	1.40	0.81
1934	1.50	0.73	-0.94
1935	2.50	1.50	0.17
1936	2.70	1.50	0.52
1937	2.50	1.70	1.00
1938	2.20	1.10	0.35
1939	2.50	1.40	-0.04
1940	2.50	2.40	1.70
1941	2.10	1.90	0.84
1942	2.00	0.62	-0.80
1943	2.20	1.20	-0.43
1944	2.00	0.98	0.00
1945	2.70	1.70	0.76
1946	2.40	1.50	0.32

Year	Upper Stake (spring)	Upper Stake (autumn)	Lower Stake (autumn)
1947	1.80	-0.79	-2.70
1948	2.50	2.10	1.10
1949	2.00	0.11	-1.10
1950	1.90	-0.19	-1.20
1951	3.10	1.80	0.47
1952	2.30	0.73	-0.49
1953	2.70	1.70	0.76
1954	1.90	1.60	0.42
1955	2.90	2.50	1.50
1956	2.20	1.60	0.44
1957	2.00	1.60	0.69
1958	2.10	1.00	0.02
1959	1.90	0.79	-0.23
1960	1.90	1.50	0.24
1961	2.70	2.30	0.84
1962	2.30	0.63	-0.25
1963	1.80	0.87	-0.46
1964	1.70	0.53	-1.20
1965	2.50	2.40	1.50
1966	2.60	2.40	1.80
1967	3.10	1.70	0.86
1968	2.50	2.30	1.30
1969	1.90	1.70	0.91
1970	2.80	1.30	0.87
1971	2.30	1.10	-0.26
1972	1.40	1.00	0.26
1973	1.80	0.44	0.00
1974	2.30	1.90	1.20
1975	3.30	2.50	1.80
1976	1.30	0.89	0.31
1977	2.80	2.30	0.86
1978	2.60	2.30	1.60
1979	2.00	0.93	0.35
1980	2.80	2.70	1.70
1981	2.10	1.50	1.10
1982	2.40	0.83	0.39
1983	2.50	0.80	0.38
1984	2.20	2.20	1.40
1985	1.70	0.78	-0.10
1986	2.10	0.65	-0.36
1987	2.30	2.00	1.50
1988	2.40	1.20	0.73
1989	2.10	0.73	0.61
1990	2.10	0.52	-0.36
1991	1.80	0.20	-0.88
1992	2.40	0.74	-0.46
1993	2.00	1.20	0.32
1994	2.50	0.96	-0.39
1995	2.50	1.70	0.96
1996	1.80	1.00	0.04
1997	2.10	1.20	0.53
1998	1.70	-0.14	-1.00
1999	3.50	2.10	1.50
2000	2.14	1.07	0.54

7.2 Special Events

For the fifth time, a data sheet was used to compile information on extraordinary events, especially for cases concerning glacier hazards and dramatic changes of glaciers. The names indicated below the glacier refer to the persons who compiled the data sheet and who should be able to furnish more information or relevant contacts. If no author's name is given, the compilation of the data sheet was done by staff members of WGMS.

ARGENTINA (AR)

Horcones Inferior (AR5006) glacier surge

C. Unger (DUT), L.E. Espizua (IANIGLA) and R. Bottero (IANIGLA)

The Horcones Inferior Glacier is located at 32º 40' S latitude and 70º 00' W longitude at the south wall of the Cerro Aconcagua (6,959 m a.s.l.), the highest peak in the Western Hemisphere. It is a valley glacier covered by debris exhibiting thermokarst features that flows to the southeast for about 11 km and is 500–700 m wide. The evolution of a surge was documented through aerial photographs taken in 1963 and 1974, analysis of the sequential satellite images for six different dates between 1976 and 1997, and observations in the field during the summer of 1990 and 1999. Also a previous study done by Happoldt and Schrott (in: IAHS(ICSI)/UNEP/UNESCO (1993a), p. 70) was considered.

Between 1963 and March 1976 the glacier front position did not show significant changes. Based on the image of December 24, 1984, a wave of ice free of supraglacial drift advanced 6,100 m from the head of the glacier at an altitude of 5,350 m a.s.l. The glacier front motion probably started in 1984. On the image of February 22, 1986 the glacier surge advanced 3,675 m between 1984 and 1986 and reached a lower topographic position (100 m) than it did in 1976 (Unger and others 2000). Between 1986 and field photographs from February 1990, the glacier front advanced 560 m. According to Happoldt and Schrott, (in: IAHS(ICSI)/UNEP/UNESCO (1993a), p. 70) the surge stopped in 1989, and the glacier surface was intensely crevassed. Through image analysis of January 1996 and April 9, 1997, it can be seen that the glacier front has maintained the same position reached in 1990. Field observations in December 1999 showed that the glacier retreated 130 m and its surface was covered by 0.80 m of debris with thermokarst features. The mean annual precipitation records show humid years from 1972 to 1985 with an increase in precipitations of about 150–300 mm.

The potential hazard of the Horcones Inferior Glacier surge damming the river does not seem likely to occur because the ice flows to the southeast along the Horcones Inferior Valley, and its terminus does not join a tributary glacier.

C.I.S. (SU)

Mutnovskiy NE (SU8011) glacier surge

Ya.D. Muravyov (IVRAN)

Activation of Mutnovskiy NE Glacier began in autumn 1996. A part of its front began to crawl over the northern half of the fumarole field in the volcanic crater, damming the source of the Vulkannaya River. By May 1997 the glacier tongue buried the river channel completely, thus promoting formation of the dammed lake. After the snowmelt process became intensive, the river cut a tunnel in the ice dam and partly drained the lake, lowering its water level considerably, so that in summer 1997 the lake area did not exceed 5,000 m^2 and it was not deeper than 2–3 m. During 1998 the glacier continued moving further westwards. It almost set against the northwestern flank of the NE volcanic crater, overlapping most of fumarole and hydrothermal springs in the northern part of the NE crater. The glacier snout thickness at the surging front came to approximately 10 m in autumn 1998, its relative elevation above the channel of the Vulkannaya River varying from 30 to 50 m. The total area of the advanced part of the glacier was estimated as 30,000 m^2, while its volume was not less than 10^6 m^3.

Possible interaction between changes of hydrogeological conditions in the active craters of the Mutnovskiy Volcano and its eruption is supposed. This interaction can become apparent in the dynamics and mass exchange of glaciers. Such alterations of external conditions may serve as a trigger of phreatic and phreato-magmatic eruptions of the Mutnovskiy Volcano at the present stage of its evolution.

Mutnovskiy SW (SU8012) volcanic eruption

Ya.D. Muravyov (IVRAN)

Small phreatic explosive eruption took place on March 17, 2000 in SW crater of the Mutnovskiy Volcano, filled by Mutnovskiy SW Glacier. During the next two months the increased heat flux at the glacier bed led to complete vanishing of ice in the crater, resulting in the formation of warm (water temperature at the surface approximately 20°C) acid lake of about 250 m in diameter. Approximately 1.2 x 10^6 m^3 of the glacier volume was melted away. The lake has got cold and frozen up by the end of the year.

Kozelskiy (SU8005) snow avalanche

Ya.D. Muravyov (IVRAN)

Tendency to slow advance of the glacier terminus with the average rate of 5–10 m/yr, revealed by GPS surveying throughout 1996–2000, is likely to be caused by a tremendous snow avalanche from the flank of the Kozelskiy Volcano that affected the glacier snout on January 30, 1996. The bulk of the snow avalanche is estimated as

1.5–2 x 10^6 m^3. Stony blocks up to 150 tons in weight were pushed and thrown off from the pedestal of the moraine ridge of the mid-19th century by this avalanche.

ITALY (IT)

Brenva (IT0219) rock-ice avalanche

G. Mortara and M. Chiarle (CNR)

On January 18, 1997, in the early afternoon, a large rockslide originated on the "Sperone della Brenva", a high buttress on the western flank of Mount Blanc, at an elevation of 3,750 m a.s.l. The rock debris was deposited partly on the Brenva Glacier below and partly moved on the glacier surface by mobilising a significant volume of snow and ice. The estimated volume of rock in the avalanche was approximately 2 x 10^6 m^3, and nearly the same volume of snow and ice was mobilised along the path. The runout was approximately 5.5 km with a total fall of 2,300 m resulting in an overall slope of 18.8°. The rock avalanche was preceded by a deep roaring sound and took place as an airborne powder avalanche. The debris was spilled from the lateral moraine and piled up on the valley nearby, forming a natural dam as much as 25 m high, which temporarily blocked the flow of the Dora Baltea River. On the opposite valley side, hundreds of conifers were thrown down due to the air wave. Two skiers lost their lives. The rock-ice avalanche of January 18, 1997 is to be considered the most recent and catastrophic event of increasing rock-fall activity that has taken place along the "Sperone della Brenva" beginning in August 1996. A more detailed description of the event can be found in Barla and others (2000) as well as in Giani and others (2001).

A very similar phenomenon had already occurred in the same area between November 14 and 19, 1920, when two large rockslides triggered a rock-ice avalanche along the Brenva Glacier of 6–7 x 10^6 m^3, which dammed the valley and ascended the opposite slope.

Miage (IT0213) calving instability

G. Mortara and M. Chiarle (CNR)

On August 9, 1996 a sudden collapse of an ice lamella of about 1,000 m^3 from the right Miage Glacier flank, which constituts the high northern shore of the marginal lake of the same name, generated a wave which swept away 11 tourists taking photos of the ice cliff, luckily without any serious consequence. The event is described in more detail by Tinti and others (1999).

Ormelune (IT0177) debris flow

G. Mortara and M. Chiarle (CNR)

During a severe storm which caused heavy damage in northwestern Italy on July 24, 1996, the proglacial torrent of Ormelune Glacier (Valgrisanche, Aosta Valley) cut to a depth of 20–30 m the steep outwash fan laying below the glacier front. Torrent bed deepening caused a huge debris flow (estimated volume of about 300,000 m^3) which flooded the Grand'Alpe torrent alluvial plain. A more detailed description can be found in Chiarle and Mortara (2001).

MEXICO (MX)

Ventorrillo (MX00101) volcanic eruption

H. Delgado Granados and P. Julio Miranda (UNAM)

Popocatepetl Volcano started to erupt on December 21, 1994. During the year 1995 a pole network was deployed on Ventorrillo Glacier to follow up the behavior of the glacier during the eruptive event and prevent possible debris flows triggered by glacier collapse. This network was surveyed by electronic distance metres (EDM) measurements from base stations located at Cerro Tlamacas and Cerro La Cruz, approximately 3–4 km from the poles. The results of several measurements made between 1995 and 1996 showed that the lower part of the glacier moved twice as fast as the upper part. Unfortunately, the network was destroyed after an explosion occurred at the volcano. Digital elevation models constructed by digital photogrammetry from aerial photographs obtained since 1995 to the present helped to assess the glacier's changes. In order to see the changes operating on the glacier's surface, DEM subtraction was carried out from year to year. Then several profiles along the Ventorrillo Glacier were used to see if bulging or deflation of any part of the glacier along the profile was occurring. Results indicate that Ventorrillo Glacier was still bulging at the lower part during the period 1996–1997. From 1997 to the year 2000 no bulging was observed. We interpret these data as indicating a surging process of a small glacier triggered by the eruptive process of Popocatepetl.

NEW ZEALAND (NZ)

Ivory (NZ9019) glacier extinction

T.J. Chinn (APPC)

During the past 5-year period the Ivory Glacier, a past research glacier, effectively disappeared. This small cirque glacier was used for mass, heat and water balance research from 1968 to 1975, and had a small proglacial lake when studies commenced. Recently the lake had expanded rapidly, until by 1999 it had reached the foot of the headwall. Today only a small ice apron remains which has withdrawn from contact with the lake.

SWITZERLAND (CH)

Detailed investigations on glacier hazards at **Gruben** and **Dolent** Glaciers, Valais Alps, were carried out within the National Research Programme 31 on "Climate Change and Natural Catastrophes". A comprehensive list of references together with an assessment of ongoing research, information about past events and future challenges is available on http://www.glacierhazards.ch.

The following minor events are reported by Raymond and others (2003): at the end of July/beginning of August, 1997, an ice avalanche broke off from the **Fee** Hanging Glacier (CH0013), about 1,500 m east of Alphubel, endangering ski-lift installations. At the end of March, 1999, a combined snow-ice avalanche from **Bis (Weisshorn)** Glacier (CH0107) with a runoff distance of about 3.5 km covered several hiking trails and reached the Vispa River but did not dam it. On June 11, 1999, about 100,000 m^3 of ice broke off at **Sillern** Glacier, reaching the valley road, damaging a bridge over the Sillern Creek and damming the Kander River. On November 4/5, 1999, an ice avalanche from **Bider** Glacier (CH0177) almost reached the lower bridge (1,930 m a.s.l.). In July 1997, parts of an artifically dynamited ice lamella from **Tournelon Blanc** Hanging Glacier crossed the road to Chanrion and reached the shore of Lake Mauvoisin. In July 1998 another ice lamella of the same hanging glacier broke off, crossed the road and reached the lakeshore again. At the same site, a water-pocket outburst happened and reached the road on June 20, 2000. After heavy rainfall, there was an outburst of the proglacial lake at **Stein** Glacier (CH0053) on August 23, 1998, causing a flood down to Nessental and damaging a bridge. During floods of 1997, a debris flow was triggered at **L'A Neuve** Glacier.

Allalin (CH0011) ice avalanche

M. Raymond, M. Wegmann and M. Funk (VAW)

On October 31 / November 1st, 1999 about 160,000 m^3 of ice broke off at the same location as in the 1965 event (at 2,565 m a.s.l.). The horizontal projection of the runoff path from the topmost breakoff point to the lowest ice deposit was 950 m. The altutide difference was 478 m and the height of the ice thickness at the breakoff front was 25 m. The overall slope of the avalanche path was 22.6°. The ice avalanche did not cause any damage.

On July 30, 2000 at 08.52 in the morning, a part of the orographic left glacier tongue broke off. The following day the orographic left part of the avalanche fell and reached the valley bottom. The total breakoff volume was more than 10^6 m^3.

These data are published with a series of other special events of Allalin glacier in Raymond and others (2003).

Dolent debris flow

On July 10, 1990, part of the historical terminal moraine of the Dolent Glacier collapsed and triggered a debris flow of approximately 40,000 m^3 which endangered a campsite and a village in the Val Ferret, Valais, Swiss Alps. Investigations were carried out in cooperation with cantonal authorities and supported within the framework of the National Research Programme 31 on "Climate Change and Natural Catastrophes". The aims were to determine the triggering factors of the debris flows and to investigate whether a degradation of the permafrost could explain the instability of the moraine. Between 1994 and 1997, seismic refraction, D.C. resitivity mapping and surface thermal measurements were performed. Results show that there is no permafrost in equilibrium with the present climate in the moraine but degraded permafrost cannot be excluded in deeper layers. The triggering factors of the debris flows are not yet clear. The instability of the moraine was not induced by an extreme rainfall event. Possible explanations of the debris flow in particular include a combination of the following processes: a slow outburst of a water-pocket in the glacier, snowmelt which soaked the moraine with water, and/or modified hydrogeological parameters in the moraine.

References/most important data sources: Lugon and others (2000).

Gruben lake formation

Flood and debris-flow hazards at Gruben Glacier near Saas Balen in the Saas Valley, Valais, Swiss Alps, result from the formation and growth of several lakes at the glacier margin and within the surrounding permafrost. In order to prevent damage related to such hazards, systematic investigations were carried out and practical measures taken as part of a transdiciplinary project in cooperation with federal and cantonal authorities and supported within the framework of the National Research Programme 31 on "Climate Change and Natural Catastrophes".

The evolution of the polythermal glacier, of the creeping permafrost within the large adjacent rock glacier and of the various periglacial lakes were monitored and documented for the past 25 years by photogrammetric analysis of annually flown high-resolution aerial photographs. The results primarily show a rapid decrease in ice thickness and flow velocity since the early 1980s, especially near ice-marginal Lake No. 3 where the fast-thinning ice dam approached floating conditions. Seismic refraction, D.C. resistivity and gravimetry soundings were performed together with hydrological tracer experiments to determine the structure and stability of the moraine dam at proglacial Lake No. 1. The soundings indicate a maximum moraine thickness of more than 100 metres and no water saturation; erosion-sensitive extremely high porosity and even ground caverns near the surface likely resulted from degradation of sub- and periglacial permafrost following 19th/20th-century retreat of the partially cold glacier tongue. The safety and retention capacity of proglacial Lake No. 1 were enhanced by deepening and reinforcing (concrete injections) the outlet structure on top of the moraine complex. The water level of ice-dammed Lake No. 3 was lowered by excavating an ice-marginal channel and filling the excavated material into the lake. Thermokarst Lake No. 5 was artficially drained by cutting through debris-covered dead ice resting on permafrost.

As a consequence of these measures, the situation now appears to be safe for the years to come. The fast changes occurring in this area of complex glacier/permafrost interactions, however, necessitate careful and continuous observation.

References/most important data sources: Haeberli and others (2001), Kääb and Haeberli (2001).

Gutz ice avalanche

C. Huggel (GIUZ)

Gutz Glacier is located on the northwestern slope of Wetterhorn and terminates with a steep ice cliff. A first ice avalanche took place on September 5, 1996 at 15.00 and had a volume of ca. 80–100 x 10^3 m^3. The avalanche just reached but did not overrun the road from Grindelwald to Grosse Scheidegg with regular postal coach service. At 21.00 a larger ice avalanche with a volume of 170–190 x 10^3 m^3 overran the road with a deposit height of ca. 4 m. Three persons were injured by the pressure of the avalanche at 21.00 on September 5, 1996, and the postal coach route was buried.

In summer 1999, once more there were indications of an ice avalanche. Studies showed that the glacier moved with a speed of 0.4 m per day with an acceleration of the front part. The failure volume was estimated as 50–100 x 10^3 m^3. In the night of August 13/14, 1999, an ice avalanche of 30 x 10^3 m^3 occurred and another one with a volume of 70 x 10^3 m^3 was expected. Significantly larger avalanches were considered unlikely since the glacier characteristics had changed. Hiking trails and the postal coach road were closed, and cattle were moved to another location in order to avoid damages. The glacier was monitored by helicopter and geodetic measurements.

The events are described by Margreth and Funk (1999), Raymond and others (2003), Salzmann and others (2004) and Huggel and others (in press). Earlier special events on Gutz Glacier are reported in 1988, 1975, 1973, 1970, 1967, 1957, 1935, 1927, 1924, 1880/1890, 1737 by Raymond and others (2003).

Trift (Gadmen) (CH0055) proglacial lake formation

M. Raymond, M. Wegmann and M. Funk (VAW)

In 1998 a proglacial lake formed due to the significant glacier retreat during the past 10 to 15 years. It merged with an existing lake located at the glacier side and continues to grow as the glacier retreats. Due to concerns that icefalls could cause a flood wave, the glacier is currently being monitored by the VAW, ETH Zurich. The data were published by Raymond and others (2003).

Unterer Grindelwald (CH0058) rockfall

On September 8, 2000 a rockfall of about 0.1 x 10^6 m^3 started between 2,000–2,200 m a.s.l. at the west face of Mättenberg, above Unterer Grindelwald Glacier. The rockfall reached and destroyed the trail leading to the Schreckhornhütte. The event was investigated in an unpublished study (GEOTEST 2000).

Earlier special events on Unterer Grindelwald Glacier are reported in 1994 (Challifirn), 1992 (Challifirn), 1983 (Challifirn), 1951, 1922, 1842, 1776 and 1600 by Raymond and others (2003).

U.S.A. (US)

LeConte (US1900) calving instability

R.J. Motyka (UAS)

LeConte Glacier is a grounded, temperate tidewater glacier located approximately 35 km east of Petersburg, in southeast Alaska. The glacier is approximately 35 km long, covers an area of 469 km^2, and has an accumulation area ratio of nearly 90% (Post and Motyka, 1995). It underwent a 2 km calving retreat between 1994 and 1998 after a 32-year period of stability. Large icebergs generated during the retreat were discharged into Fredrick Sound where they posed a threat to navigation and caused damage to docks and piers in Petersburg harbors (Motyka and others 1998). Dramatic thinning accompanied the retreat, both at the terminus and along the length of the glacier. The thinning rate, averaged over the entire glacier was 2.4 m a^{-1} (measured by airborne altimetry from 1996 to 2000; Arendt and others, 2002), while near the terminus the glacier thinned at a rate of 25 to 35 m a^{-1} over the same period. The terminus position stabilised at a fjord narrows by 1999 but the glacier continues to calve large volumes of icebergs into the bay throughout the year.

The near-terminus surface topography is steep, with surface slopes ranging from 8° to 12°. Heavy crevassing dominates the surface of the lower 8 km of the glacier, with the lowermost 4 km consisting of a chaotic pattern of unstable seracs. Surface velocities near the terminus measured 27 m d^{-1} in 1999 (O'Neel and others 2001). Just below the equilibrium line (ELA≈920 m a.s.l.) and about 7 km upstream of the present terminus, surface velocities are still relatively high (3.5 m d^{-1}). The lower region of the glacier experiences extreme longitudinal strain rates (at some locations they exceed 5 a^{-1}); these are responsible for the heavy and chaotic crevassing.

The terminal ice cliff has an average height of 50 to 60 m above the fjord surface. The centerline water depth at the terminus in 1999 was 270 m placing the terminus close to floatation. A nearly floating terminus in deep-water appears to be critical for rapid calving and high ice velocities (Motyka 1997, O'Neel and others 2003). The data at LeConte show no correlation between ice velocity and the occurrence of calving events. This observation holds over seasonal time scales as well as over a single calving event;

we also observed no changes in ice flow as a result of massive calving.

Submarine melting also contributes substantially to ice loss at the terminus of LeConte Glacier and can be at least as significant, if not more, as calving over seasonal time scales (Motyka and others 2003). Melt rates are related to fjord water temperatures and to forced convection driven by buoyant freshwater subglacial discharge. These melt rates are therefore likely to be highest in late summer and after periods of heavy rainfall. At LeConte Glacier the proglacial fjord temperature at 40 m depth was found to increase from 3° C in early June to 7° C in early September 2001.

CHAPTER 8 **THE ANNEXED MAPS**

The following 19 maps can be found in the pocket at the back of the volume. A brief description of the maps with information regarding the purpose of the particular map, its accuracy, and details of the surveying, cartography and reproduction, is added in this chapter. The literature mentioned in this chapter can be found in the reference chapter. The maps and glaciers concerned are:

1. Matusevich Glacier, Antarctica (1:250,000)
2. Mount Melbourne, Antarctica (1:250,000)
3. Northern Foothills and Inexpressible Island, Antarctica (1:50,000)
4. Relief Inlet, Antarctica (1:250,000)
5. Karls Eisfeld 1899/1900, Austria (1:10,000)
6. Vernagtferner 1999, Austria (1:10,000)
7. Waxeggkees 1950–1960, Austria (1:15,000)
8. Waxeggkees 1960–1969, Austria (1:15,000)
9. Waxeggkees 1969–1980, Austria (1:15,000)
10. Waxeggkees 1980–1989, Austria (1:15,000)
11. Waxeggkees 1989–2000, Austria (1:15,000)
12. Gran Campo Nevado, Chile (1:65,000)
13. Caresèr 1990–1997, Italy (1:5,000)
14. Caresèr 1997–2000, Italy (1:5,000)
15. Popocatépetl Volcano, Mexico
16. Fedtschenko 1929, Tajikistan (1:50,000)
17. Fedtschenko 1958, Tajikistan (1:50,000)
18. Tuyuksu 1998, Kazakhstan (1:10,000)
19. Rwenzori Mountains, Uganda (1:100,000)

MATUSEVICH GLACIER AREA, OATES COATS, EAST ANTARCTICA 1:250,000

(Glaciological Map)

M. Frezzotti[1*], R. Raffi[2], M. Guarracino[1] and M. Mancini[1,3]

[1] ENEA Progetto Clima, PO Box 2400, 00100 Roma AD, IT
[2] Dip. Scienze della Terra, P.ale A. Moro 5, 00185 Roma, IT
[3] Dip. Scienze Ambientali e del Territorio, P.ale della Scienza 1, 20126 Milano, IT
[*] Corresponding author (frezzotti@casaccia.enea.it)

A colour glaciological map at the scale of 1:250,000 is presented for the Matusevich Glacier area (Oates Coast, East Antarctica). Oates Coast is located between Cape Williams (164° 09’ E, 70° 30’ S) and Cape Hudson (153° 45’ E, 68° 20’ S). The glaciological map of the Matusevich Glacier area covers the central part of Oates Coast and the area between Lauritzen Bay (156° 50' E, 69° 07’ S) and Suvorov Glacier (160° 00' E, 69° 56’ S) along the coast. The glacier tongues here are fed by glaciers draining the Transantarctic Mountains (Lazarev Mountain, Wilson Hills) and the northern part of the Talos Dome area, a peripheral dome in the outermost northeastern sector of the East Antarctic ice sheet. Matusevich Glacier is the largest outlet glacier in this area. The satellite image map with a spatial resolution of 30 m pixel was created using the Landsat TM image (72-109) dated February, 21 1989. The image was georeferenced by identifying the survey control stations of the New Zealand Geological Survey and US Geological Survey maps on the image and rectifying the image in a Lambert Conformal Conic cartographic projection (standard parallels 68° 40’ S and 71° 20’ S, central meridian 158° E, WGS 84), using a linear conversion matrix with an RMS error of two pixels. The main glaciological features appear on the map, including the ice front, fast ice, ice divides, aeolian morphology and blue ice areas. Satellite images afforded a better distinction of physical features that were often incorrectly identified and defined on earlier maps because of the lack of relevant data. The examination of maps, aerial photographs and satellite images enabled us to determine a reasonably complete history of the last 50 years of Matusevich Glacier tongue and seven other floating glaciers along central Oates Coast. The major calving event for the Matusevich Glacier tongue occurred just before January 1947 when the outer 37 km of the glacier tongue broke away. Remotely sensed data facilitate a detailed mapping of the interior of the ice sheet’s prevalent wind direction.

MOUNT MELBOURNE QUADRANGLE, VICTORIA LAND, ANTARTICA 1:250,000

(Antarctic Geomorphological and Glaciological Map Series)

C. Baroni[1] (ed.), A. Biasini[2], A. Bondesan[3], G.H. Denton[4], M. Frezzotti[5], P. Grigioni[5], M. Meneghel[3], G. Orombelli[6], M.C. Salvatore[2], A.M. della Vedova[7], L. Vittuari[8]

[1] Dipartimento di Scienze della Terra, Università di Pisa, IT
[2] Dipartimento di Scienze della Terra, Università di Roma "La Sapienza", IT
[3] Dipartimento di Geografia "G. Morandini", Università di Padova, IT
[4] Institute for Quaternary Studies, University of Maine, US
[5] ENEA – Progetto Clima Casaccia, IT
[6] Dipartimento di Scienze dell'Ambiente e del Territorio, Università di Milano-Bicocca, IT
[7] Istituto Nazionale di Geofisica, Roma, IT
[8] DISTART, Università di Bologna, IT

with the contribution of C. Bisci, G. Bruschi, A. Petri, F. Esposito, L. Rossi and C. Smiraglia.

The geomorphological and glaciological map of the Mt. Melbourne quadrangle (74°–75° S, 162°–166° 30' E) is the first product of a cartographic project in Victoria Land undertaken by the Italian National Antarctic Research Program (PNRA). The project involves the survey of six maps between the David Glacier (to the south) and Tucker Glacier (to the north) basins.

Victoria Land is divided into two distinct regions, one to the north and the other to the south of Terra Nova Bay (located within the Mt. Melbourne quadrangle). Outlet glaciers cross the Transantactic Mountains and drain the East Antarctic Ice Sheet (EAIS) in southern Victoria Land, while an arborescent network of glacial valleys is fed by ice fields and local névées in northern Victoria Land. In the Mt. Melbourne quadrangle, the Priestley and Revees outlet glaciers drain the EAIS (southern portion of the Talos Dome area) and part of the Victoria Land névé (southern part of the Deep Freeze and Eisenhower ranges). Small ice caps and snow fields on the Transantarctic Mountains feed the Campbell, Tinker and Aviator glaciers.

The Terra Nova Bay area lies in a very interesting geographic position for characterising the dynamics of present-day glaciers, and periglacial processes acting in deglaciated areas, and for reconstructing the Cenozoic history of the EAIS. Reported geomorphological and glaciological data derives from the analysis of satellite images and aerial photographs, and from field surveys. The main landscapes of the region were surveyed and geometric relationships between different morphologies were analyzed. Besides detailed studies conducted in key sites for depicting the geological and geomorphological evolution of the two sectors of Victoria Land, we applied a method of geomorphological mapping that permits the collection of data in a wide regional context ("regional landscape analysis").

The principal cartographic objectives were: 1) to describe the most relevant components of the landscape, with particular emphasis on modern glaciers and ancient glacial landforms and deposits, 2) to characterise the environment of this sector of the Antarctic, 3) to describe the analytic pattern of landforms and deposits that originated from different morphogenetic processes, 4) to differentiate and map the main relict landforms with particular attention to those features most useful for reconstructing the geological and palaeoenvironmental history of the Transantarctic Mountains, 5) to provide a useful tool for other research projects, 6) to provide informative layers for an Antarctic GIS.

Map outline – The main trigonometric, geodetic, and GPS (Global Position System) points, and selected contour lines (from U.S.G.S. topographic map) are mapped on a satellite image mosaic (Landsat TM, 1990). Bathymetric contour lines are also reported (Istituto Idrografico Marina Italiana, 1989 and 1991).

Glacier and sea-ice features – The main features related to present-day glacier morphology and dynamics are depicted. Glacier surficial velocities, ice front fluctuations, iceberg calving fluxes and ice discharge were estimated through the analysis of aerial photographs and satellite images (Frezzotti 1993, 1997a, Frezzotti and others 1998, 2000). The boundaries of fast ice are also indicated. Detailed studies were conducted on the dynamics of local glaciers (Meneghel and Smiraglia 1989, Baroni and others 1997) and on the Hell's Gate ice shelf; the latter is fed at the base by accretion of marine ice that is transferred to the surface due to strong ablation induced by katabatic winds (Baroni 1990, Souchez and others 1991, Salvatore and others 1997, Tison and others 1998). A mean annual snow accumulation rate of 170 kg m^2 a^{-1} was observed in the area, with and inverse correlation between accumulation rate and altitude (Stenni and others 2000). Terra Nova Bay is the region of Victoria Land where the EAIS is nearest to the sea. The proximity of the ice sheet to the sea and the presence of outlet glacier valleys (Priestley and Reeves) are responsible for the confluence of katabatic winds in Terra Nova Bay (Bromwich and Kurtz 1984, Frezzotti 1997b). The intensity and persistence of katabatic winds which blow mainly in the winter create a permanent polynya in the bay. Along the coastal area, aeolian morphologies are aligned with SW–NE barrier winds (Frezzotti 1997b).

Morphogenetic data – Landforms and deposits of glacial, periglacial, and marine environments, and morphologies related to mass wasting, running waters, wind action, weathering, and geological structure, are distinguished (Baroni 1989, Baroni and Orombelli 1991, Orombelli and others 1991, Biasini and others 1992, Guglielmin and others 1997, Meneghel and others 1997, Salvatore 1997, Gragnani and others 1998). The legend includes 90 items of different colour and/or tonality. Each colour refers to a specific morphogenetic agent.

Morphodynamic and morphochronologic data – Active and relict landforms are differentiated. Chronological information is indicated when available. The stratigraphic sequence, soil chronosequence, and development of landform were reconstructed through radiometric, isotopic, and geochemical data. Several ^{14}C-ages were obtained from organic features related to marine and glacial deposits and landforms (Baroni and others 1991, Orombelli and others 1991, Baroni 1994, Baroni and Orombelli 1991, 1994a, 1994b). New data on the deglaciation and Holocene environmental history of the coastal area were obtained from relict penguin (Pygoscelis adeliae) rookeries (Baroni and Orombelli 1991, 1994a and b).

Relict alpine topographic features and the elevation of the main trimlines of the area were surveyed and mapped. Several former longitudinal profiles of glaciated valleys were reconstructed on the basis of trimlines and glacial drift limits. The relationships between relict erosional landforms, old glacial deposits, and volcanic activity were of particular interest for obtaining new chronological information on the paleogeographical evolution of this sector of the Transantarctic Mountains (Armienti and Baroni 1999).

Additional information concerning human activity, such as cultural features, historic sites, and over-snow routes, are also indicated along with Antarctic Special Protected Areas (ASPA).

Inserts – Selected themes, such as lithology, are shown at a small scale (after Carmignani and others 1989). Also depicted on the same insert are areally extensive geomorphologic features, such as the main glacial troughs, relict alpine ridges and spurs, areally scoured terrain and the Mt. Melbourne stratovolcano. Additional inserts report meteorological data from Automatic Weather Stations (AWS) operating since 1987 (Grigioni and others 1992).

NORTHERN FOOTHILLS AND INEXPRESSIBLE ISLAND AREA, VICTORIA LAND, ANTARCTICA 1:50,000

(Satellite Image Map)

M. Frezzotti[1*], M.C. Salvatore[2], L. Vittuari[3], P. Grigioni[1], L. De Silvestri[1]

[1] ENEA Progetto Clima, PO Box 2400, 00100 Rome AD, IT
[2] Dip. Scienze della Terra, P.ale A. Moro 5, 00185 Roma, IT
[3] DISTART, V.le Risorgimento 1, 40136 Bologna, IT

[*] Corresponding author (frezzotti@casaccia.enea.it)

The Satellite image map of the Northern Foothills and the Inexpressible Island area is at a scale of 1:50,000. The map details an area of coastal hills on the northwestern side of Terra Nova Bay (northern Victoria Land, East Antarctica), that lies to the East of the Browning Pass and the Nansen Ice Sheet and forms a peninsular continuation of the Deep Freeze Range. Mount Abbott (1,016 m a.s.l.) is the highest point in the Northern Foothills. The map covers an area of approximately 850 km^2, from 163° 33' 10" E, 74° 33' 47" S to 164° 15' 10", E 74° 57' 59" S. The Italian base "Terra Nova Bay" is situated along the northern coast of the Northern Foothills (164° 07' 23" E, 74° 41' 42" S), on a peninsula lying in a South-North direction to the East of Tethys Bay.

The map has been made by the digital integration of a SPOT1 XS Multi-spectral image mosaic and stereo-compilation reduction of U.S. Navy aerial photographs Trimetrogon Antarctica (TMA). The satellite image mosaic used for the map has been constructed from the digital data of two multi-spectral images, recorded on December 19, 1988, by the French Centre National d'Etudes Spatiales (CNES) Système Probatoire Pour l'Observation de la Terre satellite (SPOT) 1. Contour lines and spot elevations have been constructed from the photogrammetric processing of 28 black and white TMA vertical aerial photographs, acquired on January 10, 1957 (TMA 365; photo scale 1:25,000), November 6, 1985 (TMA 2851 and 2852; photo scale 1:50,000) and November 23, 1993 (TMA 3036; photo scale 1:50,000).

The satellite image was printed in false colour, assigning red to band 3, green to band 2 and blue to band 1. The albedo of snow, firn and ice generally decreases, going from the visible wavelengths to those of near infrared. This spectral response is shown in the satellite image in false colour. It enables glacial areas where snow accumulation occurs (white in the image), to be differentiated from ablation areas that are composed of ice (blue in the image) and from rock and deposit outcrops (dark brown in the image).

Cartographic editing included the drawing of: contour lines at 50 m intervals (blue in the glacial area and brown elsewhere); 30 m elevation contours; bathymetric contours (every 50 m) re-drawn from I.I. Marina (2000); over-snow routes; the location of relative elevations and photogrammetric elevations; construction and human activity (building, aircraft runway, radio mast, aerodrome, automatic weather station, historic monument) and Adélie penguin rookeries. Special attention was paid to the presentation of some coastal features (ice front, ice wall, rock wall and beach) and the fast ice limit. The meteorological data (wind and temperature) recorded at the Automatic Weather Station “Eneide” (90 m a.s.l., 164° 06’, 74° 42’ S, ID Argos 7353) are also provided (METEO, PNRA, IT).

RELIEF INLET QUADRANGLE, VICTORIA LAND, ANTARCTICA 1:250,000

(Antarctic Geomorphological and Glaciological Map Series)

C. Baroni[1] (ed.), A. Biasini[2], A. Cimbelli[3], M. Frezzotti[3], G. Orombelli[4], M.C. Salvatore[2], I.E. Tabacco[5], L. Vituari[6]

[1] Dipartimento di Scienze della Terra, Università di Pisa, IT
[2] Dipartimento di Scienze della Terra, Università di Roma “La Sapienza”, IT
[3]ENEA – Progetto Clima Casaccia, Italy
[4] Dipartimento di Scienze dell'Ambiente e del Territorio, Università di Milano-Bicocca, IT
[5] Dipartimento di Scienze della Terra, sez. Geofisica, Università di Milano, IT
[6]DISTART, Università di Bologna, IT

with contributions by G. Bruschi and I. Isola

The Relief Inlet quadrangle is the second product of a cartographic project involving the geomorphological and glaciological survey of Victoria Land, and conducted in the framework of the Italian National Antarctic Research Program (PNRA). The map covers the southern portion of Terra Nova Bay and the northern margin of the Scott Coast (75° S–76° S, 162° E–166° 30’ E). Three of the major outlet glaciers of Victoria Land flow into Terra Nova Bay (the Priestley, Reeves and David glaciers). The Priestley and Reeves glaciers drain the SE portion of the Talos Dome area and part of the northern Victoria Land névées, and merge to form the Nansen Ice Sheet (the name given by the first explorers, although it is technically an ice shelf). The David Glacier, the largest outlet glacier in Victoria Land, flows from eastern Dome C and southern Talos Dome, and drains the inner part of the plateau; its seaward extension, the Drygalski Ice Tongue, extends into the Ross Sea for almost 100 km. Local ice fields, within a few tens of kilometres of the Transantarctic Mountains, feed the floating glacier tongues along the Scott Coast (Clarke, Cheetham, and Harbord Ice Tongues).

Geomorphological and glaciological features are represented on a satellite image mosaic with a spatial resolution of 30 m (Landsat TM images 062-113 and 062-114, January 17, 1990). The image was georeferenced by identifying the ground control points determined through GPS measurements. It was rectified to a Lambert Conformal Conic cartographic projection (standard parallels 72° 40’S and 75° 20’S, WGS84) using a linear conversion matrix with a RMS error of less than two pixels.

The origin, spatial distribution, extension and density of landscape features and superficial deposits are represented. Features originated from several morphogenetic agents are distinguished and mapped with different colours and symbols. The map also gives information on the chronological sequence of landforms and deposits. Particular attention is devoted to glaciological features, and selected ice-thickness radar profiles are reported.

The David Glacier is the main outlet glacier in Victoria Land. It coincides with a subglacial trench which crosses the Transantarctic Mountains and links the Ross Sea Basin to the internal Wilkes Subglacial Basin. As most of the David Glacier basin lies below sea level, it is considered a marine-based glacier (Orombelli, 1991). The David Glacier is fed by two main flows, a northern one from the Talos Dome and a major southern flow from Dome C (Frezzotti 1993, Frezzotti and others 2000). Measurements derived from remote sensing analysis (image tracking) and field surveys (GPS) have provided ice velocity data for David Glacier-Drygalski Ice Tongue and Nansen Ice Sheet (Frezzotti 1993, Frezzotti and others 1998, 2000). The ice thickness of the David Glacier close to the grounding line ranges from 1,100 to 1,750 m (Frezzotti and others 2001, Tabacco and others 2000). Frezzotti and others (2000) estimated the ice discharge at the grounding line of the David Glacier (7.8 ±0.7 $km^3\ a^{-1}$), the Priestley Glacier (0.77 ±0.13 $km^3\ a^{-1}$) and the Revees Glacier (0.52 ±0.06 $km^3\ a^{-1}$); the authors also determined that basal melting and freezing rates for the Drygalski Ice Tongue and the Nansen Ice Sheet range from -16.4 ±5.8 to 8.6 ±12.0 $m\ a^{-1}$. Frezzotti and Mabin (1994) to determine a reasonably complete history of the 20th century behaviour of Drygalski Ice Tongue by examining historic maps and records, aerial photographs and satellite images. The only major calving event occurred in 1957 when the outer 40 km of the ice tongue broke away. The analysis of changes in the ice front and calving behaviour along this coast was reported by Baroni and others (1989) and Frezzotti (1992, 1993, 1997a). The surface wind field inland of the intense coastal katabatic wind regime at Terra Nova Bay was studied through both remote sensing and numerical techniques (Bromwich and others 1990, Frezzotti 1997b). The Drygalski Ice Tongue borders Terra Nova Bay to the south. Persistent offshore katabatic winds that prevent the accumulation of sea ice, and the Drygalski Ice Tongue that blocks the influx of sea ice from the south are both responsible for the formation and maintenance of the Terra Nova Bay polynya (Kurtz and Bromwich 1985, Frezzotti and Mabin 1994).

„KARLS EISFELD“ (HALLSTAETTER GLETSCHER), 1899/1900, AUSTRIA 1:10,000

(Reprint)

K. Brunner

Institute of Photogrammetry and Cartography,
Bundeswehr University, Munich, DE

In the years 1899 and 1900, Arthur von Hübl, an officer in the Austrian Army, produced the noteworthy glacier map on behalf of the Austrian Geographic Society, known as “The Karls Eisfeld” (now called the Hallstaetter Gletscher; PSFG-Nr. AT1102) at a scale of 1:10,000. The map and a description of how it was produced was published in Hübl (1901).

As a survey method, Arthur von Hübl made primary use of plane table photogrammetry (intersection photogrammetry), a technique which had already proven itself in the mapping of Vernagtferner in 1889 and afterwards for other glacier mappings in the eastern Alps. For some parts of the glacier and the pro-glacial area, which were not well suited to the photogrammetric techniques of the time, Hübl employed tacheometry, also one of the latest techniques of topographic surveying at that time.

The southward-oriented map presents the relief of the glacier and the pro-glacial area with contour lines having a vertical interval of 25 m.

As the “Karls Eisfeld” map is very difficult to obtain, the author had a facsimile reprint made, which is included in this volume.

VERNAGTFERNER 1999,
AUSTRIA 1:10,000

(Orthophoto map from semi-metric images)

K. Eder[1], J. Endres[1], T. Geiß[1], H. Rentsch[2]

[1] Technical University Munich, Institute for Photogrammetry and Cartography,
Arcisstr. 21, 80290 Munich, DE
[2] Bavarian Academy of Science, Commission for Glaciology,
Marstallplatz 8, 80539 Munich, DE

Orthophoto maps of glaciers are enjoying great popularity by glaciologists because of their ability to depict glaciological and geomorphological phenomena in a realistic way. The Commission of Glaciology of the Bavarian Academy of Science uses the semi-metric camera Metrika 45 from Linhof on board an aircraft which is normally used for hail prevention based at Rosenheim, Bavaria. This equipment provides a rather cheap and rapidly serviceable system for catching, as an example, the maximal extent of the ablation area in a given year.

The Vernagtferner in the Oetztal Alps, as one of the glaciers which is monitored permanently by the Commission of Glaciology, was depicted during an image flight on September 9, 1999 with a formation of 39 colour negative images within 7 strips. For further processing the original colour negatives as well as the scanned images were used. Exterior orientation was determined by stereo model orientation on an Analytical Plotter P1/Zeiss, based on an existing network of ground control points.

A digital elevation model (DEM) was generated to serve as input for the ortho-image computation as well as for the derivation of 20 m contour lines which were used later on for cartographic processing. As DEM primary data, a 30 m grid and breaklines were measured in the stereo models for the Vernagt- and Guslarferner including the near surroundings. The data were completed by a 20 m regular grid from the Austrian glacier inventory of 1997 in order to have full coverage of the map sheet. In a further step, the current glacier limits and the moraines were recorded and included as breaklines during DEM generation. On the basis of all these data, a homogenous 20 m DEM was computed with the DEM software package HIFI.

For the generation of the ortho-images the original negatives were scanned using a VEXEL Ultra Scan 5000 with a pixel size of 10 microns which corresponds to an average ground resolution of 0.2 metre. The digital images were rectified on the basis of the 20 m DEM, and the exterior orientation was imported from the Analytical Plotter into the ortho-photo software package PHODIS-OP/ ZI-imaging.

Since the image formation was rather inhomogeneous due to the special conditions of a non-metric image flight 27, ortho-image tiles had to be computed with special attention to the approx. 10% overlap and full coverage of the map sheet. These tiles were then combined to an ortho-image mosaic with geometric and radiometric alignment using the software package OrthoVista/INPHO GmbH at the Wenger-Oehn Engineering Company, Salzburg.

The colour ortho-photo mosaic in TIFF format and the 20 m contour lines in DXF format together with the glacier border lines, the gauge marks, the mountain tops, the extent of the glacier tongue and the geodetic benchmarks served as input for the cartographic composition with the FREEHAND/Macromedia program. Finally the map sheet was completed using a Gauss-Krüger and geographical coordinate grid and a map legend. Areas with no ortho-image coverage were filled with panoramic photographs which gives a special appearance to the orthophoto map.

WAXEGGKEES, 1950–1960–1969–1980–1989–2000, AUSTRIA 1:15,000

(Five map sheets depicting changes in area and thickness)

K. Brunner[1] and H. Rentsch[2]

[1] Institute of Photogrammetry and Cartography, Bundeswehr University, Munich, DE
[2] Commission for Glaciology, Bavarian Academy of Sciences, Munich, DE

At ten-year intervals since 1950, the state of the Waxeggkees has been recorded by means of terrestrial photogrammetry, with aerial photography being used just once, in 1969.

In the mid-1950s, observations showed an uplift of the glacier surface, which however, did not extend to its lower section. This elevated area rose steadily from 1960 to 1969, during which time there was also an increase in surface area. This tendency continued at a reduced rate until 1980, and then the elevation of the firn region began to drop. The retreat continued between 1989 and 2000, having a drastic effect on the ablation area.

The time series recorded by means of photogrammetry is documented in five special maps having a scale of 1:15,000. Each of these maps shows two glacier extents in the form of a glacier limit and contour lines at 50 m intervals. In each case, the older glacier extent is marked in blue, and the younger one in red.

Area changes in the pro-glacial area are indicated by colours, namely light red to mark the loss in area, and light blue to mark the gain. The amount and tendency of the elevation changes are indicated by a displacement of the contour lines, and this is distinguished further by filling in the space at every second contour line (100 m).

The changes in area, volume and elevation between 1950 and 1989 were published in previous volumes of "Fluctuations of Glaciers", and the values between 1989 and 2000 are shown in Table D.

GRAN CAMPO NEVADO, CHILE 1:65,000

(Aerial Photogrammetric Map and Glacier Inventory)

C. Schneider[1], M. Schnirch[1], C. Casassa[2], C. Acuña[2] and R. Kilian[3]

[1] Institut für Physische Geographie, Universität Freiburg, DE
[2] Centro de Estudios Científicos, Valdivia, CL
[3] Fachbereich Geowissenschaften, Universität Trier, DE

The Gran Campo Nevado is a small ice cap of 200 km^2 at 53° S, 73.5° W in Chile's XII. region 'Magallanes'. The Gran Campo Nevado forms the only major ice body between the southern tip of the Southern Patagonian Ice Field and the Strait of Magellan. It is located on the southern part of Península Muñoz Gamero to the southwest of Seno Skyring. Besides the ice cap of the Gran Campo Nevado itself there are a number of small valley and cirque glaciers on Península Muñoz Gamero with a total area of 53 km^2. In 2002 this ice cap, its outlet glaciers and the surrounding small bodies of ice have been inventoried for the first time. 81 individual glaciers were delineated and numbered in accordance with WGMS standards.

The aerial photogrammetric map was produced using a series of aerial photographs of the Instituto Geografíco Militar de Cile from 1998. Pre-processing of the data and aerial triangulation were performed at the Department of Geography at the University of Düsseldorf, Germany. A basic digital elevation model (DEM) was derived from digitised contour lines from the topographic map 'Península Muñoz Gamero' at the scale 1:100,000 of the Instituto Geográfico Militar de Chile. This map is based on a series of aerial photographs from 1984. The raw DEM was improved by individual photogrammetric point measurements on summits and along ridges within the aerial photographs from 1998. All DEM data were incorporated into a Geographic Information System for post-processing, interpolation and gridding of elevation data. The aerial photographs were ortho-rectified according to the DEM employing the LISA software which was kindly provided by the Department of Geography, University of Düsseldorf, Germany.

Due to the limited resolution of the underlying map information, absolute horizontal accurracy is ±100 m. Relative distances within the map are accurate to ±10 m. Error estimation of the vertical information of the DEM yields an estimate of ±35 m. However, since the elevation data is based on aerial photographs from 1984 and the actual aerial photographs used are dating from 1998, much larger errors on ice surfaces must be considered. On the ice cap itself there are wide areas where, due to low contrast or cloud coverage, precise measurements of elevation could not be derived. In these areas the location of the contour lines are only estimated visually and are therefore stippled in the ortho-photogrammetric map.

A time series of aerial photographs and satellite imagery was used to calculate the area change of individual outlet glaciers of the Gran Campo Nevado Ice Cap. All of the nine outlet glaciers that were investigated in detail showed considerable retreat between 1942 and 2002 with a mean value of 2.4% of area loss per glacier per decade. This amounts to a total loss of surface within the nine individual drainage basins of between 8% and 26% since 1942.

CARESER GLACIER, 1990–1997 AND 1997–2000, ITALY 1:5,000

(Thematic maps)

M. Giada and G. Zanon

Department of Geography, University of Padua
Via del Santo 26, 35123 Padova, IT

Several aerial surveys carried out on the Caresèr Glacier (Central Alps, Ortles-Cevedale Group) in 1967, 1980 and 1990, facilitated assessment of changes occurring during the periods 1967–1980, 1980–1990, and 1967–1990 (Giada and Zanon 1985, 1991, 1995; see in: Literature, FoG, VII, 1990–1995). Results from new surveys carried out in 1997 and 2000, exploiting the simultaneous use of already fully tested calculation programs, aimed at analysing the dynamics and quantitative results of recent changes in this glacial system, representative of the ongoing phase of accelerated glacier shrinkage in the Alps. The method used to compare the 1990, 1997 and 2000 survey results more or less repeats that used in the above research activities.

Areal variations 1990–1997
Comparison of DTM obtained from the 1990 and 1997 surveys led to the production of a thematic map, scale 1:5000, with contour lines indicating changes in the elevation of the glacier surface according to the classes shown in the legend. The map also shows geometric changes occurring in the same period. Overall, between 1990 and 1997, the glacier surface area was further reduced by 13% of its 1990 extent, with definite acceleration of the process relative to preceding comparisons.

Areal variations 1997–2000
Comparison of DTM calculated from the 1997 and 2000 surveys allowed production of a second thematic map 1: 5000, having the same qualitative characteristics as the previous one. Between 1997 and 2000 the glacier surface area was further reduced by 10% of its 1997 extent. The overall reduction was 35.6% of the 1967 value (beginning of mass balance research on the glacier); if the results of a terrestrial survey conducted in 1933, are taken into account, the total reduction is 45% of the 1933 value.

Variations in elevation and volume 1990–1997
Table 1 shows variations in elevation and volume. The latter were calculated by multiplying the level variations of the glacier surface by the area of each 50-metre altimetric zone. All values turned out to be negative, and ranged between -15.31 m for the lower zone (2,860–2,900 m a.s.l.) and -4.20 m for the higher one (above 3,200 m a.s.l.), with a mean variation for the entire surface of -7.75 m, corresponding to -1.10 m a^{-1}. The mean annual value coincides with that previously calculated for the 1980–1990 interval, whereas it is almost 5 times higher than that for the 1967–1980 period. It should be noted that in the altimetric interval between 3,050 and 3,100 m a.s.l., where mean and median elevations, and ELA with zero balance are all found, the volume loss accounts for 22% of the total value between 1990 and 1997.

TABLE 1 – Caresèr Glacier, 1990–1997. Variations in elevation (in m) and volume (in 10^6 m^3 and as percentage of total value) for 50-metre vertical zones, obtained by comparing SCM 1990 and 1997 aerial surveys.

Altitude m a.s.l.	1990 area km^2	Δ Elevation m	Δ Volume 10^6 m^3	%
2860–2900	0.0990	-15.31	-1.5155	5.07
2900–2950	0.1985	-14.36	-2.8505	9.53
2950–3000	0.3710	-12.11	-4.4930	15.30
3000–3050	0.6560	-9.82	-6.4420	21.55
3050–3100	0.9645	-6.92	-6.6745	22.32
3100–3150	1.0440	-5.17	-5.3975	18.05
3150–3200	0.3005	-5.27	-1.5835	5.30
3200–3330	0.2240	-4.20	-0.9410	3.15
2860–3330	3.8575	-7.75	-29.8975	100.00

Variations in elevation and volume 1997–2000

Table 2 shows variations in elevation and volume, calculated in the same manner as the 1990–1997 comparison. All values are also negative and range between -11.04 m for the lower zone (2,860–2,900 m a.s.l.) and -4.72 m for the higher one (above 3,200 m a.s.l.), with a mean variation for the entire surface of -7.08 m, corresponding to -2.08 m a^{-1}.

TABLE 2 – Caresèr Glacier, 1997–2000. Variations in elevation (in m) and volume (in 10^6 m^3 and as percentage of total value) for 50-metre vertical zones, obtained by comparing SCM 1997 and 2000 aerial surveys.

Altitude m a.s.l.	1997 area km^2	Δ Elevation m	Δ Volume 10^6 m^3	%
2860–2900	0.0650	-11.04	-1.0210	4.28
2900–2950	0.2225	-9.79	-2.2525	9.43
2950–3000	0.3575	-8.35	-3.3405	13.99
3000–3050	0.6050	-7.71	-4.7045	19.70
3050–3100	0.8525	-6.76	-6.5780	27.55
3100–3150	0.8700	-5.89	-4.1085	17.21
3150–3200	0.2400	-5.26	-1.2100	5.07
3200–3330	0.1500	-4.72	-0.6600	2.76
2860–3330	3.3625	-7.08	-23.8750	100.00

This value is almost twice that for 1990–1997 but 10 times greater than that for 1967–1980. For 1997–2000 too, it must be observed that in the critical 3,050–3,100 m a.s.l. zone the volume loss is almost 28% of the total value, indicating the persistence of the considerable state of disequilibrium and acceleration of deglaciation processes at the end of the millennium.

POPOCATÉPETL VOLCANO, MÉXICO

(Orthophoto map)

P. Julio Miranda[1], H. Delgado Granados[1], and A. Kääb[2]

[1]Instituto de Geofísica, Universidad Nacional Autónoma de Mexico,
Circuito Cientifico, Coyoacan 04510 D.F., MX
[2]Department of Geography, University of Zurich, 8057 Zurich, CH

Background

Popocatépetl volcano is an ice-clad volcano. At ~19º N, its glaciers are, together with the glaciers of the neighboring Iztaccíhuatl and Citlaltépetl volcanoes, the only glaciers found in the intertropical region of the northern hemisphere. Lorenzo (1964) made the first glacier inventory at Popocatépetl (reported glacierised area resulted in 0.720 km^2). Delgado (1993) described Ventorrillo and Noroccidental glaciers and four permafrost fields. Delgado (1997) updated the inventory (0.559 km^2) and established a database calculating retreat rates for glacier tongue's altitude. Average retreat rate between 1906 and 1968 was nearly 7 m/year. An advance in 1968–1978 was 10 m/year, and retreat in 1978–1982 was 40 m/year. The causes of glacier retreat were associated with an increase of volcanic activity, and response to local and global climatic changes. Huggel and Delgado (2000) studied changes in glacierised area, morphology and ice thickness, and pointed out the importance of volcanic activity as the most likely cause of retreat.

Eruptive activity

On December 1994, Popocatépetl volcano started to erupt and the study of glacier changes acquired importance for debris flow hazard assessment. Julio and Delgado (2003) reported the glacier area for December 2000, determined the equivalent water volume and estimated maximum and minimum laharic volumes for different ice melting scenarios.

Maps

Several aerial photographs have been taken for monitoring the eruptive activity and the glaciers. Selected aerial photographs were used to make a multi-spatial analysis using digital photogrammetry with the aim of quantifying glacier changes for 1996, 1997, 1999 and 2000.

Results

During 1996–2000 the area lost corresponded to 26% and retreat rate was 139 m^2/day. Prior to the eruption, in 1964–1996, the loss in glacierised area was 23% and retreat rate was 12 m^2/day.

Conclusions

Before the onset of current activity, the glaciers of Popocatépetl volcano showed a shrinking trend. However, at the end of the year 2000, glacierised area was reduced and thinned remarkably. A glacier-extinction process was underway prior to the eruption but the eruptive activity forced the completion of this process in the year 2000.

MAPS OF FEDTSCHENKO GLACIER,
TAJIKISTAN 1:50,000

(Reprints of Parts of Terrestrial Photogrammetric Maps)

K. Brunner[1], A. Franz[1] and L. N. Braun[2]

[1]Institute of Photogrammety and Cartography, Bundeswehr University, Munich, DE
[2]Commission for Glaciology, Bavarian Academy of Sciences, Munich, DE

There are two expedition maps in existence of the Fedtschenko Glacier in the Pamir with a relatively large scale of 1:50,000, and consisting of two map sheets each. These maps were made during the two research expeditions in 1928 and 1958 (Brunner 1999).

The first map, "Fedtschenko-Tanimas Region", north sheet and south sheet, was made in 1928 during the German-Russian Expedition, whose primary aim was the topographic and geological investigation of the expedition region. The topographic surveys were conducted by the German research group using terrrestrial photogrammetry. This topographic field work was based on a triangulation done by a Russian group (Finsterwalder 1932). The basis for the second map, "Fedtschenko Glacier", north sheet and south sheet, was made in 1958 during the International Geophysical Year (IGY) of 1957/58 by geodetic specialists from what was then the German Democratic Republic, who were participating in a glaciological expediton by the Uzbek Academy of Sciences. This topographic survey was based on the groundwork laid by the 1928 expedition (National Committee for Geodesy and Geophysics 1964).

In addition to these two maps at a scale of 1:50,000 from the years 1928 and 1958, further maps at larger scales were produced in the course of the two research expeditions. An official Soviet (Generalnie Shtab) map with a scale of 1:100,000 was consulted for support in the determination of changes in volume and thickness of the Fedtschenko Glacier, done in the year 2001 at the Institute of Photogrammetry and Cartography (Bundeswehr University, Munich). This Soviet map was made between 1975 and 1979 using aerial photogrammetry, and was issued in 1985. Thus there were three maps of the glacier showing its status at three different points in time, approximately 25 years apart.

The evaluation of these maps proved to be difficult, as they were extremely different from a geometric point of view. The map from 1958 contained a number of differences compared with the one from 1928, on which it was, in fact, based. The modern map based on the 1979 survey and published in 1985 has an entirely different, homogenous, geodetic reference system as its basis, compared with the maps made during the expeditions. The elevational changes between the historical maps of 1928 and 1958 were reevaluated based on the geodetic reference system of the 1979 map, and as a result, revised values were obtained which, in the lower reaches of the glacier, are remarkably smaller (less than 10 m) than the values published by the Nationalkomitee (1964), showing a lowering of about 30 m. Volume and thickness changes can be found in Table D, while area changes are not available.

SURVEYING AND MAPPING OF THE TUYUKSU GLACIER REGION, KAZAKHSTAN 1:10,000

K. Eder[1], T. Geiß[1], H. Rentsch[2],
A. Kokarev[3] and V.N. Uvarov[3]

[1] Technical University Munich, Institute for Photogrammetry and Cartography,
Arcisstr. 21, 80290 Munich, DE
[2] Bavarian Academy of Sciences, Commission for Glaciology,
Marstallplatz 8, 80539 Munich, DE
[3] Institute of Geography, Academy of Sciences of the Republic of Kazakhstan
Pushkin str. 99, Almaty, 480 1000, KZ

Within the scope of the project "The influence of glacier retreat on water yield from high mountain regions, comparison Alps – Central Asia", financed by the German Research Foundation (DFG), a completely new survey and mapping of the Tuyuksu glacier region in the Tien Shan Mountains of Kazakhstan was required. The only existing 1:10,000 map, which was the result of a USSR-German Expedition undertaken in the International Geophysical Year, dates back to 1958. The project area, located at 43° 04´ N and 77° 05´ E, covers the basin of the "Little Almatinka" River above the Mynzhilki gauging station, situated at an altitude of 3,017 m a.s.l.. There are currently eight glaciers with a total area of 7 km^2 in this high mountain basin of about 21 km^2.

In order to compute changes in area, volume and mass in a precise way it is necessary to use an identical coordinate system for mapping at the respective points in time. It was possible to use the former USSR system for land surveys as in 1958 because five well-distributed ground control points from the 1958 survey could be identified. These points served as fixed points for coordinate transformations.

In recent times, no aerial photographs could be taken for political reasons, and as an alternative, terrestrial photogrammetry was used. For a complete coverage of the project area, stereo images from 11 baselines with 2–3 different image directions were taken. For absolute orientation of the stereo models, 45 ground control points were measured, trigonometrically based on a network established by 17 trigonometric points measured by GPS. The geographical coordinates, originally obtained by GPS measurements (longitude, latitude and height above the earth ellipsoid), were transferred into Gauß-Krüger coordinates with reference meridian 78° and finally converted by 3-D Helmert transformation into the local system used in 1958. Based on these measurements, the stereo models were set up and evaluated on an Analytical Plotter P1/Zeiss. For DEM generation, regular and irregular distributed points on the terrain surface were measured, including breaklines and special points. The vector data acquisition comprised all border lines of glacier ice, debris-covered glacier ice, dead ice (not in motion), rock faces and cartographic objects like roads, buildings and measurement stations. Outside the survey area of 1998, contours from the 1958 map were digitised to complete the data set.

A regular 20-metre-spaced DEM was generated with the program package HIFI and used as the basis for computing contours with a 10-metre height interval and a shaded relief model.

The directly recorded data and the products which have been derived from the DEM were combined to create a topographical map using the Freehand (Macromedia) program. As is customary, the contours on the glaciers and the dead ice areas are drawn in blue, while in the surrounding areas they are given in black. Debris cover on glacier ice and dead ice areas were mapped directly in the field. Besides the lakes and streams, the road which leads to the glacier research station was mapped, while the part to the North lying outside the field survey of 1998 could not be drawn as the location changed as compared to 1958. Finally, the most important trigonometric points and a map grid indicating the local and geographical coordinate system was added. The annotation of the map is both in German and Cyrillic, as the geographical names of the project area were given in Russian during the era of the former Soviet Union.

RWENZORI MOUNTAINS NATIONAL PARK UGANDA
& PARC NATIONAL DES VIRUNGAS, CONGO
1:100,000 (A1 SIZE) WITH INSETS AT 1:65,000

H. Osmaston[1] and G. Kaser[2]
Cartography: E. Gärtner[2] and C. Georges[2]

[1]Thwaite End, Finsthwaite, Ulverston, Cumbria, LA12 8BN, UK
[2]Department of Geography, University of Innsbruck, AT

Many tropical mountains have evidence of glaciation at the LGM, and some show traces of both previous and later glaciations. Except in the Andes, few are now glacierised. The three major East African mountains have all these features and they are especially well developed in the Rwenzori Mountains. This map displays in an exceptionally detailed way the moraines, tills and valley forms of three Pleistocene and two Holocene glaciations. Complementing this are inset maps at a larger scale showing the extents of the rapidly retreating glaciers at different dates in the last century.

The earliest glaciation of which there is evidence was in the nature of an ice cap with an extent of about 500 km^2 (about half of the area of the National Parks), before the major valleys had been excavated. This has left spreads of till and frontal moraines on present-day interfluves in some parts of the mountain. At the LGM the greatest extent of the glaciers is marked by a belt of about 72 pairs of large valley moraines which show that ice covered about 260 km^2. Lesser Holocene glacier extensions occurred several thousand years ago and again recently in perhaps the 'Little Ice Age'. Careful estimations of the ELA indicate that on these occasions it formed a domed trend surface at about 4,000 m a.s.l., tilted down towards the East. Since the latter the glaciers have been retreating fast. A century ago they covered nearly 8 km^2, half a century ago they covered 4 km^2, and a decade ago they covered less than 2 km^2. This retreat has occurred not only at their termini but also round the margins of the accumulation area, and there have been major losses by thinning. At this rate it seems unlikely that they will survive many decades longer.

The back of the map is entirely covered with information including a more detailed account of the glaciers and glaciations; tables of glacial chronology; records of precipitation; detailed maps of the retreat of selected individual glaciers; maps and sections showing estimated Equilibrium Line Altitudes; and photographs of the main peaks at different dates.

Funded by WWF (The Worldwide Fund for Nature); Published by Henry Osmaston, ISBN 0-95180394-8; Map production by Bartholomew Ltd., Glasgow.

CHAPTER 9 THE GLOBAL LAND ICE MEASUREMENTS FROM SPACE PROJECT (GLIMS)

GLIMS goals

The international GLIMS project is a global consortium of universities and research institutes, coordinated by the US Geological Survey (USGS) in Flagstaff, Arizona, whose purpose is to assess and monitor the Earth's glaciers from space. Specifically, GLIMS objectives are to ascertain the extent and condition of the world's glaciers so that we may understand a variety of Earth surface processes and produce information for resource management and planning. These scientific, management and planning objectives are supported by the monitoring and information production objectives of the United Nations scientific organisations (Kieffer and others 2000, Bishop and others 2004).

GLIMS entails

- comprehensive satellite multi-spectral and stereo-image acquisition of land ice,
- use of satellite imaging data to measure interannual changes in glacier area, boundaries, and snowline elevation,
- measurement of glacier ice-velocity fields,
- assessment of water resource potential,
- development of a comprehensive digital database to inventory the world's glaciers, with pointers to other data and relevant scientific publications. The database is developed and located at the National Snow and Ice Data Center (Boulder, CO).

This work and the global image archive at the EROS Data Center (Sioux Falls, SD) will be useful for a variety of scientific and planning applications (Bishop and others 2004).

GLIMS technologies

GLIMS will primarily utilise multi-spectral imaging from the Landsat TM and ETM+ series, and the new ASTER sensor. Landsat TM and ETM+ data represent a well-established "working horse" for glacier inventorying and monitoring from space (Kääb and others 2002, Paul and others 2002). The ASTER sensor, available since 2000 onboard the NASA Terra spacecraft, opens additional possibilities for glacier observation. ASTERs spectral and geometric capabilities include 3 bands in VNIR (visible and near infrared) with 15 m resolution, 6 bands in the SWIR (short-wave infrared) with 30 m, 5 bands in the TIR (thermal infrared) with 90 m, and a 15 m resolution NIR along-track stereo-band looking backwards from nadir. The stereo band 3B covers the same spectral range as the nadir band 3N. Of special interest for glaciological studies are the high spatial resolution in VNIR, the stereo-, and the pointing-capabilities of ASTER. With topography being a crucial parameter for the understanding of high-mountain phenomena and processes, DEMs generated from the ASTER along-track stereo band are especially helpful (Kääb 2002). Imaging opportunities by ASTER are governed by Terra's 16-day nadir–track repeat period and the fact that the ASTER VNIR sensor can be pointed cross-track by up to ±24 degree, which allows for repeat imaging as frequently as every second day in response to urgent priorities.

ASTER proved also to be very suitable for assessing glacier hazards and managing related disasters (Kääb and others 2003). GLIMS is closely collaborating with the international working group on glacier and permafrost hazards in mountains GAPHAZ under the International Commission on Cryospheric Sciences (CCS) and the International Permafrost Association (IPA).

In addition to spaceborne optical data, GLIMS intends to increasingly utilise the integration of solar reflective, thermal and microwave remote sensing to assist in glacier analysis to address the limitations of multi-spectral approaches. This is a key future direction of the GLIMS project

GLIMS organisation

GLIMS headquarters are at the US Geological Survey in Flagstaff, Arizona. The GLIMS database design and hosting is done by the NSIDC, Boulder, Colorado. In addition, GLIMS has a working group on parameters and database, and a second working group on algorithm development. The administrative structure of GLIMS is based on so-called regional centers, from where the GLIMS activities in a given region are supervised and coordinated. These regions often follow major mountain ranges or glaciation entities, such as, for example, the European Alps or Svalbard. Under these regional centers, so-called stewards are responsible for individual countries or subregions. A detailed listing of regional centers and stewards, including contact addresses of the responsible persons, can be found on the GLIMS website at www.glims.org.

Persons or institutions interested in contributing to GLIMS or aiming to collaborate in any way are invited to contact the GLIMS regional center for their region of interest.

Further information on GLIMS and contacts

GLIMS website: http://www.glims.org

GLIMS principle investigator: J. Kargel, Department of Hydrology & Water Resources, 1133 E. North Campus Dr., Harshbarger Building, Tuscon, Arizona, USA,
E-mail: kargel@hwr.arizona.edu

GLIMS working group on parameters and database: chair B. Raup, NSIDC Boulder, Colorado, USA,
E-mail: braup@nsidc.org
http://spot.colorado.edu/~braup/glims_database/

GLIMS working group on algorithm development: chair A. Kääb, University of Zurich, Switzerland,
E-mail: kaeaeb@geo.unizh.ch
http://www.geo.unizh.ch/~kaeaeb/glims/algor.html

The last five-year period of the 20th century has been characterised by an overall tendency of continuous if not accelerated glacier melting (IAHS(ICSI)/UNEP/UNESCO 1999, 2001, 2003). The mean specific net balance (-446 mm) of the relevant reference glaciers for the five years 1995/96–1999/2000 was higher than the mean of the years 1980–1995 (-215 mm). The difference corresponds to an increase in additional energy flux of about 2.24 W/m^2 or about 0.45 W/m^2 per year. The mean of all 30 considered glaciers, however, is strongly influenced by the great number of Alpine and Scandinavian glaciers. A mean value calculated using only one single (in some places averaged) value for each of the 9 mountain ranges involved provides a mean specific net balance of -544 mm for the five-year period of 1995/96–1999/2000, clearly higher than the mean of the years 1980–1995 (-240 mm). The difference corresponds to an increase in additional energy flux of about 2.95 W/m^2 for the last 5 years of the 20th century or around 0.59 W/m^2 per year. Further analysis requires detailed consideration of aspects such as glacier sensitivity and feedback mechanisms: the cumulative mass balances reported for the individual glaciers not only reflect regional climatic variability – glaciers around the North Atlantic, for instance, exhibited considerable mass increase during the recent past (cf. Reichert and others 2001) – but also marked differences in the sensitivity of the observed glaciers.

The two decades 1980–2000 show a trend of increasingly negative balances with average annual ice thickness losses of a few decimetres. Because unchanged climatic conditions would cause mass balances to approach zero values, constant non-zero mass balances reflect continued climatic forcing. The observed trend of increasingly negative mass balances is consistent with accelerated global warming and correspondingly enhanced energy flux towards the earth’s surface. Changes in glacier length are strongly enhanced and easily measured but are at the same time indirect, filtered and delayed signals of climate change (Oerlemans 2001). Total retreat of glacier termini during the 20th century is commonly measured in kilometres for larger glaciers and in hundreds of metres for smaller ones. Characteristic average rates of glacier thinning (mass loss) can be calculated from cumulative length change data using a continuity approach over time periods corresponding to the dynamic response time of individual glaciers. Corresponding values are a few decimetres per year for temperate glaciers in wet coastal climates, and centimetres to a decimetre per year for glaciers in dry continental areas with firn areas below melting temperature (Hoelzle and others 2003, cf. also Haeberli and Holzhauser 2003 for reconstructed balances during the past two millennia). The analysis of repeated inventories show that glaciers in the European Alps have lost more than 50% of their volume since the middle of the 19th century and that a further loss of roughly one fourth of the remaining volume is estimated to have occurred since the 1970s (Haeberli and others 2002). With a realistic scenario of future atmospheric warming, almost complete deglaciation of many mountain ranges could occur within decades, leaving only some ice on the very highest peaks and in thick but downwasting rather than retreating glacier tongues. The model study by Wallinga and Van de Val (1998) shows that Rhonegletscher could disappear within decades if the presently observed trend continues. The extensive model intercomparison by Oerlemans and others (1998) indeed confirms that this could be the case for many if not most other glaciers of the current worldwide mass balance network.

Worldwide monitoring of glacier changes can build on more than a century of systematic/coordinated observation within the framework of international scientific collaboration, a wealth of excellent information, a highly developed process understanding and well reflected integrated/multilevel operational strategies (Haeberli 2004). The task of documenting potentially dramatic developments in remote areas, however, represents a challenge which can be met only with the best available techniques and concepts. The potential of high-resolution satellite imagery with stereo capacity and in combination with geoinformatics for automated image processing, or the use of AOGCMs for analysis and interpretaton of the observed data and continuously improved concepts are prominent examples of avenues for research and development.

The recent availability of high resolution Landsat-7 and ASTER images together with new methods for automated image and data analysis/modelling based on GIS techniques in digital inventories of glaciers in the European Alps, the former Soviet Union and in China, not only opens new possibilities for upgrading preliminary inventories and repeating earlier inventories with a view to assessing regional and global features of change, but also provides important information on impacts of rock/ice avalanches or hazards from glacier lakes (Huggel and others 2002, 2003, 2004, Kääb and others 2003, Salzmann and others 2004). The interpretation of regional aspects is assisted by the use of statistically downscaled AOGCMs together with seasonal sensitivity characteristics on mass balance models of intermediate complexity. A corresponding study by Reichert and others (2001) demonstrates that mass balances in Norway and Switzerland, are strongly correlated with decadal variations in the North Atlantic Oscillation (NAO). This mechanism, which is entirely caused by internal variations in the climate system, can explain the sharp contrast between recent mass gains for certain Scandinavian glaciers as compared with the marked ice losses observed in the European Alps.

Regional scaling with advanced AOGCM calculations reflects part but not all of current process understanding. In particular, two fundamental physical aspects still await inclusion into simulations and assessments: the firn/ice temperature effect and the size/dynamics effect. Firn warming relates to latent heat exchange involved with percolation and refreezing of surface meltwater; this process makes the rate of firn warming considerably higher than corresponding air temperature change. Once the firn becomes temperate, mass loss starts taking place with continued warming of the air. This means that the mass-balance sensitivity of large firn areas in the Canadian Arctic or in Central Asia, etc., could a) strongly increase during the coming decades and thereby b) reduce the regional differences in sensitivity. The large and relatively flat glaciers around the Gulf of Alaska or in Patagonia, which provide the most important meltwater contribution to sea level rise, have dynamic response times beyond the century scale and cannot dynamically adjust by tongue retreat to rapid forcing but rather waste down with little area loss. This, in turn, causes the mass balance/altitude feedback to become important. A cumulative surface lowering of about 50 to 100 metres within a century or so could, indeed, easily increase the mass balance sensitivity by a factor of two, correspondingly double the surface lowering and, hence, lead to a runaway effect. The corresponding growth in size of the ablation area on such glaciers would probably by far overcompensate the effect of shrinking total areas on small glaciers elsewhere. This means that the sensitivity of the main meltwater producers for sea level is likely to strongly increase during the coming decades and strengthen regional differences accordingly. The effects on sea level would, however, be reduced to some degree by the fact that important parts of such large maritime meltwater producers are below sea level. These examples clearly illustrate the key to a successful glacier observation programme: the combination of mapping, monitoring and modelling with advanced process understanding.

The continued shrinking of mountain glaciers for more than a century has become obvious in many parts of the world and can be perceived universally. Moreover, the melting of snow and ice at warm temperatures as a basic experience in common life makes it easy to qualitatively understand the physical principle related to this striking environmental evolution. By looking at the state of mountain glaciers, future generations will be able to judge which scenario of climate change has become reality. Mountain glaciers are, therefore, considered to constitute key variables for early-detection strategies in global climate-related observations and assessments (Haeberli and others 2000, cf. Fig. 2.39a in IPCC 2001). The integrated perception and documentation of glacier changes within the framework of such internationally coordinated programmes is a challenge of historical dimensions. Since the initiation in 1894 of a worldwide programme for collection of standardised information on ongoing glacier changes with the foundation of the International Glacier Commission at the 6th International Geological Congress in Zurich, Switzerland (Forel 1895, Haeberli and others 1998), various aspects involved have changed in a most remarkable way:

- Concern increases that the ongoing trend of worldwide and fast if not accelerating glacier shrinkage at the century time scale is of non-cyclic nature – there is definitely no more question of the originally envisaged “variations périodiques des glaciers”.

- Due to the human impacts on the climate system (enhanced greenhouse-effect), dramatic scenarios of future developments – including complete deglaciation of entire mountain ranges – must be taken into consideration.

- Such scenarios may lead far beyond the range of historical/holocene variability and most likely introduce processes (extent and rate of glacier vanishing, distance to equilibrium conditions) without precedence in the history of the earth.

- A broad and worldwide public today recognises glacier changes as a key indication of regional and global climate and environment change.

- Observational strategies established by expert groups within international monitoring programmes build on advanced process understanding and include extreme perspectives.

- These strategies make use of rapidly developing new technologies and relate them to traditional approaches in order to apply integrated, multilevel concepts within which individual observational components (length, area, volume change) fit together, enabling a comprehensive view.

An international network of glacier observations such as the World Glacier Monitoring Service (WGMS) of the International Commission on Cryospheric Sciences (CCS/IUGG) and the Federation of Astronomical and Geophysical Data Analysis Services (FAGS/ICSU), together with its Terrestrial Network for Glaciers (GTN-G; Haeberli and others 2000, 2002) within the Global Terrestrial Observing System (GTOS) and the Global Climate Observing System (GCOS), is designed to provide quantitative and comprehensible information in connection with questions about process understanding, change detection, model validation and environmental impacts in a interdisciplinary knowledge transfer to the scientific community as well as to policymakers, the media and the public. A Global Hierarchical Observing Strategy (GHOST) was developed to bridge the gap in scale, logistics and resolution between detailed process studies at a few selected sites and global coverage at pixel resolution using techniques of remote sensing and geoinformatics. The following main steps or "tiers" are included:

- *Tier 1 (multi-component system observation across environmental gradients)*
  Primary emphasis is on spatial diversity at large (continental-type) scales or along elevation belts of high-mountain areas. Special attention should be given to long-term measurements. Some of the glaciers already observed (for instance, those in the American Cordilleras or in a profile from the Pyrenees through the Alps and Scandinavia to Svalbard) could later form part of Tier 1 observations along large-scale transects.

- *Tier 2 (extensive glacier mass balance and flow studies within major climatic zones for improved process understanding and calibration of numerical models)*
  Full parameterisation of coupled numerical energy/mass balance and flow models is based on detailed observations for improved process understanding, sensitivity experiments and extrapolation to areas with less comprehensive measurements. Ideally, sites should be located near the centre of the range of environmental conditions of the zone which they are representing. The actual locations will depend more on existing infrastructure and logistical feasibility rather than on strict spatial guidelines, but there is a need to capture a broad range of climatic zones (such as tropical, subtropical, monsoon-type, mid-latitude maritime/continental, subpolar, polar).

- *Tier 3 (determination of regional glacier volume change within major mountain systems using cost-saving methodologies)*
  There are numerous sites that reflect regional patterns of glacier mass change within major mountain systems, but they are not optimally distributed (Cogley and Adams 1998). Observations with a limited number of strategically selected index stakes (annual time resolution) combined with precision mapping at about decadal intervals (volume change of entire glaciers) for smaller ice bodies, or with laser altimetry/

kinematic GPS (Ahrendt and others 2002) for large glaciers constitute optimal possibilities for extending the information into remote areas of difficult access. Repeated mapping and altimetery alone provide important data at a lower time resolution (decades).

- *Tier 4 (long-term observations of glacier length change data within major mountain ranges for assessing the representativity of mass balance and volume change measurements)*
  At this level, spatial representativity is the highest priority. Locations should be based on statistical considerations (Meier and Bahr 1996) concerning climate characteristics, size effects and dynamics (calving, surge, debris cover, etc.). Long-term observations of glacier length change at a minimum of about 10 sites within each of the important mountain ranges should be measured either in-situ or with remote sensing techniques at annual to multi-annual frequencies.

- *Tier 5 (glacier inventories repeated at time intervals of a few decades by using satellite remote sensing)*
  Continuous upgrading of preliminary inventories and repetition of detailed inventories using aerial photography or – in most cases – satellite imagery should make it possible to attain global coverage and to serve as validation of climate models (Beniston and others 1997). The use of digital terrain information in GIS greatly facilitates automated procedures of image analysis, data processing and modelling/ interpretation of newly available information (Kääb and others 2002, Paul and others 2002). Preparation of data products from satellite measurements must be based on a long-term program of data acquisition, archiving, product generation, and quality control.

This integrated and multi-level strategy aims at combining in-situ observations with remotely sensed data, process understanding with global coverage and traditional measurements with new technologies. Tiers 2 and 4 mainly represent traditional methodologies which remain fundamentally important for deeper understanding of the involved processes, as training components in environment-related educational programmes and as unique demonstration objects for a wide public. Tiers 3 and 5 constitute wide-open doors for the application of new technologies.

A network of 60 glaciers representing Tiers 2 and 3 has been established. This step closely corresponds to the data compilation published so far by the World Glacier Monitoring Service with the biennial Glacier Mass Balance Bulletin and also guarantees annual reporting in electronic form. Such a sample of reference glaciers provides information on presently observed rates of change in glacier mass, corresponding acceleration trends and regional distribution patterns. Long-term changes in glacier length must be used to assess the representativity of the small sample of values measured during a few decades with respect to the evolution at a global scale and during previous time periods. This can be done by (a) intercomparison between curves of cumulative glacier length change from geometrically similar glaciers, (b) application of continuity considerations for assumed step changes between steady-state conditions reached after the dynamic response time (Hoelzle and others 2003), and (c) dynamic fitting of time-dependent flow models to present-day geometries and observed long-term length change (Oerlemans and others 1998). New detailed glacier inventories are now being compiled in areas not covered so far in detail or, for comparison, as a repetition of earlier inventories. This task is greatly facilitated by the launching of the ASTER/GLIMS programme (Kieffer and others 2000). Remote sensing at various scales (satellite imagery, aerophotogrammetry) and GIS technologies must be combined with digital terrain information (Kääb and others 2002, Paul and others 2002) in order to overcome the difficulties of earlier satellite-derived preliminary inventories (area determination only) and to reduce the cost and time of compilation. In this way, it should be feasible to reach the goals of global observing systems in the years to come. A corresponding implementation plan for the Global Climate Observing System (GCOS) with glaciers as a key terrestrial component is now being completed.

LITERATURE

This chapter lists literature, cited, collected and submitted by principal investigators and national correspondents.

Aellen, M., Kappenberger, G. e Casartelli, G. (1996): Il ghiacciaio del Basodino (Alpi meridionali Svizzere). Geografia Fisica e Dinamica Quaternaria, 18.

Ageta, Y., Iwata, S., Yabuki, H., Naito, N., Sakai, A., Narama, C. and Karma (2000): Expansion of glacier lakes in recent decades in the Bhutan Himalayas. International Association of Hydrological Sciences, Publication No. 264 (Symposium at Seattle 2000 – Debris-covered glacier), p. 165–175.

Ageta, Y., Naito, N., Nakawo, M., Fujita, K., Shankar, K., Pokhrel, A.P. and Wangda, D. (2001): Study project on the recent rapid shrinkage of summer-accumulation type glaciers in the Himalayas, 1997–1999. Bulletin of Glaciological Research, 18, p. 45–49.

Aleynikov, A.A., Popovnin, V.V., Voytkovskiy, K.F., and Zolotaryov, Ye.A. (2001): Indirect estimation of the Djankuat Glacier volume, based on surface topography. Nordic Hydrology, 32 (5).

Aleynikov, A.A., Zolotaryov, Ye.A., and Popovnin, V.V. (2002): Ice divide recognition on twinned glaciers: a case of the Djantugan firn plateau in the Caucasus. Moscow Univ. Herald [Vestnik Moskovskogo Universiteta], ser. 5 “Geography”, No. 3.

Aniya, M., Sato, H., Naruse, R., Skvarca, P. and Casassa G. (1996): The use of satellite and airborne imagery to inventory outlet glaciers of the Southern Patagonia Icefield, South America. Photogrammetric Engineering and Remote Sensing, 62, p. 1361–1369.

Aniya, M., Sato, H., Naruse, R., Skvarca, P. and Casassa, G. (1997): Recent variations in the Southern Patagonia Icefield, South America. Arctic and Alpine Research, 29(1), p. 1–12.

Aniya, M., Dhakal, A.S., Park, S., and Naruse, R. (2000): Variations of Patagonian glaciers, South America, using RADARSAT and Landsat images. Canadian Journal of Remote Sensing, Vol. 26, No. 6, p. 501–511.

Arendt, A., Echelmeyer, K., Harrison, W.D., Lingle, G. and Valentine, V. (2002): Rapid wastage of Alaska glaciers and their contribution to rising sea level. Science 297 (5580), p. 382–386.

Armienti, P. and Baroni, C. (1999): Cenozoic climatic change in Antarctica recorded by volcanic activity and landscape evolution. Geology, 27 (7), p. 617–620.

Barla, G., Dutto, F. and Mortara, G. (2000): Brenva Glacier rock avalanche of 18 January 1997 on the Mount Blanc Range, Northwest Italy. Landslide News, 13, p. 2–5.

Baroni, C. (1989): Geomorphological map of the Northern Foothills near the Italian Station (Terra Nova Bay, Antarctica). In: Ricci, C.A. (ed.): Proceedings of the meeting Geosciences in Victoria Land, Antarctica. Siena, 2–3 Sept. 1987. Memorie Società Geologica Italiana, 33, p. 195–211.

Baroni, C. (1990): The Hell's Gate and Backstairs Passage Ice Shelves, Victoria Land – Antarctica. In: Ricci C.A. (ed.): Proceedings of the meeting Earth Science in Antarctica, Siena 27–28 Sept. 1988. Memorie Società Geologica Italiana, 43, p. 123–144

Baroni, C., Belluomini, G., Branca, M.E., Improta, S. and Orombelli G. (1991): Radiocarbon dates from Terra Nova Bay (Northern Victoria Land, Antarctica): conventional and calibrated ages. In: Ricci, C.A. (ed.): Proceedings of the meeting Earth Science Investigation in Antarctica, Siena 4–6 Oct. 1989. Memorie Società Geologica Italiana, 46, p. 81–92.

Baroni, C., Frezzotti, M., Giraudi, C. and Orombelli, G. (1991): Ice flow and surficial variation inferred from satellite image and aerial photograph analysis of Larsen Ice Tongue, Hell's Gate and Nansen Ice Shelves (Victoria Land, Antarctica). In: Ricci, C.A. (ed.): Proceedings of the meeting Earth Science Investigation in Antarctica, Siena 4–6 Oct. 1989. Memorie Società Geologica Italiana, 46, p. 69–80.

Baroni, C. and Orombelli, G. (1991): Holocene raised beaches at Terra Nova Bay (Victoria Land, Antarctica). Quaternary Research, 36, p. 157–177.

Baroni, C. and Orombelli, G. (1994a): Abandoned penguin rookeries as Holocene palaeoclimatic indicators in Antarctica. Geology, 22, p. 23–26.

Baroni, C. and Orombelli, G. (1994b): Holocene glacier variations in the Terra Nova Bay area (Victoria Land, Antarctica). Antarctic Science, 6 (4), p. 497–505.

Baroni, C., Frezzotti, M., Meneghel, M., Orombelli, G., Smiraglia, G. and Vittuari, L. (1995): Results of monitoring of local glaciers at Terra Nova Bay (Victoria Land, Antarctica), Terra Antartica, 2 (1), p. 41–47.

Beniston, M., Haeberli, W., Hoelzle, M. and Taylor, A. (1997): On the potential use of glacier and permafrost observations for verification of climate models. Annals of Glaciology 25, p. 400–406.

Biasini, A., Fanucci, O. and Salvatore, M.C. (1992): Geomorphology of the Priestley Glacier to Campbell Glacier transect mapped by aerial photographs (Victoria Land, Antarctica). In: Yoshida, Y., Kaminuma, K. and Shiraishi, K. (eds.): Recent progress in Antarctic Earth Science. Terra Scientific Publishing Company, Tokyo, p. 721–726.

Bishop, M.P., Olsenholler, J.A., Shroder, J.F., Barry, R.G., Raup, B.H., Bush, A.B.G., Coplan, L., Dwyer, J.L., Fountain, A.G., Haeberli, W., Kääb, A., Paul, F., Hall, D.K., Kargel, J.S., Molnia, B.F., Trabant, D.C., and Wessels, R. (2004): Global land ice measurements from space (GLIMS). Remote sensing and GIS investigations of the Earth's cryosphere. Geocarto International, 19(2), p. 57–84.

Bromwich, D.H. and Kurtz, D.D. (1984): Katabatic wind forcing of Terra Nova polynya. Journal Geophysical Research, 89, p. 3561–3572.

Bromwich, D.H., Parish, T.R. and Zorman, C.A. (1990): The confluence zone of the intense katabatic winds at Terra Nova Bay, Antarctica, as derived from airborne sastrugi surveys, and mesoscale numerical modelling. Journal Geophysical Research, 89, p. 5495–5509.

Brunner, K. (1993): Vernagtferner 1898, Austria. In: IAHS (ICSI) – UNEP– UNESCO (1993a): Fluctuations of Glaciers 1985–1990, Vol. VI (Haeberli, W. and Hoelzle, M.; eds.). World Glacier Monitoring Service, Paris, p. 91–92.

Brunner, K. (1999): Expeditionskarten des Fedtschenkogletscher, Alai-Pamir. In: Brunner, K. and Welsch, W. (eds.): Hochgebirgs- und Gletscherforschung. Zum 100. Geburtstag von Richard Finsterwalder. Schriftenreihe Studiengang Vermessungswesen, Universität der Bundeswehr München, Heft 62, p. 67–72.

Brunner, K. (2000): Erste großmaßstäbige Gletscherkarten unter besonderer Berücksichtigung der Hohen Tauern. In: Aschenbrenner, J. and Suida, H. (eds.): 40 Jahre Glaziologische Forschung. Festschrift für Heinz Slupetzky zum 60. Geburtstag. Salzburger Geographische Arbeiten, Band 36, Salzburg, p. 7–21.

Brunner, K. (2004): Das Karls-Eisfeld – Forschungsarbeiten am Hallstätter Gletscher. Wissenschaftliches Alpenvereinsheft, Nr. 38, München: 103 pp.

Carmignani, L., Ghezzo, C., Gosso, G., Lombardo, B., Meccheri, M., Montrasio, A., Pertusati, P.C. and Salvini, F. (1988): Geological map of the area between David and Mariner Glaciers. Victoria Land Antarctica. In: Ricci, C.A. (ed.): Proceedings of the meeting Geosciences in Victoria Land, Antarctica. Siena, 2–3 Sept. 1987. Memorie Società Geologica Italiana, 33, p. 77–97.

Casassa, G., Brecher, H., Rivera, A. and Aniya, M. (1997): A century-long record of Glaciar O'Higgins, Patagonia. Annals of Glaciology, 24, p. 106–110.

Casassa, G., Espizua, L., Francou, B., Ribstein, P., Ames, A. and Alean, J. (1998): Glaciers in South America. In: Haeberli, W., Hoelze, M. and Suter, S. (eds.): Into the second century of worldwide glacier monitoring: prospects and strategies. World Glacier Monitoring Service. Studies and Reports in Hydrology, Zurich, 56, p. 125–146.

Casassa, G. and Rivera, A. (1998): Digital radio-echo sounding at Tyndall Glacier, Patagonia. Anales Instituto Patagonia, Serie Cs. Nat., 26, p. 129–135.

Catalogue of Glaciers of the USSR, Vol.14, Issue 3, Parts 8 (1979), 13 (1978), 14 (1979), 15 (1979), 17 (1975): Gidrometeoizdat, Leningrad (in Russian).

Chiarle, M. and Mortara, G. (2001): Esempi di rimodellamento di apparati morenici nell'arco alpino italiano. Atti dell'VIII Convegno Glaciologico Italiano, "Risposta dei ghiacciai alpini ai cambiamenti climatici", Bormio 9–12 Settembre 1999. Suppl. Geogr. Fis. Dinam. Quat., .V, p. 41–54.

Chinn, T.J.H. (1999): New Zealand glacier response to the past two decades of positive balances. Global and Planetary Change, 22, p. 155–168.

Chinn, T.J.H. (2001): Distribution of the glacial water resources of New Zealand. Journal of Hydrology(NZ), 40 (2), p. 139–187.

Cogley, J.G. and Adams, W.P. (1998): Mass balance of glaciers other than the ice sheets. Journal of Glaciology 44 (147), p. 315–325.

Delgado, H. (1993): The glaciers of Popocatépetl Volcano (México): changes and causes. First International Conference on Climatic Change in México, Taxco, Guerrero, México, Abstracts, p. 27.

Delgado, H. (1997): The Glaciers of Popocatépetl Volcano (Mexico): changes and causes, Quaternary Intl. 43, p. 1–8.

Dischl, M. (1999, unpubl.): Weltweite Gletscherlängenänderungen seit 1894. Diplomarbeit am Geographischen Institut der Universtität Zürich, 107 pp.

Dyurgerov, M. (2002): Glacier mass balance and regime: data of measurements and analysis. INSTAAR Occasional Paper No. 55. Institute of Arctic and Alpine Research, University of Colorado, 88 pp.

Finsterwalder, R. (1932): Geodätische, topographische und glaziologische Ergebnisse. Teil I, Band 1: Geodätische und glaziologische Teile. Band 2: Kartenbeilagen. Wissenschaftliche Ergebnisse der Alai-Pamir Expedition 1928, 218 pp., 12 maps.

Fitzharris, B.B., Chinn, T.J. and Lamont, G. (1997): Glacier balance fluctuations and atmospheric circulation patterns over the Southern Alps, New Zealand. International Journal of Climatology 17, p. 745–763.

Forel, F.-A. (1895): Les variations périodiques des glaciers. Discours préliminaire. Archives des Sciences physiques et naturelles, Genève, XXXIV, p. 209–229.

Francou, B., Ramírez, E., Cáceres, B. and Mendoza, J. (2000): Glacier evolution in the tropical Andes during the last decades of the 20th century. Chacaltaya, Bolivia, and Antizana, Ecuador. Ambio, Vol. 29, No 7, p. 416–422.

Francou, B., Vuille, M., Wagnon, P., Mendoza, J. and Sicart, J.E. (2003): Tropical climate change recorded by a glacier of the central Andes during the last decades of the 20th century: Chacaltaya, Bolivia, 16°S. Journal of Geophysical Research, 108, D5, 4154, doi, 10.1029/2002JD002959.

Francou, B., Vuille, M., Favier, V. and Cáceres, B. (2004): New evidences of ENSO impacts on glaciers at low latitude: Antizana 15, Andes of Ecuador, 0° 28' S. Journal of Geophysical Research, 109, doi, 10.1029/2003JD004484.

Franz, A. (2001, unpubl.): Bestimmung der Volumenänderung des Fedtschenkogletschers (Alai Pamir). Diplomarbeit an der Fakultät für Bauingenieur- und Vermessungswesen, Universität der Bundeswehr, München, 91 pp.

Frezzotti, M. (1992): Fluctuations of ice tongue and ice shelves derived from satellite images in Terra Nova Bay area, Victoria Land, Antarctica. In: Yoshida, Y., Kaminuma, K. and Shiraishi, K. (eds.): Recent progress in Antarctic Earth Science. Terra Scientific Publishing Company, Tokyo, p. 733–739.

Frezzotti, M. (1993): Glaciological study in Terra Nova Bay, Antarctica, inferred from remote sensing analysis. Annals of Glaciology, 17, p. 63–71.

Frezzotti, M. and Mabin, M.C.G. (1994): Twentieth century behaviour of the Drygalski Ice Tongue, Ross Sea, Antarctica. Annals of Glaciology, 20, p. 397–400.

Frezzotti, M. (1997a): Ice front fluctuation, iceberg calving flux and mass balance of Victoria Land glaciers (Antarctica). Antarctic Science, 9 (1), p. 61–73.

Frezzotti, M. (1997b): Surface wind field of Victoria Land (Antarctica) from surveys of aeolian morphologic features. Terra Antartica Reports, 1, p. 43–45.

Frezzotti, M., Capra, A. and Vittuari, L. (1998): Comparison between glacier ice velocities inferred from GPS and sequential satellite images. Annals of Glaciology, 27, p. 54–60.

Frezzotti, M., Cimbelli, A. and Ferrigno, J.G. (1998): Ice-front change and iceberg behaviour along Oates and George V Coast, Antarctica, 1912–96. Annals of Glaciolology, 27, p. 643–650.

Frezzotti, M., Salvatore, M.C., Vittuari, L., Grigioni, P., De Silvestri, L. (2000): Satellite image map: Northern Foothills and Inexpressible Island Area (Victoria Land, Antarctica). Terra Antartica Reports, 6, p. 1–8.

Frezzotti, M., Tabacco, I. and Zirizzotti, A. (2000): Ice discharge of eastern Dome C drainage area, Antarctica, determined from airborne radar survey and satellite image analysis. Journal of Glaciology, 46 (153), p. 253–264.

Frezzotti, M., Raffi, R., Guarracino, M., Mancini, M. (2002): Glaciological map of Matusevich Glacier area (Oates Coats, East Antarctica). Terra Antartica Report. 7, p. 1–8.

Fujita, K., Nakawo, M., Fujii, Y. and Paudyal, P. (1997): Changes in glaciers in Hidden Valley, Mukut Himal, Nepal Himalayas, from 1974 to 1994. Journal of Glaciology, 43(145), p. 583–588.

Fujita, K., Takeuchi, N. and Seko, K. (1998): Glaciological observations of Yala Glacier in Langtang Valley, Nepal Himalayas, 1994 and 1996. Bulletin of Glacier Research, 16, p. 75–81.

Fujita, K., Ageta, Y., Pu, J. and Yao, T. (2000): Mass balance of Xiao Dongkemadi Glacier on the central Tibetan Plateau from 1989 to 1995. Annals of Glaciology, 31, p. 159–163.

Fujita, K., Kadota, T., Rana, B., Kayastha, R.B. and Ageta, Y. (2001): Shrinkage of Glacier AX010 in Shorong region, Nepal Himalayas, in the 1990s. Bulletin of Glaciological Research, 18, p. 51–54.

Fujita, K., Nakazawa, F. and Rana, B. (2001): Glaciological observations on Rikha Samba Glacier in Hidden Valley, Nepal Himalayas, 1998 and 1999. Bulletin of Glaciological Research, 18, p. 31–35.

Giani, G.P., Silvano, S. and Zanon, G. (2001): Avalanche of 18 January 1997 on Brenva Glacier, Mont Blanc Group, Western Alps: an unusual process of formation. Annals of Glaciology, 32, p. 333–338.

Gragnani, L., Guglielmin, M., Longinelli, A., Stenni, B., Smiraglia, C. and Cumino, L. (1998): Origins of the ground ice in the ice-free lands of the Northern Foothills (northern Victoria Land, Antarctica). In: Lewkowicz, A.G. and Allard, M. (eds.): Proceedings 7th International Conference on Permafrost, Yellowknife, Northwest Territories, June 23–27, 1998, p. 335–340.

Grigioni, P., De Silvestri, L., Pellegrini, A., and Sarao, R. (1992): Some climatological aspects in the Terra Nova Bay area, Antarctica. In: Colacino, M., Giovannelli, G. and Stefanutti, L. (eds.): Conference Proceedings Vol. 35, Italian Research on Antarctic Atmosphere. SIF, Bologna, p. 97–121.

Grunewald, K., Haubold, F. and Gebel, M. (1999): Ökosystemforschung Südwest-Bulgarien – Untersuchungen zur Struktur, Funktion und Dynamik der Landschaften im nördlichen Pirin und im Becken von Razlog. Dresdener Geographische Beiträge 5, TU Dresden, Selbstverlag, Dresden.

Grzes, M. and Sobota, I. (1999): Winter balance of Waldemar Glacier in 1996–1998. Polish Polar Studies, XXVI Polar Symposium, Lublin 1999, p. 87–98.

Guglielmin, M., Biasini, A. and Dramis, F. (1997): Detection of permafrost and buried ice in ice-free areas of the northern Victoria Land (Antarctica) with the vertical electrical soundings (V.E.S.). In: Ricci, C.A. (ed.): The Antarctic Region: Geological Evolution and Processes. Terra Antartica Pubbl., Siena, p. 965–971.

Haeberli, W., Hoelzle, M. and Suter, S. (eds., 1998): Into the second century of worldwide glacier monitoring: prospects and strategies. A contribution to the International Hydrological Programme (IHP) and the Global Environment Monitoring System (GEMS). UNESCO – Studies and Reports in Hydrology 56.

Haeberli, W., Barry, R. and Cihlar, J. (2000): Glacier monitoring within the Global Climate Observing System. Annals of Glaciology 31, p. 241–246.

Haeberli, W., Kääb, A., Vonder Mühll, D. and Teysseire, Ph. (2001): Prevention of outburst floods from periglacial lakes at Grubengletscher, Valais, Swiss Alps. Journal of Glaciology, 47/156, p. 111-122.

Haeberli, W., Maisch, M. and Paul, F. (2002): Mountain glaciers in global climate-related observation networks. WMO Bulletin, 51/1, p. 18–25.

Haeberli, W. and Holzhauser, H. (2003): Alpine glacier mass changes during the past two millennia. Pages News, 1/11, p. 13–15.

Haeberli, W. (2004): Glaciers and ice caps: historical background and strategies of worldwide monitoring. In: Bamber, J.L. and Payne, A.J. (eds): Mass Balance of the Cryosphere. Cambridge University Press, Cambridge, p. 559–578.

Herren, E., Bauder, A., Hoelzle, M. and Maisch, M. (2002): The Swiss Glaciers 1999/2000 and 2000/2001. Glaciological Report No. 121/122. Publication of the Glaciological Commission (GC) of the Swiss Academy of Science (SAS), 73 pp.

Hoelzle, M., Haeberli, W., Dischl, M. and Peschke, W. (2003): Secular glacier mass balances derived from cumulative glacier length changes. Global and Planetary Change 36(4), p. 77–89.

Hübl, A. (1901): Karlseisfeld-Forschungen der K.K. Geographischen Gesellschaft, I. Theil: Die Topographische Aufnahme des Karlseisfeldes in den Jahren 1899 und 1900. Abhandlungen der K.K. Geographischen Gesellschaft, Wien, III. Band, p. 5–25.

Huggel, C. and Delgado, H. (2000). Glacier monitoring at Popocatépetl Volcano, Mexico: glacier shrinkage and possible causes. In: Hegg, C., Vonder Muehll, D. (eds.): Beiträge zur Geomorphologie, Proceedings der Fachtagung der Schweizerischen Geomorphologischen Gesellschaft vom 8.–10. Juli 1999 in Bramois (Kt. Wallis), Birmensdorf, Eidgenössische Forschungsanstalt WSL, p. 97–106.

Huggel, C., Kääb, A., Haeberli, W., Teysseire, P. and Paul, F. (2002): Remote sensing based assessment of hazards from glacier lake outburst: a case study in the Swiss Alps. Canadian Geotechnical Journal, 39, p. 316–300.

Huggel, C., Kääb, A., Haeberli, W. and Krummenacher, B. (2003): Regional-scale GIS-models for assessment of hazards from glacier lake outbursts: evaluation and application in the Swiss Alps. Natural Hazards and Earth System Sciences, 3 (6), p. 647–662.

Huggel, C., Kääb, A. and Salzmann, N. (2004): GIS-based modeling of glacial hazards and their interactions using Landsat-TM and IKONOS imagery. Norwegian Journal of Geography, 58 (2), p. 61–73.

Huggel, C., Haeberli, W., Kääb, A., Bieri, D. and Richardson, S. (in press): Assessment procedures for glacial hazards in the Swiss Alps. Canadian Geotechnical Journal.

IAHS (ICSI) – UNESCO (1967): Fluctuations of Glaciers 1959–1965, Vol. I (P. Kasser; ed.). Permanent Service on Fluctuations of Glaciers, Paris, 52 pp.

IAHS (ICSI) – UNESCO (1973): Fluctuations of Glaciers 1965–1970, Vol. II (P. Kasser; ed.). Permanent Service on Fluctuations of Glaciers, Paris, 357 pp.

IAHS (ICSI) – UNESCO (1977): Fluctuations of Glaciers 1970–1975, Vol. III (F. Müller; ed.). Permanent Service on Fluctuations of Glaciers, Paris, 269 pp.

IAHS (ICSI) – UNESCO (1985): Fluctuations of Glaciers 1975–1980, Vol. IV (W. Haeberli; ed.). Permanent Service on Fluctuations of Glaciers, Paris, 265 pp.

IAHS (ICSI) – UNEP – UNESCO (1988): Fluctuations of Glaciers 1980–1985, Vol. V (Haeberli, W. and Müller, P.; eds.). World Glacier Monitoring Service, Paris, 290 pp.

IAHS (ICSI) – UNEP – UNESCO (1989): World Glacier Inventory – Status 1988 (Haeberli, W., Bösch, H., Scherler, K, Østrem, G. and Wallén, C.C.; eds.). World Glacier Monitoring Service, Nairobi.

IAHS (ICSI) – UNEP – UNESCO (1991): Glacier Mass Balance Bulletin No. 1, 1988–1989 (Haeberli, W. and Herren, E.; eds.). World Glacier Monitoring Service, Zurich, 70 pp.

IAHS (ICSI) – UNEP – UNESCO (1993a): Fluctuations of Glaciers 1985–1990, Vol. VI (Haeberli, W. and Hoelzle, M.; eds.). World Glacier Monitoring Service, Paris, 322 pp.

IAHS (ICSI) – UNEP – UNESCO (1993b): Glacier Mass Balance Bulletin No. 2, 1990–1991 (Haeberli, W., Herren, E. and Hoelzle, M.; eds.). World Glacier Monitoring Service, Zurich, 74 pp.

IAHS (ICSI) – UNEP – UNESCO (1994): Glacier Mass Balance Bulletin No. 3, 1992–1993 (Haeberli, W., Hoelzle, M. and Bösch, H.; eds.). World Glacier Monitoring Service, Zurich, 80 pp.

IAHS (ICSI) – UNEP – UNESCO (1996): Glacier Mass Balance Bulletin No. 4, 1994–19995 (Haeberli, W., Hoelzle, M. and Suter, S.; eds.). World Glacier Monitoring Service, Zurich, 90 pp.

IAHS (ICSI) – UNEP – UNESCO (1998): Fluctuations of Glaciers 1990–1995, Vol. VII (Haeberli, W., Hoelzle, M., Suter, S. and Frauenfelder, R.; eds.). World Glacier Monitoring Service, Paris, 296 pp.

IAHS (ICSI) – UNEP – UNESCO (1999): Glacier Mass Balance Bulletin No. 5, 1996–1997 (Haeberli, W., Hoelzle, M. and Frauenfelder, R.; eds). World Glacier Monitoring Service, Zurich, 96 pp.

IAHS (ICSI) – UNEP – UNESCO (2001): Glacier Mass Balance Bulletin No. 6, 1998–1999 (Haeberli, W., Frauenfelder, R. and Hoelzle, M.; eds.). World Glacier Monitoring Service, Zurich, 93 pp.

IAHS (ICSI) – UNEP – UNESCO – WMO (2003): Glacier Mass Balance Bulletin No. 7, 2000–2001 (Haeberli, W., Frauenfelder, R., Hoelzle M. and Zemp, M.; eds). World Glacier Monitoring Service, Zurich, 87 pp.

IPCC (2001): Climate change 2001 – the scientific basis. Contribution of Working Group I to the Third Assessment Report of the Intergovernmental Panel on Climate Change, Cambridge University Press.

Istituto Idrografico Marina Italiana (1989): Antartide, Mare di Ross-Baia Terra Nova. Carta Batimetrica, Scala 1:100 000, Genova, No 883.

Istituto Idrografico Marina Italiana (1991): Antartide, Mare di Ross-Baia Terra Nova. Carta Batimetrica, Scala 1:50 000, Genova, No 882.

Istituto Idrografico della Marina (2000): Carta della serie Internazionale, Antarctica, Ross Sea, Terra Nova Bay, Da Cape Russell a Campbell Glacier Tongue. Genova, No 881 INT 9005.

Iwata, S., Aoki, T., Kadota,T., Seko, K. and Yamaguchi, S. (2000): Morphological evolution of the debris cover on Khumbu Glacier, Nepal, between 1978 and 1995. International Association of Hydrological Sciences, Publication No. 264 (Symposium at Seattle 2000 – Debris-covered glacier), p. 3–11.

Jania, J. and Glowacki, P. (1996): Is the Hansbreen in South Spitsbergen (Svalbard) a surge-type glacier? In: Krawczyk, W.E. (ed.): 23rd Polar Symposium, Sosnowiec, p. 17–43.

Jania, J., Mochnacki, D. and Gadek, B. (1996): The thermal structure of the Hansbreen, a tidewater glacier in southern Spitsbergen, Svalbard. Polar Research, 15 (1), p. 53–66.

Jania, J. (1997): The problem of Holocene glaciers and snow patches fluctuation in the Tatra Mountains. Short report. Palaeoklimaforschung, 24.

Julio-Miranda, P., and Delgado-Granados, H. (2003): Fast hazards evaluation employing digital photogrammetry: Popocatépetl glaciers. México. Geof. Int., 42 (2), p. 275–283.

Kääb, A. and Haeberli, W. (2001): Evolution of a high-mountain thermokarst lake in the Swiss Alps. Arctic, Antarctic and Alpine Research, 33/4, p. 385–390.

Kääb, A. (2002): Monitoring high-mountain terrain deformation from air- and spaceborne optical data: examples using digital aerial imagery and ASTER data. ISPRS Journal of Photogrammetry and Remote Sensing 57(1–2), p. 39–52.

Kääb, A., Paul, F., Maisch, M., Hoelzle, M. and Haeberli, W. (2002): The new remote-sensing-derived Swiss Glacier Inventory: II. First results. Annals of Glaciology 34, p. 362–366.

Kääb, A., Wessels, R., Haeberli, W., Huggel, C., Kargel, J.S. and Khalsa, S.J.S. (2003): Rapid ASTER imaging facilitates timely assessment of glacier hazards and disasters. EOS, 13/84, p. 117–124.

Kadota, T., Fujita, K., Seko, K., Kayastha, R. and Ageta, Y. (1997): Monitoring and prediction of shrinkage of a small glacier in the Nepal Himalaya. Annals of Glaciology, 24, p. 90–94.

Kadota, T., Seko, K., Aoki, T., Iwata, S. and Yamaguchi, S. (2000): Shrinkage of the Khumbu Glacier, east Nepal from 1978 to 1995. International Association of Hydrological Sciences, Publication No. 264 (Symposium at Seattle 2000 – Debris-covered glacier), p. 235–243.

Kappenberger, G., Aellen, M. e Casartelli, G. (1995): Il giacciaio del Basodino. Nimbus 8.

Kappenberger, G. and Aellen, M. (1998): The Basodino Glacier (Ticino, Switzerland) and its variations. Convegno Internazionale di Meteorologia Alpina, (CIMA-ITAM), Torino, 9, p. 163–166.

Kaser, G. and Osmaston, H. (2002): Tropical glaciers. Cambridge University Press, Cambridge, 2002, 207 pp. and 1 foldout map.

Kasser, P., Aellen, M. und Siegenthaler, H. (1986): Die Gletscher der Schweizer Alpen 1977/78 und 1978/79. 99. und 100. Bericht (Jahrbuch) der GK/SNG, 288 pp.

Kieffer, H., Kargel, J.S., Barry, R., Bindschadler, R., Bishop, M., MacKinnon, D., Ohmura, A., Raup, B., Antoninetti, M., Bamber, J., Braun, M., Brown, I., Cohen, D., Copland, L., DueHagen, J., Engeset, R.V., Fitzharris, B., Fujita, K., Haeberli, W., Hagen. J.O., Hall, D., Hoelzle, M., Johansson, M., Kaeaeb, A., Koenig, M., Konovalov, V., Maisch, M., Paul, F., Rau, F., Reeh, N., Rignot, E., Rivera, A., de Ruyter de Wildt, M., Scambos, T., Schaper, J., Scharfen, G., Shroder, J., Solomina, O., Thompson, D. van der Veen, K., Wohlleben, T. and Young, N. (2000): New eyes in the sky measure glaciers and ice sheets. EOS Transactions, American Geophysical Union, 81, 24, 265-271.

Kotlyakov, V.M., Osipova, G.B., Popovnin, V.V., and Tsvetkov, D.G. (1996): Experience from observations of glacier fluctuations in the territory of the former USSR. Zeitschrift für Gletscherkunde und Glazialgeologie, 32, p. 5–14.

Kotlyakov, V.M., Osipova, G.B., Popovnin, V.V., and Tsvetkov, D.G. (1997): Results of the glacier fluctuation observations on the former USSR territory. Data of Glaciological Studies [Materialy glyatsiologicheskikh issledovaniy], 82, p. 77–93 (in Russian).

Kurtz, D.D. and Bromwich, D.H. (1985): A recurring, atmospherically forced polynya in Terra Nova Bay. Antarctic Research Series, 43, p. 177–201.

Lamont, G.N., Chinn, T.J.H., and Fitzharris, B.B. (1999): Slopes of glacier snowlines in the Southern Alps of New Zealand in relation to atmospheric circulation patterns. Global and Planetary Change, 22, p. 209–219.

Leiva, J.C. (1999): Recent fluctuations of the Argentinian glaciers. Global and Planetary Change 22: p. 169–177.

Lorenzo, J.L. (1964): The glaciers of Mexico, Monographs of the Instituto de Geofísica, UNAM, Mexico,123 pp.

Lozej, A., Tabacco, I., Meneghel, M., Orombelli, G., Smiraglia, C. and Longinelli, A. (1991): Radio-echo sounding of Enigma Lake (Northern Foothills, Victoria Land, Antarctica). Memorie Società Geologica Italiana, 46, p. 103–115.

Lugon, R., Gardaz, J.-M., Vonder Mühll, D. (2000): The partial collapse of the Dolent Glacier moraine (Swiss Alps, Mont Blanc Range). Zeitschrift für Geomorphologie, Bd. 222, p. 191–208.

Margreth, S., and Funk, M. (1999): Hazard mapping for ice and combined snow/ice avalanches – two case studies from the Swiss and Italian Alps. Cold Regions Science and Technology, 30, p. 159–173.

Meier, M.F. and Bahr, D.B. (1996): Counting glaciers: use of scaling methods to estimate the number and size distribution of the glaciers on the world. In: Colbeck, S.C. (ed.): Glaciers, Ice Sheets and Volcanoes: a Tribute to Mark F. Meier. CRREL Special Report, 96–27, p. 1–120.

Meneghel, M. and Smiraglia, C. (1991): Preliminary data on the mass balance of the Strandline Glacier (Terra Nova Bay, Antarctica). In: Ricci, C.A. (ed.): Proceedings of the meeting Earth Science Investigation in Antarctica, Siena 4–6 Oct. 1989. Memorie Società Geologica Italiana, 46, p. 59–67.

Meneghel, M., Bondesan, A., Salvatore, M.C. and Stenni, B. (1997): Non sorted polygons in the Terra Nova Bay area (Victoria Land, Antarctica). In: Ricci, C.A. (ed.): The Antarctic Region: Geological Evolution and Processes", Terra Antartica Pubbl., Siena, p. 957–963.

Moore, J.C., Palli, A., Ludwig, F., Blatter, H., Jania, J., Gadek, B., Glowacki, P., Mochnacki, D. and Isaksson, E. (1999): High-resolution hydrothermal structure of Hansbreen, Spitsbergen mapped by ground-penetrating radar. Journal of Glaciology, 45, 151, p. 524–532.

Motyka, R.J. (1997): Deep-water calving at LeConte Glacier, southeast Alaska. In: Van der Veen, C.J. (ed.): Calving glaciers: report of a workshop, February 28 – March 2, 1997. BPRC Report No. 15, Byrd Polar Research Center, The Ohio State University, Columbus, Ohio, p. 115-118.

Motyka, R.J., Beget, J.E. and Bowen, P. (1998): Recent retreat of LeConte Glacier and associated calving and iceberg hazards. Alaska Division of Geological and Geophysical Surveys Report of Investigation, 98-15, 20 pp.

Motyka, R.J., Hunter, L., Echelmeyer, K. and Connor, C. (2003): Submarine melting at the terminus of a temperate tidewater glacier, LeConte Glacier, Alaska. Annals of Glaciology, 36, p. 57-65.

Müller, F., Caflisch, T. and Müller, G. (1976): Firn und Eis der Schweizer Alpen. Gletscherinventar. Geographisches Institut ETH Zurich, 57, 174 pp.

Müller, H. and Kappenberger, G. (1991): Claridenfirn-Messungen 1914–1984. Zürcher Geographische Schriften 40, 79 pp.

Naito, N., Nakawo, M., Aoki, T., Asahi, K., Fujita, K., Sakai, A., Kadota, T., Shiraiwa, T. and Seko, K. (1998): Surface flow of the ablation area of the Lirung Glacier in Langtang Valley, Nepal Himalayas. Bulletin of Glacier Research, 16, p. 67–73.

Nakawo, M., Fujita, K., Ageta, Y., Shankar, K., Pokhrel, A.P. and Yao, T. (1997): Basic studies for assessing the impacts of the global warming on the Himalayan cryosphere, 1994–1996. Bulletin of Glacier Research, 15, p. 53–58.

Nakawo, M., Yabuki, H. and Sakai, A. (1999): Characteristics of Khumbu Glacier, Nepal Himalaya: recent change in the debris-covered area. Annals of Glaciology, 28, p. 118–122.

Narozhniy, Yu.K. (2001a): Estimate of resources and tendencies of glacier changes in the Aktru catchment area, Altai Mts., during the last one and a half century. Data of Glaciological Studies [Materialy glyatsiologicheskikh issledovaniy], 90, p.117–125 (in Russian).

Narozhniy, Yu.K. (2001b): External mass exchange of the Aktru Glaciers: observational methods, tendencies of changes and climatic reasons. Tomsk Univ. Herald [Vestnik Tomskogo Universiteta], 274, Tomsk, p.13–23 (in Russian).

Nationalkomitee für Geodäsie und Geophysik der DDR an der Deutschen Akademie der Wissenschaften zu Berlin (1964): Geodätische Arbeiten im Rahmen der Glaziologischen Expedition der Usbekischen Akademie der Wissenschaften zum Fedtschenkogletscher im Jahre 1958. Geodätische und geophysikalische Veröffentlichungen, Reihe 3, Heft 1, 188 pp.

Oerlemans, J., Anderson, B., Hubbard, A., Huybrechts, P., Johannesson, T., Knap, W.H., Schmeits, M., Stroeven, A.P., van de Wal, R.S.W., Wallinga, J. and Zuo, Z. (1998): Modelling the response of glaciers to climate warming. Climate Dynamics 14, p. 267–274.

Oerlemans, J. (2001): Glaciers and climatic change. Balkema (Rotterdam), 148 pp.

O'Neel, S., Echelmeyer, K. and Motyka, R.J. (2001): Short-term flow dynamics of a retreating tidewater glacier: LeConte Glacier, Alaska, U.S.A.. Journal of Glaciology, 47 (159), p. 567–578.

O'Neel, S., Echelmeyer, K. and Motyka, R.J. (2003): Short-term variations in calving at a retreating tidewater glacier: LeConte Glacier, Alaska. Journal of Glaciology, 49 (167), p. 587-598.

Orombelli, G. (1991): Glaciers and glacial morphology at Terra Nova Bay: an opportunity for significant studies on environmental and climate global changes. In: Ricci C.A. ed.): Proceedings of the meeting Earth Science investigation in Antarctica. Siena 4–6 Oct. 1989. Memorie Società Geologica Italiana, 46, p. 9–16.

Orombelli, G., Baroni C. and Denton, G.H. (1991): Late Cenozoic glacial history of the Terra Nova Bay Region, Northern Victoria Land, Antarctica, Geografia Fisica e Dinamica Quaternaria (1990), 13 (2), p. 139–163.

Osipova, G.B., and Tsvetkov, D.G. (2000): Satellite monitoring of glaciation in the Eastern Pamirs. Data of Glaciological Studies [Materialy glyatsiologicheskikh issledovaniy], 89, p. 163–174 (in Russian).

Panov, V.D. (1993): Evolution of the modern glaciation of the Caucasus. Sankt-Peterburg, Gidrometeoizdat, 432 pp. (in Russian).

Paul, F., Kääb, A., Maisch, M., Kellenberger, T. and Haeberli, W. (2002): The new remote-sensing-derived Swiss Glacier Inventory: I. Methods. Annals of Glaciology 34, p. 355–361.

Popovnin, V.V. (1995): Ice divide migration along the Djantugan firn plateau. Data of Glaciological Studies [Materialy glyatsiologicheskikh issledovaniy], 79, p.123–127 (in Russian).

Popovnin, V.V. (1998): Der Gletscher Dschankuat – ein reprasentatives Objekt des glaziologischen Monitorings. In: Gletscher und Landschaften des Elbrusgebietes. Justus-Perthes Verlag, Gotha, Germany, p. 85–100.

Popovnin, V.V., Danilova, T.A., and Petrakov, D.A. (1999): A pioneer mass-balance estimate for a Patagonian glacier: Glaciar De los Tres, Argentina. Global and Planetary Change, 22 (1–4), p. 255–267.

Post, A. and Motyka, R.J. (1995): Taku and LeConte Glaciers, Alaska: calving speed control of late Holocene asynchronous advances and retreats. Physical Geography, 16(1), p. 59–82.

Rabus, B.T. and Echelmeyer, K.A. (1998): The mass balance of McCall Glacier, Brooks Range, Alaska, U.S.A.; its regional relevance and implications for climate change in the Arctic. Journal of Glaciology, 44/147, p. 333–351.

Ramírez, E., Francou, B., Ribstein, P., Descloîtres, M., Guérin, R., Mendoza, J., Gallaire, R., Pouyaud, B., and Jordan, E. (2001): Small glaciers disappearing in the tropical Andes. A case study in Bolivia : Glaciar Chacaltaya (16° S). Journal of Glaciology, 47, 157, p. 187–194.

Raymond, M., Wegmann, M. and Funk, M. (2003): Inventar gefährlicher Gletscher in der Schweiz. Mitteilungen der VAW/ETH 182, Zurich, 368 pp.

Reichert, B.K., Bengtsson, L. and Oerlemans, J. (2001): Mid-latitude forcing mechanisms for glacier mass balance investigated using General Circulation Models. Journal of Climate,14, p. 3767–3784.

Rivera, A., Aravena, J. and Casassa, G. (1997): Recent fluctuations of Glaciar Pio XI, Patagonia: discussion of a glacial surge hypothesis. Mountain Research and Development, 17(4), p. 309–322.

Rivera, A., Lange, H., Aravena, J. and Casassa, G. (1997): The 20th century advance of Glaciar Pio XI, Southern Patagonia Icefield. Annals of Glaciology, 24, p. 66–71.

Rivera, A. and Casassa, G. (1999): Volume changes on Glaciar Pio XI, Patagonia: 1975–1995. Global and Planetary Change 22(1–4), p. 233–244.

Rivera, A., Casassa, G., Acuña, C. and Lange, H. (2000): Variaciones recientes de glaciares en chile. Investigaciones geograficas, 34, p. 29–52.

Sakai, A., K. Chikita and T. Yamada (2000): Expansion of a moraine-dammed glacier lake, Tsho Rolpa, in Rolwaling Himal, Nepal Himalaya. Limnology and Oceanography, 45(6), p. 1401–1408.

Salvatore, M.C. (1997): Geomorphological map of the area between Mount Emison and Mills Peak mapped by aerial photographs (Victoria Land, Antarctica). In: Ricci, C.A. (ed.): The Antarctic Region: Geological Evolution and Processes. Terra Antartica Pubbl., Siena, p. 1179–1182.

Salvatore, M.C., Bondesan, A., Meneghel, M., Baroni, C. and Orombelli, G. (1997): Geomorphological sketch map of the Evans Cove area, Victoria Land, Antarctica. Geografia Fisica e Dinamica Quaternaria, 20 (2), p. 283–290.

Salzmann, N., Kääb, A., Huggel, C., Allgöwer, B. and Haeberli, W. (2004): Assessment of the hazard potential of ice avalanches using remote sensing and GIS-modelling. Norwegian Journal of Geography, 58, p. 74–84.

Seko, K., Yabuki, H., Nakawo, M., Sakai, A., Kadota, T. and Yamada, Y. (1998): Changing surface features of Khumbu Glacier, Nepal Himalayas revealed by SPOT images. Bulletin of Glacier Research, 16, p. 33–41.

Sicart, J.E., Ribstein, P., Francou, B., Pouyaud, B. and Condom, T. (in press): Hydrological and glaciological mass balances of a tropical glacier: Zongo, Bolivia. Global and Planetary Change.

Six, D., Reynaud, L. and Letreguilly, A. (in press): Les glaciers alpines et scandinaves, témoins de l'oscillation du climat de l'Atlantique Nord. Comptes rendus de l'Académie des Sciences.

Skvarca, P., Stuefer, M. and Rott, M. (1999): Temporal changes of Glaciar Mayo and Laguna Econdida, Southern Patagonia, detected by remote sensing data. Global and Planetory Change, 22, p. 245–253.

Sobota, I. (1999): Ablation of Waldemar Glacier in summer seasons of 1996, 1997 and 1998. Polish Polar Studies, XXVI Polar Symposium, Lublin 1999, p. 257–274.

Sobota, I. (2003): Struktura bilansu masy lodowca Waldemara na tle lodowców Svalbarduw latach 1996–2002. [w] The Functioning of Polar Ecosystems as Viewed Against Global Environmental Changes, Structure of mass balance of Waldemarbreen against two glaciers of Svalbard in 1996–2002. Kraków, p. 259–262.

Souchez, R., Meneghel, M., Tison, J.L., Lorrain, R., Ronveaux, D., Baroni, C., Lozej, A., Tabacco, I. and Jouzel, J. (1991): Ice composition evidence of marine ice transfer along the bottom of a small Antarctic ice shelf. Geophysical Research Letters, 18 (5), p. 849–852.

Stenni, B., Serra, F., Frezzotti, M., Maggi, V., Traversi, R., Becagli, S. and Udisti, R. (2000): Snow accumulation rates in Northern Victoria Land (Antactica) by firn core analysis. Journal of Glaciology, 46 (155), p. 541–552.

Strelin, J. and Iturraspe, R. (2004): La cuenca glacio-nival "Martial – Buena Esperanza". Actas en CD "High Summit Conference 2002" CRICyT, Mendoza, 19 pp.

Tabacco, I.E., Bianchi, C., Chiappini, M., Zirizzotti, A. and Zuccheretti, E. (2000): Analysis of bottom morphology of the David Glacier-Drygalski Ice Tongue, East Antarctica. Annals of Glaciology, 30, p. 47–51.

Tinti, S., Maramai, A. and Cerutti, A.V. (1999): The Miage Glacier in the Valley of Aosta (Western Alps, Italy) and the extraordinary detachment which occurred on August 9, 1996. Phys. Chem. Earth (A), 24 (2), p. 157–161.

Tison, J.L., Lorrain, R.D., Bouzette, A., Dini, M., Bondesan, A. and Stievenard, M. (1998): Linking landfast sea ice variability to marine ice accretion at Hell's Gate Ice Shelf, Ross Sea, In: Antarctic Sea Ice: physical processes, interaction and variability. Antarctic Research Series, 74, p. 375–407.

Torinesi, O., Letreguilly, A. and F. Valla (in press): A century reconstruction of the mass balance of Glacier de Sarennes, in the French Alps. Journal of Glaciology.

UNESCO (1970): Perennial ice and snow masses – a guide for compilation and assemblage of data for the World Glacier Inventory. Technical Papers in Hydrology No. 1.

Unger, C., Espizua, L. E. and Bottero, R. (2000): Untersuchung von Gletscherständen im Tal des Rio Mendoza (Zentralargentinische Anden) – Kartierung eines surge-Vorstosses des Horcones Inferior. Zeitschrift für Gletscherkunde und Glazialgeologie. Band 36, p. 151–157.

Vincent, C. and Vallon, M. (1997): Meteorological controls on glacier mass balance: empirical relations suggested by measurements on glacier de Sarennes, France. 1997, Journal of Glaciology, Vol. 43, No. 143, p. 131-137.

Vincent, C., Vallon, M., Reynaud, L. and Le Meur, E. (2000): Dynamic behaviour analysis of glacier de Saint Sorlin, France, from 40 years of observations, 1957–1997. Journal of Glaciology, Vol. 46, No. 154, p. 499-506.

Vincent, C. (2002): Influence of climate change over the 20th century on four French glacier mass balances. Journal of Geophysical Research, Vol. 107, No. D19, 4375, doi: 10.1029/2001JD000832.

Vincent, C., Kappenberger, G., Valla, F., Bauder, A., Funk, M., and Le Meur, E. (2004): Ice ablation as evidence of climate change in the Alps over the 20th century. Journal of Geophysical Research, Vol. 109, D10104, doi: 10.1029/2003JD003857.

Wagnon, P., Ribstein, P., Francou, B. and Pouyaud, B. (1999): Annual cycle of energy balance of Zongo Glacier, Cordillera Real, Bolivia. Journal of Geophysical Research, 104, D4, p. 3907–3924

Wallinga, J. and Van de Wal, R.S.W. (1998): Sensitivity of Rhonegletscher, Switzerland, to climate change: experiments with a one-dimensional flowline model. Journal of Glaciology, 44/147, p. 383–393.

Zolotaryov, Ye.A., and Kharkovets, Ye.G. (2000): Glaciation of Elbrus in the end of XX century (digital orthophoto map of Elbrus for 1997). Data of Glaciological Studies [Materialy glyatsiologicheskikh issledovaniy], 89, p. 175–181 (in Russian).

APPENDIX **NOTES ON THE COMPLETION OF THE DATA SHEETS**

This appendix includes the explanatory notes on the completion of the data sheets:

- Notes on the completion of the data sheet "General Information on the Observed Glaciers 1995–2000"

- Notes on the completion of the data sheet "Variations in the Position of Glacier Fronts 1995–2000" (also valid for Addenda from earlier years)

- Notes on the completion of the data sheet "Mass Balance Study Results Summary Data 1995–2000" (also valid for Addenda from earlier years)

- Notes on the completion of the data sheet "Special Events".

Beginning of 2005 the WGMS website was revised to simplify the access to information on available data, procedures for data order and data submission as well as to the addresses of national correspondents. It can be accessed via the two following addresses:

http://www.wgms.ch

http://www.geo.unizh.ch/wgms

WORLD GLACIER MONITORING SERVICE

GENERAL INFORMATION ON THE OBSERVED GLACIERS 1995–2000

NOTES ON THE COMPLETION OF THE DATA SHEET

This data sheet should be completed for all glaciers on which data are submitted for inclusion in “Fluctuations of Glaciers 1995–2000”; however, questions 5 to 14 should be answered only for glaciers not included in Volumes V, VI and VII, or for cases where new or improved information is now available.

1. **Country or Territory**
   Name of country or territory where the glacier is located (for abbreviations, see this issue, p. 3).

2. **Glacier Number (former PSFG number)**
   Numbering allows better identification of the glaciers and has proven to be especially helpful when dealing with glaciers having the same name, no name or names changing with time. National correspondents are therefore asked to give numbers to glaciers on which data are submitted for Volume VIII. Once a Glacier Number has been assigned to a glacier it will not be changed again. Please, therefore, refer to earlier volumes of the “Fluctuations of Glaciers” when assigning the Glacier Number (= former PSFG number).

   For glaciers without a (PSFG) number, the following guidelines are given for assigning the number:

   Glacier Number = number with max. 4 numerical digits or, as an exception, 5 digits.

   In assigning the number to glaciers of present interest, it should be kept in mind that the need to number neighbouring glaciers may arise in the future. Accordingly, the numbering system which is adopted should leave “spare numbers”. This could be done by using the left-hand digit(s) to denote geographical subdivisions, and the right-hand digit(s) to number single glaciers within each subdivision. The total number of digits used, 2–4, will depend on the size of the country and the degree of sophistication in identifying the geographical subdivisions. Empty spaces should be filled with the digit 0. A glacier may advance or retreat enough to make it necessary in future to identify individual parts, e.g., a single front may become several distinct fronts, or part of the glacier may become separated from the main glacier. In these exceptional cases, the fifth digit (alphabetic or numeric) should be used.

3. **Glacier Number in already published inventories**
Only where a glacier number has been assigned in connection with a previously published National Glacier Inventory should this number be given.
Format: max. 16 digits.

4. **Glacier Name**
The name of the glacier should be written in CAPITAL letters.
Format: max. 15 column positions, left justified. If necessary, the name can be abbreviated; in this case, please give the full name under "16. Remarks".

5. **Geographical Location (general)**
By "general geographical location" we mean the reference to a very large geographical entity (e.g., a large mountain range or a large political subdivision) which gives a rough idea of the location of the glacier without requiring the use of an atlas or map.
Examples: Western Alps, Southern Norway, Polar Ural, Tien Shan, Himalayas.
Format: similar to 4 (Glacier Name)

6. **Geographical Location (more specific)**
A more specific geographical location should be given here (mountain group, drainage basin, etc.) which can be found easily on a small-scale map of the country concerned.
Format: similar to 4 (Glacier Name)

7. **Geographical Coordinates**
The geographical coordinates should refer to a point in the upper ablation area; for small glaciers, this point may possibly lie outside the glacier.

As a new requirement, the latitude and longitude should be indicated in decimal degrees, positive values indicating north/east and negative values indicating south/west respectively. Maximum precision is 4^{th} positions after decimal point.

8. **Orientation**
The main orientation of the accumulation area and of the ablation area should be given using the 8-point compass.

9. **Highest Elevation**
Altitude of the highest point of the glacier and the year of survey.

10. **Median Elevation**
Altitude of the contour line which halves the area of the glacier, and the year of survey.

11. **Lowest Elevation**
Altitude of the lowest point of the glacier and the year of survey.

12. **Area**
Total area of the glacier (in horizontal projection) and the year of survey.

13. Length

Maximum length of the glacier measured along the most important flowline (in horizontal projection) and the year of survey.

14. Rough Classification

This classification should be given in coded form according to “Perennial Ice and Snow Masses” (Technical Papers in Hydrology, UNESCO/IAHS, 1970). The following information should be given:

- “Primary classification” (Digit 1)
- “Form” (Digit 2)
- “Frontal characteristics” (Digit 3)

Code: (from “Perennial Ice and Snow Masses”, slightly revised)

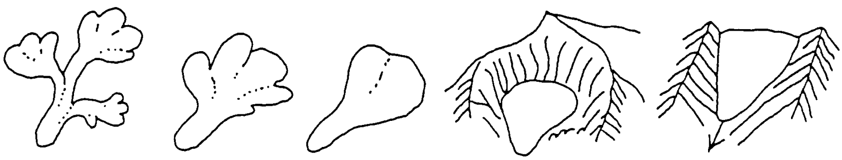
Digit 1: Primary classification

0	Miscellaneous	Any type not listed below (explain)
1	Contintental ice sheet	Inundates areas of continental size
2	Icefield	Ice masses of sheet or blanket type of a thickness not sufficient to obscure the subsurface topography
3	Ice cap	Dome-shaped ice mass with radial flow
4	Outlet glacier	Drains an ice sheet, ice flield or ice cap, usually of valley glacier form; the catchment area may not be clearly delineated
5	Valley glacier	Flows down a valley; the catchment area is well defined
6	Mountain glacier	Cirque, niche or crater type, hanging glacier; includes ice aprons and groups of small units
7	Glacieret and snowfield	Small ice masses of indefinite shape in hollows, river beds and on protected slopes, which has developed from snow drifting, avalanching and/or especially heavy accumulation in certain years; usually no marked flow pattern is visible; in existence for at least two consecutive years.
8	Ice shelf	Floating ice sheet of considerable thickness attached to a coast nourished by glacier(s); snow accumulation on its surface or bottom freezing
9	Rock glacier	Lava-stream-like debris mass containing ice in several possible forms and moving slowly downslope

Digit 2: Form

0	Miscellaneous	Any type not listed below (explain)
1	Compound basins	Two or more individual valley glaciers issuing from tributary valleys and coalescing (Fig. 1a)
2	Compound basin	Two or more individual accumulation basins feeding one glacier system (Fig. 1b)

3	Simple basin	Single accumulation area (Fig. 1c)
4	Cirque	Occupies a separate, rounded, steep-walled recess which it has formed on a mountain side (Fig. 1d)
5	Niche	Small glacier in V-shaped gully or depression on a mountain slope (Fig. 1e); generally more common than the genetically further developed cirque glacier
6	Crater	Occurring in extinct or dormant volcanic craters
7	Ice apron	Irregular, usually thin ice mass which adheres to a mountain slope or ridge
8	Group	A number of similar small ice masses occurring in close proximity and too small to be assessed individually
9	Remnant	An inactive, usually small ice mass left by a receding glacier

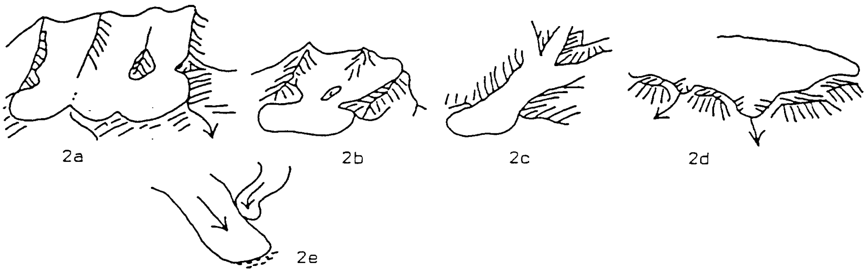


1a 1b 1c 1d 1e

Digit 3: Frontal characteristics

0	Miscellaneous	Any type not listed below (explain)
1	Piedmont	Icefield formed on a lowland by lateral expansion of one or coalescence of several glaciers (Fig. 2a, 2b)
2	Expanded foot	Lobe or fan formed where the lower portion of the glacier leaves the confining wall of a valley and extends on to a less restricted and more level surface (Fig. 2c)
3	Lobed	Part of an ice sheet or ice cap, disqualified as an outlet glacier (Fig. 2d)
4	Calving	Terminus of a glacier sufficiently extending into sea or lake water to produce icebergs; includes – for this inventory – dry land calving which would be recognisable from the "lowest glacier elevation"

5 Coalescing, non-contributing (Fig. 2e)
6 Irregular, mainly clean ice (mountain or valley glaciers)
7 Irregular, debris-covered (mountain or valley glaciers)
8 Single lobe, mainly clean ice (mountain or valley glaciers)
9 Single lobe, debris-covered (mountain or valley glaciers)



15. Number of data sheets submitted

Number of data sheets submitted for this glacier concerning information on Variations in the Position of Glacier Fronts, Mass Balance Study Results, Summary Data, etc.

16. Remarks

Any important information or comments not included above may be given here. Comments about the accuracy of the various numerical data may be made. No fields for quantitative accuracy ratings of the various data have been given on the data sheet. Only significant decimals should be given for area and length.

WORLD GLACIER MONITORING SERVICE

VARIATIONS IN THE POSITION OF GLACIER FRONTS 1995–2000

NOTES ON THE COMPLETION OF THE DATA SHEET

1. **Country or Territory**
   Name of country or territory where the glacier is located (for abbreviation, see this issue, p. 3).

2. **Glacier Number (former PSFG number)**
   See "Notes on the completion of the data sheet: GENERAL INFORMATION ON THE OBSERVED GLACIERS 1995–2000".

3. **Glacier Name**
   The name of the glacier should be written in CAPITAL letters.

4. **Observed since**
   Year of the first known quantitative survey, with available data.

5. **Date of Initial Survey for Reported Period**
   "Initial survey" is defined here as the last survey performed before 1996, whereby the position or the variation in the position of the glacier front was determined quantitatively.
   The "initial survey" will normally be the 1995 survey. If no survey was carried out in 1995, or if only qualitative data are available for 1995, the "initial survey" will, of course, be an earlier quantitative one.

6. **Variation (Survey previous to 19.. survey)**
   (refers also to 9, 12, 15 and 18)
   Variation in horizontal projection between previous survey and present survey.
   Units: metres
   Sign : + advance
   - retreat

   Missing data:
   If no data are available for a particular year, the corresponding data field should be deleted.

   Qualitative data:
   If no quantitative data are available for a particular year, but qualitative data are available, then variations should be denoted by using the following symbols placed in the positions on the far left of the corresponding data field:
   ST : no apparent variation (stationary)
   +X : apparent advance (numerical value unknown)

- X : apparent retreat (numerical value unknown)
SN : glacier tongue is covered with snow making survey impossible

In the case of qualitative data, the variations will be understood with reference to the previous survey, whether quantitative or qualitative.

7. Altitude of Snout/Lowest Point
(refers also to 10, 13, 16 and 19)
If the altitude of the snout or the lowest point of the glacier has also been measured, it should be indicated in the corresponding data field, and the inappropriate term (i.e., snout or lowest point) should be deleted.

Missing data: delete the corresponding field.

8. Date of Survey
(refers also to 11, 14, 17 and 20)
For each survey performed, please indicate the complete date (day, month, year).

Missing data:
no survey: delete corresponding field.
Day unknown or day and month unknown: put question mark(s) in corresponding field(s).

21. Error
Estimated maximum error

22. Method
The following indications should be given here:
a = aerial photogrammetry
b = terrestrial photogrammetry
c = geodetic ground survey (theodolite, tape, etc.)
d = combination of a, b or c (please explain under “25. Remarks”)
e = other methods (please explain under “25. Remarks”) or no information

23. Investigator(s)
Name(s) of the person(s) or agency doing the field work and/or the name(s) of the person(s) or agency processing the data.

24. Sponsoring Agency
Full name, abbreviation and address of the agency where the data are kept.

25. Remarks
Any important information or comments not included above may be given here. If a regular survey has been discontinued for some reason, this should be indicated here.

WORLD GLACIER MONITORING SERVICE

MASS BALANCE STUDY RESULTS SUMMARY DATA 1995–2000

NOTES ON THE COMPLETION OF THE DATA SHEET

The present data sheet strives to accommodate inherent ambiguities in mass balance data by providing several data fields. It is not expected that all fields on the data sheet can be completed fully.

The terminology used here mainly follows that given in the UNESCO/IAHS publication "Combined heat, ice and water balances at selected basins" (Technical Papers in Hydrology No. 5, 1970, Appendix 2). To avoid confusion and to assure continuity of the reported data, the same terms are used as in Volumes III, IV, V, VI and VII. It remains the task of national correspondents to define the exact meaning of the given information as carefully as possible.

1. **Country or Territory**
   Name of country or territory where the glacier is located (for abbreviations, see this issue, p. 3).

2. **Glacier Number (former PSFG number)**
   See "Notes on the completion of the data sheet: GENERAL INFORMATION ON THE OBSERVED GLACIERS 1995–2000".

3. **Glacier Name**
   The name of the glacier should be written in CAPITAL letters.

4. **Start of continuous mass balance measurements**
   Year when continuous measurement of mass balance started.

5. **Time System**
   The appropriate code number should be entered here:
   1 = stratigraphic system
   2 = fixed date system
   3 = combined system
   4 = other (please explain under "22. Remarks")

   Where it is not clear whether the method of measurement corresponds to the "stratigraphic" or to the "fixed date" system, it should be defined as "other" and an appropriate comment made under "22. Remarks". Note that observations with the "combined system" (Mayo and others 1972) contain more information than can be given in the data sheet.

6. Number of Measurement Points
Number of measurement sites in the accumulation (left) and ablation (right) areas. Repeated measurements may be made at a single site for the purpose of obtaining an average value for the site, but each site may be counted only once.

When the number of measurement points is not constant over the reported period, the range should be given.

7. Beginning of Balance/Measurement Year
Day and month of the beginning of the balance year (stratigraphic system), if known, or day and month of the beginning of the measurement year (fixed date system).

8. End of Winter Season
Day and month of the end of the winter season (if known).

9. End of Balance/Measurement Year
Day and month of the end of the balance year (stratigraphic system), if known, or day and month of the end of the measurement year (fixed date system).

10. Winter Balance (specific)
"Specific" means "total" value divided by the total area of the glacier.

11. Summer Balance (specific)
Similar to 10.

14. Net/Annual Balance (specific)
Similar to 10.
Sign: put the correct sign in the sign box
+ : mass increase
- : mass decrease

15. Accumulation Area

16. Ablation Area

17. Total Area

18. Accumulation Area Ratio
Accumulation area (15.) divided by the total area (17.) multiplied by 100.

19. Equilibrium Line/Annual Equilibrium Line
Mean altitude (averaged over the glacier) of the equilibrium line/annual equilibrium line.

20. Investigator(s)
Name(s) of the person(s) or agency doing the field work and/or the name(s) of the person(s) or agency processing the data.

21. Sponsoring Agency
Full name, abbreviation and address of the agency where the data are kept.

22. Remarks
Any important information or comments not included above may be given here. If a regular survey has been discontinued for some reason, it should be indicated here.

WORLD GLACIER MONITORING SERVICE

SPECIAL EVENTS 1995–2000

NOTES ON THE COMPLETION OF THE DATA SHEET

This data sheet should be completed in cases of extraordinary events, especially those concerning glacier hazards and dramatic changes of glaciers (cf. Point 4.).

1. Country or Territory
Name of country or territory where the glacier is located (for abbreviations, see this issue, p. 3).

2. Glacier Number (former PSFG number)
See ‘Notes on the completion of the data sheet: GENERAL INFORMATION ON THE OBSERVED GLACIERS’.

3. Glacier Name
The name of the glacier should be written in CAPITAL letters.

4. Type of Event
Enter one (or more) of the following numbers:
1 = glacier surge
2 = calving instability
3 = glacier flood, debris flow, mudflow
4 = large ice avalanche
5 = tectonic impact (earthquake, volcanic eruption)
6 = other

5. Short Description
Please give quantitative information wherever possible, for example:
– surge: date and location of onset, duration, flow or advance velocities, discharge anomalies, periodicity;
– calving instability: rate of retreat, iceberg discharge, ice flow velocity and water depth at calving front;
– glacier flood, debris flow, mudflow: outburst volume, outburst mechanism, peak discharge, sediment load, reach and propagation velocity of flood wave or front of debris flow/mudflow;
– ice avalanche: volume released, runout distance, overall slope of avalanche path;
– tectonic impact: volumes, runout distances and overall slopes of rock slides on glacier surfaces, amount of geothermal melting in craters, etc.

6. Reference or Most Important Data Source
Please indicate at least one or two references or sources which could help the reader to locate more detailed information, or give the name(s) of contact person(s) who

would be able to supply additional information.

7. Remarks
Amount or kind of possible destruction, particular technical measures taken against glacier hazards, or special studies carried out in connection with this event can be mentioned.

Notes

Notes

WORLD GLACIER MONITORING SERVICE

GENERAL INFORMATION ON THE OBSERVED GLACIERS 1995–2000

TABLE A

NR	Record number
GLACIER NAME	15 alphabetic or numeric digits
PSFG NUMBER	5 digits identifying glacier with alphabetic prefix denoting country
LAT	Latitude in decimal degrees north or south
LONG	Longitudes in decimal degrees east or west
CODE	3 digits giving “primary classification”, “form” and “frontal characteristics”, respectively
EXP AC	Exposition of accumulation area (cardinal points)
EXP AB	Exposition of ablation area (cardinal points)
ELEVATION MAX	Maximum elevation of glacier in metres
ELEVATION MED	Median elevation of glacier in metres
ELEVATION MIN	Minimum elevation of glacier in metres
AREA	Total area of glacier in square kilometres
LEN	Length of glacier along a flowline from maximum to minimum elevation in kilometres
TYPE OF DATA	B = Variations in the positions of glacier fronts 1995–2000 or Variations in the position of glacier fronts: addenda from earlier years
	C = Mass Balance summary data 1995–2000 or Mass Balance summary data: addenda from earlier years
	D = Changes in area, volume and thickness
	F = Index measurements or special events – see Chapter 7

NR	GLACIER NAME	PSFG NR	LAT	LONG	CODE	EXP AC	EXP AB	ELEVATION MAX	ELEVATION MED	ELEVATION MIN	AREA KM²	LEN KM	TYPE OF DATA
	<u>ARGENTINA</u>												
1	HORCONES INF.	AR5006	32.67 S	70.00 W	5 2 9	SE	SE					11	F
2	DE LOS TRES	AR	49.33 S	73.00 W	5 4 4	SE	SE	1990		1200	0.976	1.7	B C
3	MARTIAL	AR0131	54.78 S	68.42 W	1 4 3	SE	SE	1170	1050	940	1.0	0.45	B D
4	MARTIAL ESTE	AR	54.78 S	68.40 W	6 4 6	SE	SE	1170	1070	970	0.093	0.33	D
	<u>AUSTRIA</u>												
5	AEU.PIRCHLKAR	AT0229	47.00 N	10.92 E	6 0 6	SE	NE	3260	3030	2720	0.94	1.9	B
6	ALPEINER F.	AT0307	47.05 N	11.13 E	5 2 8	N	NE	3340	2930	2310	3.94	4.6	B
7	BACHFALLEN F.	AT0304	47.08 N	11.08 E	6 0 8	N	N	3120	2850	2580	2.55	2.9	B
8	BAERENKOPF K.	AT0702	47.13 N	12.72 E	6 2 4	N	N	3400	3030	2270	2.5	3.1	B
9	BERGLAS F.	AT0308	47.07 N	11.12 E	6 0 8	E	NE	3290	2990	2490	1.47	2.5	B
10	BIELTAL F W	AT0105B	46.87 N	10.13 E	6 4 6	NW	NW	2810	2680	2540	0.29	0.9	B
11	BIELTAL F.	AT0105A	46.88 N	10.13 E	6 0 6	NW	NW	3000	2740	2544	0.73	1.1	B
12	BRENNKOGL K.	AT0727	47.10 N	12.80 E	6 4 6	N	N	2960	2670	2430	0.59	1.2	B
13	DAUNKOGEL F.	AT0310A	47.00 N	11.10 E	6 0 8	NE	NE	3240	2880	2550	2.69	2.9	B
14	DIEM F.	AT0220	46.82 N	10.95 E	6 0 8	NW	NW	3540	3060	2710	3.5	3.4	B
15	DORFER K.	AT0509	47.10 N	12.33 E	6 2 8	SE	SE	3600	2790	2270	6.24	4	B
16	EISKAR G.	AT1301	46.62 N	12.90 E	6 4 6	N	N	2390	2250	2160	0.151	0.4	B
17	FERNAU F.	AT0312	46.98 N	11.13 E	6 4 8	NW	N	3310	2850	2380	2.02	2.5	B
18	FREIGER F.	AT0320	46.97 N	11.20 E	6 0 6	NE	NE	3370	3090	2720	0.59	1.5	B
19	FREIWAND K.	AT0706	47.10 N	12.75 E	6 4 8	SE	SE	3130	2890	2690	0.35	1.1	B
20	FROSNITZ K.	AT0507	47.08 N	12.40 E	6 3 6	E	E	3330	2780	2400	4.19	4.4	B
21	FURTSCHAGL K.	AT0406	47.00 N	11.77 E	6 0 8	NW	NW	3480	2890	2542	1	1.6	B
22	GAISKAR F.	AT0325	46.97 N	11.12 E	6 4 8	SE	SE	3190	3070	2890	0.75	1.1	B
23	GAISSBERG F.	AT0225	46.83 N	11.07 E	5 2 8	NW	NW	3390	2850	2460	1.35	3.3	B
24	GEPATSCH F.	AT0202	46.85 N	10.77 E	5 2 8	NE	N	3536	3057	2060	17.346	8.2	B D
25	GOESSNITZ K.	AT1201	46.97 N	12.75 E	6 4 7	NW	NW	3060	2690	2520	0.86	1.5	B
26	GR GOLDBERG K.	AT0802B	47.03 N	12.47 E	6 4 8	SE	NE	3080	2680	2310		2.8	B
27	GR.GOSAU G.	AT1101	47.48 N	13.60 E	6 4 6	NW	NW	2810	2520	2250	1.48	2.2	B
28	GROSSELEND K.	AT1001	47.03 N	13.32 E	6 3 6	NW	NW	3140	2720	2410	2.76	2.4	B
29	GRUENAU F.	AT0315	46.98 N	11.20 E	6 4 8	N	N	3415	2941	2363	1.72	2.24	B D
30	GURGLER F.	AT0222	46.80 N	10.98 E	5 2 8	NW	N	3420	2990	2270	11.14	8	B
31	GUSLAR F.	AT0210	46.85 N	10.80 E	6 4 8	E	SE	3480	3120	2780	1.76	2.5	B
32	HALLSTAETTER G.	AT1102	47.48 N	13.62 E	6 0 8	NE	NE	2910	2560	2080	3.3	2.3	B
33	HINTEREIS FERNER	AT0209	46.80 N	10.77 E	5 2 8	E	NE	3727	3011	2400	8.53	7.1	B C D
34	HOCHALM K.	AT1005	47.02 N	13.33 E	6 3 6	E	E	3350	2880	2540	3.16	2.4	B
35	HOCHJOCH F.	AT0208	46.78 N	10.82 E	5 2 6	N	NW	3500	3030	2580	7.13	3.8	B
36	HORN K.(SCHOB.)	AT1202	46.97 N	12.77 E	6 4 8	N	NW	3010	2780	2600	0.46	1.1	B
37	HORN K.(ZILLER)	AT0402	47.00 N	11.82 E	5 3 8	N	N	3213	2777	2089	3.416	3	B D
38	INN.PIRCHLKAR	AT0228	47.00 N	10.92 E	6 5 6	E	NE	3340	2990	2720	0.62	1.8	B
39	JAMTAL F.	AT0106	46.87 N	10.17 E	5 2 8	N	N	3120	2780	2370	3.68	2.8	B C
40	KAELBERSPITZ K.	AT1003	47.03 N	13.28 E	6 0 8	N	N	2890	2690	2450	0.82	2.2	B
41	KARLES F.	AT0207	46.93 N	10.92 E	6 4 6	N	NW	3350	2950	2620	1.54	2	B

NR	GLACIER NAME	PSFG NR	LAT	LONG	CODE	EXP		ELEVATION			AREA	LEN	TYPE OF
						AC	AB	MAX	MED	MIN	KM²	KM	DATA
42	KARLINGER K.	AT0701	47.13 N	12.70 E	6 2 4	NE	N	3340	2800	2060	4.04	3.6	B
43	KESSELWAND F.	AT0226	46.83 N	10.80 E	6 3 8	SE	E	3490	3180	2698	4.17	4.25	B C
44	KL.FLEISS K.	AT0801	47.05 N	12.95 E	6 0 6	W	W	3080	2840	2510	1.57	2.3	B
45	KLEINEISER K.	AT0717	47.15 N	12.67 E	6 4 6	NW	NW	2880	2730	2620	0.25	0.7	B
46	KLEINELEND K.	AT1002	47.07 N	13.25 E	6 3 4	NE	NE	3190	2750	2150	3.04	2.7	B
47	KLOSTERTALER M.	AT0102B	46.87 N	10.07 E	6 0 8	W	W	3220	2940	2640	0.45	1.6	B
48	KLOSTERTALER N.	AT0102A	46.87 N	10.07 E	6 0 8	NW	NW	3220	2880	2600	0.62	1.7	B
49	KRIMMLER K.	AT0501A	47.08 N	12.25 E	6 2 6	NW	NW	3490	2550	1910	7.52	3.5	B
50	LAENGENTALER F.	AT0305	47.08 N	11.10 E	6 4 7	NE	N	3200	2820	2540	0.89	2.2	B
51	LANDECK K.	AT0604	47.13 N	12.58 E	6 4 6	N	N	2940	2600	2430	0.41	0.9	B
52	LANGTALER F.	AT0223	46.80 N	11.02 E	5 3 8	N	NW	3420	2910	2450	3.05	5.1	B
53	LIESENSER F.	AT0306	47.08 N	11.13 E	6 2 6	NE	NE	3270	2930	2430	4.17	4.6	B
54	LITZNERGL.	AT0101	46.88 N	10.03 E	6 4 7	N	N	2970	2630	2450	0.71	1.2	B
55	MARZELL F.	AT0218	46.78 N	10.88 E	5 2 8	NW	N	3620	3160	2450	5.14	4.4	B
56	MAURER K. (GLO.)	AT0714	47.18 N	12.68 E	6 4 6	W	W	2890	2730	2610	0.49	1.4	B
57	MAURER K.(VEN.)	AT0510	47.08 N	12.30 E	6 0 8	S	S	3490	2840	2330	7.33	3.1	B
58	MITTERKAR F.	AT0214	46.88 N	10.87 E	6 4 6	SE	SE	3580	3230	2960	1.1	2.1	B
59	MUTMAL F.	AT0227	46.78 N	10.92 E	6 4 8	N	NW	3520	3080	2720	0.79	1.5	B
60	NIEDERJOCH F.	AT0217	46.78 N	10.87 E	5 2 8	N	N	3600	3100	2690	2.9	3	B
61	OBERSULZBACH K.	AT0502	47.12 N	12.30 E	5 1 8	NW	NW	3600	2730	1990	15.3	5.7	B
62	OCHSENTALERGL.	AT0103	46.85 N	10.10 E	5 2 8	N	N	3160	2910	2290	2.59	2.8	B C
63	OEDENWINKEL K.	AT0712	47.12 N	12.65 E	5 3 9	NW	NW	3180	2590	2130	2.22	3.8	B
64	PASTERZEN K.	AT0704	47.10 N	12.70 E	5 2 8	SE	SE	3700	2990	2070	19.78	9.4	B
65	PFAFFEN F.	AT0324	46.95 N	11.13 E	6 4 8	W	W	3470	3060	2770	1.21	1.8	B
66	PRAEGRAT K.	AT0603	47.12 N	12.58 E	6 0 6	W	W	3020	2800	2630	1.44	1.1	B
67	RETTENBACH F.	AT0212	46.93 N	10.93 E	6 4 6	N	N	3350	2920	2610	1.79	2.5	B
68	RIFFL K. N	AT0718	47.13 N	12.67 E	6 4 6	W	SW	3070	2880	2710	0.26	0.8	B
69	ROFENKAR F.	AT0215	46.88 N	10.88 E	6 4 4	SE	SE	3750	3290	2820	1.26	2.2	B
70	ROTMOOS F.	AT0224	46.82 N	11.05 E	6 2 8	N	N	3410	2960	2370	3.17	3.3	B
71	SCHALF F.	AT0219	46.78 N	10.93 E	5 2 8	NW	NW	3500	3130	2500	8.47	5.6	B
72	SCHAUFEL F.	AT0311	46.98 N	11.12 E	6 0 8	NE	NE	3150	2850	2560	1.46	2.3	B
73	SCHLADMINGER G.	AT1103	47.47 N	13.63 E	6 4 6	NE	NE	2700	2600	2420	0.81	0.9	B
74	SCHLAPPEREBEN K.	AT0805	47.02 N	13.02 E	6 4 8	N	NE	3000	2780	2554	0.74	1.3	B
75	SCHLATEN K.	AT0506	47.12 N	12.38 E	5 1 8	NE	NE	3670	2810	1940	11.27	6.3	B
76	SCHLEGEIS K.	AT0405	46.98 N	11.77 E	6 0 4	NW	NW	3480	2846	2446	4.542	1.7	B D
77	SCHMIEDINGER K.	AT0726	47.18 N	12.68 E	6 0 6	NE	NE	3160	2750	2410	1.81	2	B
78	SCHNEEGLOCKEN	AT0109	46.87 N	10.10 E	6 4 6	NE	NE	3020	2770	2570	0.72	1.2	B
79	SCHNEELOCH G.	AT1104	47.50 N	13.60 E	6 4 8	NW	NW	2530	2300	2190	0.23	0.8	B
80	SCHWARZENBERG F.	AT0303	47.05 N	11.12 E	6 3 8	SE	SW	3490	3030	2590	1.84	2.9	B
81	SCHWARZENSTEIN	AT0403	47.02 N	11.85 E	5 0 8	NW	NW	3320	2902	2319	4.12	2.5	B D
82	SCHWARZKARL K.	AT0716	47.17 N	12.67 E	6 4 6	NW	NW	2970	2750	2560	0.47	1.2	B
83	SCHWARZKOEPFL K.	AT0710	47.15 N	12.72 E	6 4 8	N	NW	2860	2570	2340	0.54	1.2	B
84	SEXEGERTEN F.	AT0204	46.90 N	10.80 E	6 2 8	N	NE	3470	2950	2560	2.83	2.9	B
85	SIMMING F.	AT0318	46.98 N	11.25 E	6 0 8	N	N	3170	2700	2340	2.52	2.3	B

NR	GLACIER NAME	PSFG NR	LAT	LONG	CODE	EXP AC	EXP AB	ELEVATION MAX	ELEVATION MED	ELEVATION MIN	AREA KM²	LEN KM	TYPE OF DATA
86	SIMONY K.	AT0511	47.07 N	12.27 E	6 0 9	SE	SE	3490	2810	2230	4.16	3.5	B
87	SONNBLICK KEES	AT0601A	47.13 N	12.60 E	6 0 6	NE	E	3050	2780	2500	1.50	1.5	B C
88	SPIEGEL F.	AT0221	46.83 N	10.95 E	6 4 8	NW	NW	3430	3080	2780	1.11	1.7	B
89	SULZENAU F.	AT0314A	46.98 N	11.15 E	5 1 8	N	N	3501	3012	2468	4.47	3.64	B D
90	SULZTAL F.	AT0301	47.00 N	11.08 E	5 2 8	N	N	3350	2860	2290	4.48	4.1	B
91	TASCHACH F.	AT0205	46.90 N	10.87 E	5 2 8	N	NW	3760	3130	2240	8.16	5.6	B
92	TAUFKAR F.	AT0216	46.88 N	10.90 E	6 4 6	SE	SE	3340	3120	2980	0.44	1	B
93	TOTENFELD	AT0110	46.88 N	10.15 E	6 4 8	NE	NE	3040	2790	2550	0.72	1.5	B
94	TRIEBENKARLAS F.	AT0323	46.95 N	11.15 E	6 4 8	W	W	3460	3040	2760	1.79	2	B
95	UMBAL K.	AT0512	47.05 N	12.25 E	5 3 8	SW	SW	3440	2850	2230	7.33	5	B
96	UNTERSULZBACH K.	AT0503	47.13 N	12.35 E	5 2 8	N	NW	3670	2720	2070	5.92	6.3	B
97	VERBORGENBERG F.	AT0322	47.07 N	11.12 E	6 4 6	E	E	3260	3000	2780	0.89	1.3	B
98	VERMUNTGL.	AT0104	46.85 N	10.13 E	6 2 8	NW	NW	3130	2790	2430	2.16	2.8	B C
99	VERNAGT FERNER	AT0211	46.88 N	10.82 E	6 2 6	S	SE	3627	3142	2765	8.71	3.15	B C D
100	VILTRAGEN K.	AT0505	47.13 N	12.37 E	5 2 8	NE	E	3480	2660	2190	4.35	4.5	B
101	W.TRIPP K.	AT1004	47.02 N	13.32 E	6 4 6	SE	S	3230	2880	2780	0.6	1.5	B
102	WASSERFALLWINKL	AT0705	47.12 N	12.72 E	6 3 8	SE	S	3150	2870	2610	1.93	2.5	B
103	WAXEGG K.	AT0401	47.00 N	11.80 E	6 3 6	NE	N	3310	2852	2394	3.207	1.97	B D
104	WEISSEE F.	AT0201	46.85 N	10.72 E	6 0 8	N	N	3530	2970	2540	3.48	3.4	B
105	WILDGERLOS	AT0404	47.15 N	12.12 E	6 0 8	N	N	3260	2650	2110	3.68	2.8	B
106	WINKL K.	AT1006	47.02 N	13.32 E	6 4 8	W	W	3100	2710	2390	0.66	1.5	B
107	WURTEN K.	AT0804	47.03 N	13.00 E	6 2 8	SW	S	3120	2680	2380	0.97	3	B C
108	ZETTALUNITZ K.	AT0508	47.08 N	12.38 E	6 3 8	SW	SW	3470	2980	2450	5.47	4.5	B
	BOLIVIA												
109	CHACALTAYA	BO5180	16.35 S	68.12 W	6 4 8	S	S	5360	5225	5145	0.06	0.5	B C D
110	ZONGO	BO5150	16.25 S	68.17 W	5 3 8	S	E	6000	5450	4890	2.1	3	B C
	BULGARIA												
111	SNESHNIKA	BG	41.77 N	23.40 E	7 4 0	E	E	2312	2297	2287	0.007	0.1	F
	CANADA												
112	DEVON ICE CAP	CA0431	75.42 N	83.25 W	3 0 3	NW	NW	1890	1200	0	1667.6	50	C
113	HELM	CA0855	49.97 N	123.00 W	6 2 6	NW	NW	2150	1900	1770	0.92	2.4	C
114	MEIGHEN ICE CAP	CA1335	79.95 N	99.13 W	3 0 3			1267	600	70	85.0	56	C
115	PEYTO	CA1640	51.67 N	116.53 W	5 3 8	NE	NE	3190	2640	2130	11.45	5.3	C
116	PLACE	CA1660	50.43 N	122.60 W	5 3 8	NE	NW	2610	2089	1860	3.45	4.2	C
117	WHITE	CA2340	79.45 N	90.67 W	5 1 5	SE	SE	1780	1160	80	39.38	15.4	C
	CHILE												
118	AMALIA	CL0056	50.95 S	73.75 W	4 2 4	W	W				157	21	B
119	BLANCO CHICO	CL0074	41.15 S	71.92 W	- - -	W	W			780	7		B
120	CASA PANGUE	CL0073	41.13 S	71.87 W	- - -	N	N			695	7		B
121	CERRO BLANCO	CL0034	48.33 S	72.25 W	- - -								B

NR	GLACIER NAME	PSFG NR	LAT	LONG	CODE	EXP AC	EXP AB	ELEVATION MAX	ELEVATION MED	ELEVATION MIN	AREA KM²	LEN KM	TYPE OF DATA
122	CHICO	CL0059	49.00 S	73.07 W	4 2 4	N	N						B
123	CIPRESES	CL0071	34.55 S	70.37 W	6 2 5	W	W	4450	3680	2600	39.98	11.8	B
124	DICKSON	CL0063	50.78 S	73.15 W	4 2 4	SE	SE				71	10	B
125	ECHAURREN NORTE	CL0001B	33.10 S	70.53 W	6 4 3	SW	SW	3880	3750	3650	0.4	1.2	C
126	G30	CL0068	33.13 S	70.13 W	6 3 0	S	S	5000	3962	3995	1.29	2.5	B
127	G32	CL0069	33.13 S	70.12 W	6 3 0	S	S	4535	3983	4075	1.42	2.3	B
128	GALERIA	CL1016	52.79 S	73.01 W	- - -	NE	NE	1104		0	7.25	5.97	B
129	GCN09	CL1009	52.75 S	73.11 W	- - -	NW	NW	1625		101	51.46	14.2	B
130	GCN13	CL1013	52.76 S	73.03 W	- - -	NE	NE	712		96	1.26	2.65	B
131	GCN22	CL1021	52.83 S	73.01 W	- - -	E	E	777		105	1.23	2.06	B
132	GCN37	CL1036	52.89 S	73.09 W	- - -	S	S	1522		50	14.39	6.94	B
133	GCN38	CL1037	52.87 S	73.13 W	- - -	SW	SW	1626		58	9.47	6.63	B
134	GCN40	CL1039	52.84 S	73.19 W	- - -	W	W	1606		118	15.06	8.25	B
135	GCN41	CL1040	52.82 S	73.18 W	- - -	NW	NW	1326		451	3.1	2.84	B
136	GCN42	CL1041	52.81 S	73.14 W	- - -	NW	NW	1654		0	30.91	11.6	B
137	JUNCAL NORTE	CL0064	33.03 S	70.10 W	5 3 0	N	N			2958	9.02		B
138	JUNCAL SUR	CL0065	33.08 S	70.10 W	5 1 0	S	S	5860	4098	3880	25.6	14.6	B
139	LENGUA	CL1019	52.81 S	73.00 W	- - -	SE	SE	1013		98	3.62	4.09	B
140	OLIVARES BETA	CL0067	33.13 S	70.18 W	5 1 0	SW	SW	4900	4130	3850	10.5	6.6	B
141	OLIVARES GAMA	CL0066	33.13 S	70.17 W	5 1 0	S	S	5020	4098	3710	14.7	7.9	B
142	PIO XI	CL0044	49.22 S	74.00 W	4 2 4	W	W	3380		0	1265	64	B
143	RISOPATRON	CL0070	33.13 S	70.08 W	5 1 0	W	W	5596	3935	4295	5.4	5.4	B
144	TRINIDAD	CL0055	49.42 S	73.75 W	- - -	S	S						B
145	TRONQUITOS	CL0029	28.53 S	69.72 W	6 4 8	SW	SW	5600		4850	1.7	2.4	B
146	UNIVERSIDAD	CL0072	34.70 S	70.33 W	5 1 0	SW	SW			2500			B
147	VERDE	CL0075	41.20 S	71.83 W	- - -	S	S			1045	8.1		B
	CHINA												
148	LAPATE NO.51	CN0027	43.70 N	84.40 E	6 4 0	NE	NE	4049	3640	3400	1.48	1.7	B
149	URUMQIHE E-BR.	CN1001	43.08 N	86.82 E	6 2 8	NE	NE	4267	3977	3736	1.115	2.1	B C
150	URUMQIHE S.NO.1	CN0010	43.08 N	86.82 E	6 2 2	NE	NE	4486	4040	3736	1.742	2.2	C
151	URUMQIHE W-BR.	CN1002	43.08 N	86.82 E	6 2 8	NE	NE	4486	4082	3820	0.627	1.9	B C
	C.I.S.												
152	1.14.03.17	SU	39.27 N	73.55 E	5 - 8	N	N						B
153	10.14.03.17	SU	39.08 N	73.70 E	5 - 8	NW	NW						B
154	100.14.03.14	SU	37.98 N	72.72 E	5 - 8	E	NE						B
155	101.14.03.14	SU	37.98 N	72.75 E	5 - 8	NE	NE						B
156	12.14.03.17	SU	39.13 N	73.70 E	5 - 8	NW	NW						B
157	134.14.03.17	SU	38.85 N	73.03 E	5 - 8	N	N						B
158	136.14.03.17	SU	38.85 N	73.02 E	5 - 8	N	N						B
159	139.14.03.17	SU	38.87 N	73.00 E	5 - 8	N	N						B
160	15.14.03.17	SU	39.12 N	73.68 E	5 - 8	NW	NW						B
161	152.14.03.14	SU	37.90 N	73.02 E	6 - 7	N	N						B

NR	GLACIER NAME	PSFG NR	LAT	LONG	CODE	EXP		ELEVATION			AREA	LEN	TYPE OF
						AC	AB	MAX	MED	MIN	KM²	KM	DATA
162	155.14.03.14	SU	37.95 N	73.02 E	5 - 8	N	N						B
163	159.14.03.14	SU	37.92 N	73.03 E	5 - 8	NE	N						B
164	16.14.03.17	SU	39.10 N	73.67 E	6 - 7	NW	NW						B
165	160.14.03.14	SU	37.92 N	73.05 E	5 - 8	N	N						B
166	161.14.03.14	SU	37.95 N	73.07 E	5 - 8	N	N						B
167	165.14.03.14	SU	37.92 N	73.08 E	5 - 8	NE	N						B
168	168.14.03.14	SU	37.93 N	73.12 E	6 - 8	NE	E						B
169	169.14.03.14	SU	37.92 N	73.13 E	5 - 8	NE	N						B
170	170.14.03.14	SU	37.92 N	73.15 E	5 - 8	NE	NE						B
171	172.14.03.14	SU	37.93 N	73.18 E	6 - 8	N	N						B
172	173.14.03.14	SU	37.93 N	73.18 E	5 - 8	NE	N						B
173	174.14.03.14	SU	37.93 N	73.20 E	5 - 8	N	NW						B
174	208.14.03.14	SU	38.12 N	73.08 E	5 - 8	NW	W						B
175	239.14.03.17	SU	39.12 N	72.95 E	5 - 8	N	N						B
176	240.14.03.17	SU	39.08 N	72.95 E	5 - 8	NW	NW						B
177	241.14.03.17	SU	39.07 N	72.92 E	5 - 8	NW	NW						B
178	242.14.03.14	SU	38.20 N	73.12 E	5 - 8	NW	N						B
179	242.14.03.17	SU	39.08 N	72.93 E	5 - 8	NW	NW						B
180	243.14.03.14	SU	38.20 N	73.13 E	5 - 8	NW	NW						B
181	254.14.03.17	SU	39.07 N	72.85 E	5 - 8	NE	E						B
182	257.14.03.17	SU	39.10 N	72.85 E	5 - 8	SE	SE						B
183	259.14.03.17	SU	39.10 N	72.87 E	5 - 8	S	S						B
184	26.14.03.17	SU	38.97 N	73.82 E	5 - 8	NW	NW						B
185	260.14.03.17	SU	39.10 N	72.88 E	5 - 8	SE	SE						B
186	261.14.03.17	SU	39.12 N	72.87 E	5 - 8	E	E						B
187	262.14.03.17	SU	39.13 N	72.87 E	5 - 8	SE	SE						B
188	263.14.03.17	SU	39.13 N	72.90 E	5 - 8	SE	SE						B
189	264.14.03.17	SU	39.15 N	72.90 E	5 - 8	SE	SE						B
190	268.14.03.17	SU	39.17 N	72.95 E	5 - 8	SE	SE						B
191	269.14.03.17	SU	39.17 N	72.97 E	5 - 8	SE	SE						B
192	270.14.03.17	SU	39.18 N	73.02 E	6 - 7	NE	NE						B
193	271.14.03.17	SU	39.20 N	73.03 E	6 - 7	NE	NE						B
194	273.14.03.14	SU	38.18 N	73.13 E	5 - 8	E	SE						B
195	273.14.03.17	SU	39.20 N	72.98 E	5 - 8	NE	NE						B
196	279.14.03.14	SU	38.13 N	73.03 E	5 - 8	NE	NE						B
197	280.14.03.14	SU	38.13 N	73.07 E	6 - 8	N	N						B
198	281.14.03.14	SU	38.12 N	73.10 E	6 - 8	N	N						B
199	284.14.03.14	SU	38.05 N	73.10 E	5 - 8	NE	NE						B
200	3.14.03.17	SU	39.23 N	73.58 E	3 - 6	SW	SW						B
201	30.14.03.17	SU	38.95 N	73.78 E	5 - 8	N	N						B
202	306.14.03.14	SU	38.05 N	73.23 E	6 - 8	N	N						B
203	31.14.03.14	SU	38.10 N	72.47 E	5 - 8	E	E						B
204	31.14.03.17	SU	38.95 N	73.77 E	5 - 8	N	N						B
205	314.14.03.08	SU	39.17 N	72.78 E	5 - 8	E	E						B

NR	GLACIER NAME	PSFG NR	LAT	LONG	CODE	EXP		ELEVATION			AREA	LEN	TYPE OF
						AC	AB	MAX	MED	MIN	KM^2	KM	DATA
206	315.14.03.08	SU	39.18 N	72.82 E	5 - 8	SE	SE						B
207	324.14.03.08	SU	39.20 N	72.72 E	5 - 8	NE	N						B
208	329.14.03.14	SU	38.08 N	73.25 E	6 - 8	NW	NW						B
209	331.14.03.14	SU	38.10 N	73.30 E	6 - 8	N	N						B
210	336.14.03.14	SU	38.08 N	73.28 E	5 - 8	E	NE						B
211	34.14.03.17	SU	38.93 N	73.73 E	6 - 7	NW	NW						B
212	36.14.03.17	SU	38.92 N	73.73 E	5 - 8	W	W						B
213	375.14.03.15	SU	37.68 N	72.77 E	6 - 8	NE	NE						B
214	38.14.03.14	SU	38.08 N	72.53 E	6 - 8	E	E						B
215	385.14.03.15	SU	37.70 N	72.70 E	5 - 8	N	N						B
216	388.14.03.15	SU	37.72 N	72.68 E	6 - 7	N	N						B
217	39.14.03.14	SU	38.07 N	72.53 E	6 - 8	N	E						B
218	390.14.03.15	SU	37.70 N	72.65 E	5 - 8	N	N						B
219	394.14.03.15	SU	37.72 N	72.63 E	5 - 8	N	N						B
220	40.14.03.17	SU	38.90 N	73.88 E	5 - 8	NW	NW						B
221	41.14.03.17	SU	38.87 N	73.70 E	5 - 8	N	N						B
222	42.14.03.17	SU	39.30 N	73.18 E	5 - 8	NE	N						B
223	429.14.03.15	SU	37.60 N	72.72 E	5 - 8	NE	NE						B
224	434.14.03.15	SU	37.57 N	72.70 E	6 - 7	N	N						B
225	44.14.03.14	SU	38.03 N	72.57 E	6 - 8	E	E						B
226	446.14.03.13	SU	38.43 N	73.47 E	5 - 8	NE	N						B
227	447.14.03.08	SU	39.07 N	72.73 E	5 - 8	SW	W						B
228	448.14.03.08	SU	39.08 N	72.73 E	5 - 8	SW	SW						B
229	449.14.03.08	SU	39.05 N	72.73 E	5 - 8	NW	NW						B
230	449.14.03.13	SU	38.43 N	73.43 E	5 - 8	N	N						B
231	453.14.03.13	SU	38.48 N	73.40 E	5 - 8	NE	NE						B
232	46.14.03.14	SU	38.02 N	72.53 E	5 - 8	SE	E						B
233	464.14.03.08	SU	39.07 N	72.80 E	5 - 8	SW	SW						B
234	469.14.03.08	SU	39.05 N	72.80 E	5 - 8	SW	SW						B
235	47.14.03.14	SU	38.00 N	72.53 E	5 - 8	NE	NE						B
236	471.14.03.08	SU	39.03 N	72.80 E	5 - 8	SW	SW						B
237	473.14.03.08	SU	39.02 N	72.78 E	6 - 8	NW	NW						B
238	474.14.03.08	SU	39.00 N	72.77 E	6 - 8	NW	NW						B
239	499.14.03.13	SU	38.48 N	73.37 E	5 - 8	W	NW						B
240	5.14.03.17	SU	39.23 N	73.60 E	5 - 8	W	W						B
241	503.14.03.08	SU	38.87 N	72.95 E	5 - 8	N	N						B
242	506.14.03.08	SU	38.87 N	72.93 E	5 - 8	E	E						B
243	508.14.03.08	SU	38.88 N	72.93 E	6 - 8	E	E						B
244	509.14.03.08	SU	38.90 N	72.93 E	6 - 8	NE	NE						B
245	512.14.03.08	SU	38.87 N	72.92 E	5 - 8	NW	NW						B
246	514.14.03.08	SU	38.88 N	72.87 E	5 - 8	E	N						B
247	519.14.03.08	SU	38.92 N	72.88 E	5 - 8	N	N						B
248	52.14.03.14	SU	37.97 N	72.57 E	5 - 8	E	NE						B
249	520.14.03.08	SU	38.88 N	72.87 E	5 - 8	N	N						B

NR	GLACIER NAME	PSFG NR	LAT	LONG	CODE	EXP		ELEVATION			AREA	LEN	TYPE OF
						AC	AB	MAX	MED	MIN	KM²	KM	DATA
250	531.14.03.08	SU	38.92 N	72.82 E	6 - 8	N	N						B
251	532.14.03.08	SU	38.92 N	72.82 E	5 - 8	N	N						B
252	538.14.03.08	SU	38.80 N	72.97 E	5 - 8	N	N						B
253	54.14.03.14	SU	37.97 N	72.60 E	6 - 8	NE	NE						B
254	541.14.03.08	SU	38.82 N	72.95 E	6 - 8	NE	NE						B
255	543.14.03.08	SU	38.80 N	72.95 E	5 - 8	NW	NW						B
256	544.14.03.08	SU	38.78 N	72.93 E	5 - 8	N	N						B
257	549.14.03.08	SU	38.82 N	72.90 E	6 - 6	NE	NE						B
258	551.14.03.08	SU	38.80 N	72.88 E	5 - 8	W	N						B
259	558.14.03.08	SU	38.77 N	72.80 E	5 - 8	SE	E						B
260	560.14.03.08	SU	38.77 N	72.78 E	5 - 8	NE	E						B
261	572.14.03.08	SU	38.85 N	72.75 E	5 - 8	E	E						B
262	573.14.03.08	SU	38.88 N	72.75 E	5 - 8	E	E						B
263	578.14.03.08	SU	38.83 N	72.73 E	5 - 8	N	NW						B
264	579.14.03.08	SU	38.82 N	72.68 E	5 - 8	N	NE						B
265	580.14.03.08	SU	38.83 N	72.68 E	6 - 8	E	E						B
266	582.14.03.08	SU	38.85 N	72.70 E	5 - 8	NE	NE						B
267	586.14.03.08	SU	38.88 N	72.68 E	5 - 8	N	N						B
268	591.14.03.08	SU	38.85 N	72.63 E	6 - 8	N	N						B
269	593.14.03.08	SU	38.80 N	72.62 E	5 - 8	NW	NW						B
270	597.14.03.14	SU	38.13 N	73.07 E	6 - 8	N	N						B
271	598.14.03.14	SU	38.48 N	73.62 E	5 - 8	N	N						B
272	599.14.03.08	SU	38.88 N	72.58 E	5 - 8	E	NE						B
273	600.14.03.08	SU	38.88 N	72.57 E	5 - 8	E	NE						B
274	605.14.03.08	SU	38.93 N	72.60 E	6 - 8	NE	E						B
275	606.14.03.08	SU	38.95 N	72.63 E	6 - 8	E	E						B
276	608.14.03.08	SU	38.97 N	72.65 E	6 - 8	N	N						B
277	612.14.03.08	SU	38.98 N	72.62 E	5 - 8	N	N						B
278	614.14.03.08	SU	39.00 N	72.60 E	5 - 8	N	N						B
279	617.14.03.08	SU	38.95 N	72.60 E	5 - 8	NW	NW						B
280	622.14.03.08	SU	38.95 N	72.57 E	5 - 8	NE	NE						B
281	623.14.03.08	SU	38.95 N	72.55 E	5 - 8	NE	NE						B
282	72.14.03.17	SU	38.83 N	73.65 E	5 - 8	NE	NE						B
283	8.14.03.17	SU	39.15 N	73.68 E	5 - 8	NW	NW						B
284	83.14.03.14	SU	38.08 N	72.63 E	5 - 8	NE	NE						B
285	87.14.03.14	SU	38.08 N	72.68 E	5 - 8	N	N						B
286	89.14.03.14	SU	38.08 N	72.72 E	6 - 8	NE	NE						B
287	93.14.03.14	SU	38.02 N	72.72 E	5 - 8	NE	N						B
288	93.14.03.17	SU	38.45 N	73.57 E	5 - 8	N	NW						B
289	96.14.03.17	SU	38.45 N	73.53 E	5 - 8	N	N						B
290	ABRAMOV	SU4101	39.63 N	71.60 E	5 2 8	N	N	4960	4200	3620	25.83	9.4	B C
291	AKBAYTAL	SU4036	38.45 N	73.55 E	5 3 8	N	NE	5920		4750	5.5	4.6	B
292	BAKCHIGIR	SU4038	37.62 N	72.73 E	5 3 8	NE	NE	5200		4480	11.6	6	B
293	BELEULI	SU	39.08 N	72.77 E	5 - 8	N	NW						B

NR	GLACIER NAME	PSFG NR	LAT	LONG	CODE	EXP AC	EXP AB	ELEVATION MAX	ELEVATION MED	ELEVATION MIN	AREA KM²	LEN KM	TYPE OF DATA
294	BEZENGI	SU3006	43.13 N	42.97 E	5 2 9	NE	NE	5050		2080	36.2	17.6	B
295	BIRDZHALYCHIRAN	SU3026	43.37 N	42.53 E	0 0 6	NE	NE	5600	3650	3320	12.69	6.46	B
296	BITYUKTYUBE	SU3034	43.37 N	42.40 E	0 0 7	NW	NW	4670	4000	3325	2.22	3.34	B
297	BOLSHOY AZAU	SU3004	43.28 N	42.43 E	0 0 8	S	SE	5610	3900	2526	18.76	8.94	B
298	BUZ-CHUBEK	SU	38.83 N	73.62 E	5 - 8	NW	NW						B
299	CHAKYDZHILGA	SU	38.80 N	72.75 E	5 - 8	NE	NE						B
300	CHUNGURCHATCHIR	SU3027	43.37 N	42.55 E	0 0 6	NE	NE	5600	3650	3182	12.5	6.72	B
301	DJANKUAT	SU3010	43.20 N	42.77 E	5 2 8	N	NW	3990	3240	2700	2.74	4.2	B C D
302	DUSAKASAY	SU	38.90 N	72.55 E	5 - 8	NE	E						B
303	DZHAYLYAUKUMSAY	SU	38.80 N	72.57 E	5 - 8	NE	NE						B
304	DZHELO	SU7106	50.12 N	88.30 E	5 3 6	SE	SE	3780	3150	2590	8.66	5.53	B
305	FEDTSCHENKO	SU	38.70 N	72.33 E	- - -								D
306	GARABASHI	SU3031	43.30 N	42.47 E	0 0 8	SE	S	5000	3880	3316	4.47	5.8	B C
307	ICHKELSAY	SU	38.80 N	72.65 E	5 - 8	N	N						B
308	IRIK	SU3029	43.33 N	42.50 E	0 0 7	SE	SE	5600	3900	2623	10.1	8.51	B
309	IRIKCHAT	SU3028	43.33 N	42.53 E	0 0 7	SE	SE	3960	3650	3222	1.73	2.37	B
310	KARA-ART	SU	38.93 N	73.82 E	5 - 8	N	N						B
311	KARA-BATKAK	SU5080	42.10 N	78.30 E	5 3 8	N	N	4829	3886	3293	4.19	3.55	B C
312	KARACHAUL	SU3022	43.38 N	42.45 E	0 0 6	N	N	5610	4000	3093	5.14	6.14	B
313	KHAKEL	SU3003	43.17 N	41.67 E	5 3 9	N	N	3240		2270	2.7	3.9	B
314	KORUMDU	SU7103	50.13 N	87.68 E	5 3 6	NE	NE	4043	3150	2240	4.85	4.64	B
315	KORYTO	SU8003			5 3 8	NW	NW	1200	810	280	7.54	6.95	B C
316	KOZELSKIY	SU8005	53.23 N	158.82 E	5 3 9	S	S	2030	1590	880	1.80	4.56	B C F
317	KOZITSITI	SU3009	42.63 N	43.72 E	6 4 9	SW	SW						B
318	KRASNOSLOBODTSE.	SU	39.35 N	73.22 E	5 - 8	SE	S						B
319	KROPOTKINA	SU8006			6 4 9	N	N	1300	1180	1025			B
320	KYUKYURTLYU	SU3033	43.35 N	42.38 E	0 0 7	W	W	5640	4250	2768	6.59	7.43	B
321	KYZYLDZHILGA	SU	38.48 N	73.58 E	5 - 8	NE	N						B
322	LEVIY AKTRU	SU7102	50.08 N	87.72 E	5 3 6	SE	SE	4043	3250	2575	5.95	5.84	B C
323	LEVIY KARAGEMSK	SU7107	50.23 N	88.17 E	5 3 8	S	S	3760	3100	2290	4.04	3.4	B
324	M. OKTYABRSKIY	SU4037	39.18 N	73.00 E	5 3 8	NE	NE	6780		4440	32	19	B
325	MALIY AKTRU	SU7100	50.08 N	87.75 E	5 3 8	E	N	3714	3200	2234	2.73	4.22	B C
326	MALIY AZAU	SU3032	43.28 N	42.45 E	0 0 6	S	S	5610	4000	3077	8.47	7	B
327	MARUKHSKIY	SU3001	43.33 N	41.17 E	5 3 9	NE	NE	3160	2785	2490	3.33	4	B
328	MIKELCHIRAN	SU3025	43.37 N	42.50 E	0 0 6	NE	NE	4900	3900	3262	4.44	4.65	B
329	MIZHIRGICHIRAN	SU3043	43.05 N	43.17 E	5 2 9	N	NW	4670		2380	9.9	8.8	B
330	MUTNOVSKIY NE	SU8011			6 6 0	NW	NW	1950	1700	1460	1.38	1.7	B F
331	MUTNOVSKIY SW	SU8012			6 6 0	NE	NE	1800	1710	1500	1.09	1.5	B F
332	NANKALDY	SU	38.95 N	72.63 E	5 - 8	NE	NE						B
333	NICHKEDZHILGA	SU	38.80 N	72.70 E	5 - 8	N	NE						B
334	NO. 125 (VODOP.)	SU7105	50.10 N	87.70 E	3 0 3	N	N	3552	3230	3038	0.75	1.38	B C
335	NO. 462V (KUL. N.)	SU3005	43.08 N	42.92 E	5 3 9	NE	NE	4160		2500	4.1	3.7	B
336	PRAVIY KARAGEMS.	SU7109	50.17 N	88.13 E	5 3 8	SE	SE	3960	3200	2390	2.03	3.6	B
337	SEVERNIY DZHAYL.	SU	38.87 N	72.55 E	5 - 8	E	E						B

NR	GLACIER NAME	PSFG NR	LAT	LONG	CODE	EXP AC	EXP AB	ELEVATION MAX	ELEVATION MED	ELEVATION MIN	AREA KM²	LEN KM	TYPE OF DATA
338	SEVERNIY ZULUM.	SU	39.08 N	72.80 E	5 - 8	NE	N						B
339	SHUMSKIY	SU6001	45.08 N	80.23 E	5 3 6	N	N	4464	3660	3126	2.81	3.51	C
340	SKAZKA	SU3008	42.83 N	43.67 E	5 3 9	N	N	3760		2540	2	3.2	B
341	TERSKOL	SU3030	43.30 N	42.48 E	0 0 6	S	SE	5600	3900	2990	7.53	6.54	B
342	TS.TUYUKSUYSKIY	SU5075	43.05 N	77.08 E	5 3 6	N	N	4219	3770	3418	2.55	3.1	B C D
343	TSEYA	SU3007	42.92 N	43.67 E	5 2 9	NE	NE	4460		2200	9.7	8.6	B
344	ULLUCHIRAN	SU3021	43.38 N	42.43 E	0 0 7	N	N	5640	4100	3065	11.92	6.17	B
345	ULLUKAM	SU	43.32 N	42.40 E	0 - 9	SW	SW						B
346	ULLUKOL	SU3023	43.38 N	42.47 E	0 0 6	N	N	5600	3750	3363	2.37	5.7	B
347	ULLUMALIENDERKU	SU3024	43.38 N	42.48 E	0 0 6	N	N	5600	3750	3171	2.41	5.79	B
348	URTA-BAKCHIGIR 1	SU	37.67 N	72.72 E	5 - 8	N	N						B
349	URTA-BAKCHIGIR 2	SU	37.67 N	72.73 E	5 - 8	NE	NE						B
350	VOLODARSKIY 1	SU	39.03 N	72.88 E	5 - 8	N	N						B
351	VOLODARSKIY 2	SU	39.05 N	72.85 E	5 - 8	NE	NE						B
352	VOLODARSKIY 3	SU	39.05 N	72.90 E	5 - 8	NW	N						B
353	YUGO-VOSTOCHNIY	SU3018	42.28 N	46.27 E	5 4 7	NW	NW	3880	3480	3000	1.2	2.2	B
354	YUZHNIY	SU3017	42.28 N	46.25 E	6 4 9	N	N	3850	3400	2900	1.1	1.9	B
355	YUZHNIY KARAYKA.	SU	38.92 N	72.55 E	5 - 8	NE	N						B
356	ZAPADNIY OKTYAB.	SU	39.22 N	72.97 E	5 - 8	NE	NE						B
357	ZORTASHKOL	SU	38.45 N	73.50 E	5 - 8	NE	NW						B
358	ZULUMART	SU	39.13 N	72.78 E	5 - 8	NE	NE						B
	<u>COLOMBIA</u>												
359	ALFOMBRALES	CO0013	4.87 N	75.33 W	6 3 6	S	SW			4830	2.33		B
360	CENTRAL	CO0032	4.47 N	75.22 W	6 3 6	NW	NW	4900	4770	4700	0.6	0.81	B
361	EL OSO	CO0010			- - -					4910			B
362	GUALI	CO0003	4.90 N	75.33 W	6 3 3	NW	NW			5025	0.43		B
363	LA CONEJERA	CO0033	4.48 N	75.22 W	6 3 6	NW	NW	4870	4755	4700	0.33	1.08	B
364	LA LISA	CO0004	4.92 N	75.32 W	6 3 3	N	NW			5100	0.21		B
365	LAGUNA AZUL	CO0026	4.47 N	75.37 W	6 3 6	SE	E	4925	4738	4694	0.63	1.14	B
366	MOLINOS	CO0002	4.90 N	75.33 W	6 3 8	NW	NW	5260	5037	5126	0.31	1.2	B
367	NEREIDAS	CO0014	4.88 N	75.33 W	5 3 7	SW	W	5300	5040	4850	2.4	2.5	B
368	TRIDENTE	CO0012	4.88 N	75.32 W	6 3 8	S	S	5220	5035	4975	0.5	1.39	B
	<u>ECUADOR</u>												
369	ANTIZANA15ALPHA	EC0001	0.47 S	78.15 W	4 7 8	NW	NW	5760	5200	4830	0.37	2.0	B C
	<u>FRANCE</u>												
370	ARGENTIERE	FR0002	45.97 N	6.93 E	5 1 9	NW	NW	3100	2600	1550	15.6	9.4	B
371	BLANC	FR0031	44.95 N	6.22 E	5 3 8	E	S	4100	3000	2300	7.7	6	B
372	BOSSONS	FR0004	45.87 N	6.78 E	5 2 8	N	N	4800	3200	1190	10.53	7.2	B
373	GEBROULAZ	FR0009	45.28 N	6.63 E	5 3 9	N	N	3580	3000	2600	2.76	4	B
374	MER DE GLACE	FR0003	45.88 N	6.93 E	5 1 9	N	N	3600	3000	1480	33	12	B
375	SAINT SORLIN	FR0015	45.18 N	6.17 E	5 2 9	N	N	3460	2900	2650	3.0	2.9	B C

NR	GLACIER NAME	PSFG NR	LAT	LONG	CODE	EXP AC	EXP AB	ELEVATION MAX	ELEVATION MED	ELEVATION MIN	AREA KM²	LEN KM	TYPE OF DATA
376	SARENNES	FR0029	45.12 N	6.17 E	- - -	S	S	3190	3000	2830	0.5	1.5	C
	GERMANY												
377	HOELLENTAL	DE0003	47.72 N	11.00 E	5 4 8	NE	NE	2579	2358	2200	0.258	0.84	D
378	SCHNEEFERNER N	DE0001	47.42 N	10.98 E	6 4 8	E	E	2807	2640	2559	0.34	1.03	D
379	SCHNEEFERNER S	DE0002	47.40 N	10.97 E	6 4 8	NE	NE	2680	2591	2525	0.108	0.28	D
	ICELAND												
380	BREIDAMJOK.E.B	IS1126B	64.22 N	16.33 W	4 2 4	S	SE	1730		0	540	40	B C
381	BREIDAMJOK.W.A	IS1125A	64.17 N	16.47 W	4 2 4	E	SE	1900		60	160	20	B
382	BREIDAMJOK.W.C	IS1125C	64.17 N	16.47 W	4 2 3	SE	SE	1730		40	210	30	B
383	BRUARJOKULL	IS2400	64.67 N	16.17 W	4 3 3	N	N	1900	1255	550	1700	45	C
384	DYNGJUJOKULL	IS2600	64.67 N	17.00 W	4 2 3	N	N	2000	1475	700	1040		C
385	EYJABAKKAJOKULL	IS2300	64.65 N	15.58 W	4 2 3	N	NE	1520	1095	680	109	18	C
386	FALLJOKULL	IS1021	63.98 N	16.75 W	4 3 3	W	W	2000		140	8	8	B
387	FJALLS.FITJAR	IS1024B	64.03 N	16.52 W	4 3 4	SE	E	2040		40	48	15	B
388	FJALLSJ. BRMFJ	IS1024A	64.03 N	16.52 W	4 3 4	SE	E	2040		40	45	15	B
389	FJALLSJ.G-SEL	IS1024C	64.03 N	16.52 W	4 3 4	SE	E	2040		40	48	15	B
390	FLAAJ. E148	IS1930C	64.33 N	15.13 W	- - -								B
391	GIGJOKULL	IS0112	63.65 N	19.62 W	4 3 4	N	N	1666		190	7.5	7.5	B
392	GLJUFURARJOKULL	IS0103	65.72 N	18.67 W	5 4 8	N	N	1350		600	3	2.5	B
393	HAGAFELLSJOK.E	IS0306	64.57 N	20.22 W	4 3 3	SW	SW	1350		440	105	19	B
394	HAGAFELLSJOK.W	IS0204	64.57 N	20.40 W	4 3 3	SW	SW	1350		450	150	18	B
395	HOFFELLSJ.W	IS2031	64.48 N	15.57 W	4 3 3	SE	SE	1500		20	200	19	B
396	HOFSJOKULL E	IS0510B	64.80 N	18.58 W	4 3 3	E	E	1800	1185	640	250	19	C
397	HOFSJOKULL N	IS0510A	64.95 N	18.92 W	4 3 3	N	N	1800	1250	860	81.5	19.9	C
398	HOFSJOKULL SW	IS0510C	64.72 N	19.05 W	4 3 3	SW	SW	1750	1205	750	51	13	C
399	HRUTARJOKULL	IS0923	64.02 N	16.53 W	4 3 3	E	E	1900		100	12	8.5	B
400	HYRNINGSJOKULL	IS0100	64.80 N	23.77 W	4 3 3	E	E	1445		700	2	2	B
401	JOKULKROKUR	IS0007	64.80 N	19.73 W	4 3 3	NE	NE	1350		720	55	11	B
402	KALDALONSJOKULL	IS0102	66.13 N	22.27 W	4 3 3	SW	SW	900		140	37	6	B
403	KOELDUKVISLARJ.	IS2700	64.58 N	17.83 W	4 3 3	NW	NW	2000	1410	900	334	25	C
404	KVERKJOKULL	IS2500	64.68 N	16.63 W	4 3 3	N	N	1920		900	29	11	B
405	KVIARJOKULL	IS0822	63.97 N	16.57 W	4 3 3	SE	SE	2100		40	24	13	B
406	LANGJOKULL S. D.	IS	64.62 N	20.30 W	- - -						925		C
407	LEIRUFJ.JOKULL	IS0200	66.18 N	22.38 W	4 3 3	NW	NW	925		140	27	6	B
408	MORSARJOKULL	IS0318	64.12 N	16.88 W	4 3 3	SW	SW	1380		180	30	10	B
409	MULAJOKULL S.	IS0311A	64.67 N	18.72 W	4 3 2	SE	SE	1800		610	70	20	B
410	NAUTHAGAJOKULL	IS0210	64.67 N	18.77 W	4 3 3	S	S	1780		630	25	18	B
411	OLDUFELLSJOKULL	IS0114	63.73 N	18.92 W	4 3 2	NE	E	1400		320	40	15	B
412	REYKJAFJARDARJ.	IS0300	66.18 N	22.20 W	4 3 3	NE	NE	925		100	22	7	B
413	SATUJOKULL	IS0530	64.92 N	18.83 W	4 3 3	N	N	1800		860	91	20	B
414	SIDUJOK.E M177	IS0015B	64.18 N	17.88 W	4 3 2	SW	S	1700		590	350	40	B
415	SKAFTAFELLSJ.	IS0419	64.08 N	16.80 W	4 2 3	SW	SW	1900		100	85	18	B

NR	GLACIER NAME	PSFG NR	LAT	LONG	CODE	EXP AC	EXP AB	ELEVATION MAX	ELEVATION MED	ELEVATION MIN	AREA KM²	LEN KM	TYPE OF DATA
416	SKEIDARARJ. E1	IS0117A	64.22 N	17.22 W	4 3 2	S	S	1725		100	850	50	B
417	SKEIDARARJ. E2	IS0117B	64.22 N	17.22 W	4 3 2	S	S	1725		100	850	50	B
418	SKEIDARARJ. E3	IS0117C	64.22 N	17.22 W	4 3 2	S	S	1725		100	850	50	B
419	SKEIDARARJ. W	IS0116	64.22 N	17.22 W	4 3 2	S	S	1740		80	530	45	B
420	SOLHEIMAJOK. W	IS0113A	63.58 N	19.28 W	4 3 3	SW	SW	1500		110	44	15	B
421	SVINAFELLSJ.	IS0520A	64.03 N	16.75 W	4 2 3	W	SW	2119		120	24	12	B
422	THRANDARJOKULL	IS1940	64.70 N	14.88 W	3 0 0			1240	1080	820	19		C
423	TUNGNAARJOKULL	IS2214	64.32 N	18.07 W	4 3 3	SW	W	1720	1210	580	235	40	B
424	VIRKISJOKULL	IS0721	64.00 N	16.75 W	4 3 3	W	W	2119		150	6	8.5	B
	<u>ITALY</u>												
425	AGNELLO	IT0029	45.15 N	6.90 E	6 4 0	NE	NE	3200	3010	3020	0.5	1.45	B
426	ALTA (VEDRETTA)	IT0730	46.45 N	10.68 E	5 3 8	NE	N	3350	3059	2695	1.75	2	B
427	AMOLA	IT0644	46.22 N	10.67 E	6 3 0	E	E	3120	2785	2510	0.86	1.8	B
428	ANDOLLA NORD	IT0336	46.08 N	8.03 E	6 4 0	SE	SE	3010	2860	2705	0.2	0.7	B
429	ANTELAO INF.	IT0967	46.45 N	12.27 E	6 4 0	N	N	2800	2472	2340	0.2	0.85	B
430	ANTELAO SUP.	IT0966	46.45 N	12.27 E	6 3 0	N	NE	3130	2465	2510	0.37	1.3	B
431	AURONA	IT0338	46.25 N	8.08 E	5 2 0	NW	NE	3385	2940	2325	1.17	2.3	B
432	BARBADORSO D.	IT0778	46.80 N	10.70 E	5 3 8	N	N	3550	2798	2690	1.84	2.1	B
433	BASEI	IT0064	45.47 N	7.12 E	6 0 0	NE	NE	3320		2950	0.37	0.8	B
434	BELVEDERE	IT0325	45.93 N	7.90 E	5 2 5	NE	NE	4520		1785	5.58	6.05	B
435	BESSANESE	IT0040	45.30 N	7.12 E	5 3 2	SE	SE	3210		2580	1.04	2.55	B
436	BRENVA	IT0219	45.83 N	6.90 E	5 2 8	SE	E	4810	3100	1400	8.06	7.64	B F
437	CARESER	IT0701	46.45 N	10.70 E	6 3 8	S	S	3313	3092	2857	3.36	2.2	C D
438	CASPOGGIO	IT0435	46.33 N	9.88 E	6 4 8	NW	NW	2985	2800	2650	0.84	1.1	B
439	CEVEDALE	IT0732	46.45 N	10.63 E	5 3 8	E	E	3700	3078	2635	3.2	3.7	B
440	CHAVANNES	IT0204	45.73 N	6.82 E	6 3 0	E	E	3090	2857	2710	1.09	1.5	B
441	CIARDONEY	IT0081	45.52 N	7.43 E	6 4 0	N	N	3170	3000	2850	0.83	1.9	B C
442	COLLALTO	IT0927	46.92 N	12.13 E	6 3 8	NW	NW	3380	2955	2515	2.57	2.1	B
443	CORNISELLO MER.	IT0646	46.23 N	10.73 E	- 6 4	NE	NE	3130	2965	2775	0.4	1.4	B
444	CRODA ROSSA	IT0828	46.73 N	10.98 E	6 3 8	N	N	3205	3002	2746	0.21	1	B
445	DOSDE OR.	IT0473	46.38 N	10.20 E	6 4 6	N	N	3200	2850	2580	0.85	1.7	B
446	DOSEGU	IT0512	46.37 N	10.53 E	5 2 6	SW	SW	3670	3260	2805	3.3	2.8	B
447	FELLARIA OCC.	IT0439	46.35 N	9.92 E	5 2 8	SE	SE	3700	3090	2550	5.09	3	B
448	FONTANA BIANCA	IT0713	46.48 N	10.77 E	6 4 0	E	E	3360	3120	2880	0.63	1.15	C D
449	FORCOLA	IT0731	46.45 N	10.65 E	5 3 8	E	NE	3750	3105	2645	2.52	3.5	B
450	FORNI	IT0507	46.40 N	10.57 E	5 2 9	N	NW	3678	3150	2490	20	5	B
451	FRADUSTA	IT0950	46.25 N	11.87 E	6 0 0	N	N	2936	2730	2645	0.43	0.95	B
452	GIGANTE CENTR.	IT0929	46.90 N	12.12 E	6 4 9	NW	N	3265	2816	2535	2.57	2.1	B
453	GIGANTE OCC.	IT0930	46.90 N	12.10 E	6 3 6	N	N	3300	2955	2610	2.57	2.1	B
454	GOLETTA	IT0148	45.50 N	7.05 E	5 2 0	N	N	3290	3055	2700	3.02	2.4	B
455	GR. MURAILLES	IT0260	45.95 N	7.58 E	5 2 0	W	W	4000	3308	2320	7.57	4.2	B
456	GRAN PILASTRO	IT0893	46.97 N	11.73 E	5 3 8	SW	W	3370	2935	2465	2.62	3.7	B
457	HOHSAND SETT.	IT0357	46.40 N	8.30 E	6 2 0	NE	E	3180	2860	2550	1.98	2.87	B

NR	GLACIER NAME	PSFG NR	LAT	LONG	CODE	EXP AC	EXP AB	ELEVATION MAX	ELEVATION MED	ELEVATION MIN	AREA KM²	LEN KM	TYPE OF DATA
458	LA MARE	IT0699	46.43 N	10.60 E	5 2 5	E	E	3769	3260	2595	4.75	3.5	B
459	LANA	IT0913	47.07 N	12.22 E	5 2 9	NW	NW	3480	2720	2240	1.69	2.9	B
460	LARES	IT0634	46.13 N	10.65 E	6 7 6	E	NE	3463	3023	2600	6.24	3.7	B
461	LAUSON	IT0116	45.57 N	7.28 E	6 4 0	N	N	3370	3100	2965	0.46	1.05	B
462	LEX BLANCHE	IT0209	45.78 N	6.82 E	5 1 0	SE	SE	3910	3120	2100	4.09	3.6	B
463	LOBBIA	IT0637	46.15 N	10.63 E	5 3 0	N	N	3438	2968	2620	5.4	1.8	B
464	LUNGA(VEDRETTA)	IT0733	46.47 N	10.62 E	5 2 9	NE	E	3450	3100	2650	2.62	3.6	B
465	LYS	IT0304	45.90 N	7.83 E	5 1 5	SW	SW	4530	3732	2355	11.83	5.6	B
466	MALAVALLE	IT0875	46.95 N	11.20 E	5 1 5	E	E	3470	2950	2530	9.42	4.4	B
467	MANDRONE	IT0639	46.17 N	10.53 E	5 2 0	NE	NE	3436	3022	2530	12.38	5.38	B
468	MARMOLADA	IT0941	46.43 N	11.87 E	6 0 6	N	N	3340	2825	2550	2.6	1.5	B
469	MIAGE	IT0213	45.81 N	6.84 E	5 1 0	SE	SE	4810	3035	1720	13.0	10.35	F
470	MONACHE OR.	IT0723	46.48 N	10.75 E	6 2 0	N	N	3250	3110	2745	0.61	0.9	B
471	NARDIS OCC.	IT0640	46.20 N	10.65 E	5 3 0	SE	SE	3500	3160	2790	1.67	2.55	B
472	NEVES OR.	IT0902	46.98 N	11.80 E	6 3 8	S	S	3300	2990	2575	2.27	2.2	B
473	NISCLI	IT0633	46.12 N	10.60 E	6 3 0	E	E	3200	2783	2590	0.66	1.5	B
474	ORMELUNE	IT0177	45.58 N	7.00 E	6 0 0	NE	NE	3210	2960	2630	0.89	0.7	F
475	PENDENTE	IT0876	46.97 N	11.23 E	5 2 0	S	S	3125	2818	2620	1.07	1.1	B C
476	PIODE	IT0312	45.90 N	7.87 E	5 2 0	SE	SE	4436	3120	2415	2.55	2.65	B
477	PISGANA OCC.	IT0577	46.17 N	10.50 E	5 3 7	N	NE	3320	3000	2560	3.36	2.8	B
478	PIZZO SCALINO	IT0443	46.28 N	9.98 E	6 3 6	N	N	3100	2920	2595	1.94	2.1	B
479	PRE DE BAR	IT0235	45.90 N	7.05 E	5 2 0	SE	SE	3750	3095	2076	3.53	3.93	B
480	PRESANELLA	IT0678	46.22 N	10.65 E	5 2 0	N	N	3525	2860	2455	3.92	3.2	B
481	QUAIRA BIANCA	IT0889	46.97 N	11.68 E	5 2 0	SW	SW	3509	3132	2575	1.41	2.8	B
482	ROSIM	IT0754	46.52 N	10.63 E	6 3 0	NW	W	3405	3215	2900	0.78	1.5	B
483	ROSSA (VEDR.)	IT0697	46.40 N	10.63 E	6 3 0	NE	NE	3640	3195	2765	1.24	1.7	B
484	ROSSO DESTRO	IT0920	47.03 N	12.20 E	5 3 6	W	W	3285	2838	2530	0.88	1.7	B
485	RUTOR	IT0189	45.50 N	7.00 E	5 2 0	N	NW	3460	2998	2480	9.54	4.8	B
486	SFORZELLINA	IT0516	46.33 N	10.50 E	6 4 8	NW	NW	3120	2925	2790	0.40	0.7	B C
487	TESSA	IT0829	46.73 N	10.98 E	6 3 2	N	NW	3300	2990	2698	0.8	1.8	B
488	TOULES	IT0221	45.83 N	6.93 E	6 4 0	SE	SE	3500	3050	2655	0.93	1.65	B
489	TRAVIGNOLO	IT0947	46.28 N	11.82 E	6 4 7	N	N	2850	2520	2330	0.28	0.9	B
490	TRESERO	IT0511	46.38 N	10.53 E	6 4 6	NW	W	3470	3170	3000	0.77	1.1	B
491	TZA DE TZAN	IT0259	45.98 N	7.57 E	5 2 0	SE	S	3810	3285	2530	3.95	3.7	B
491	VALLE DEL VENTO	IT0919	47.03 N	12.22 E	5 3 8	NW	NW	3050	2710	2475	0.36	1.2	B
493	VALLELUNGA	IT0777	46.80 N	10.55 E	5 1 8	NW	NW	3730	3138	2395	8.55	3.9	B
494	VALTOURNENCHE	IT0289	45.92 N	7.70 E	4 2 2	W	W	3695	3315	2990	1.68	2	B
495	VENEROCOLO	IT0581	46.17 N	10.50 E	5 3 9	NW	N	3280	2810	2560	1.5	2.2	B
496	VENEZIA (VEDR.)	IT0698	46.42 N	10.63 E	6 3 0	E	E	3705	3200	2805	1.71	2.5	B
497	VENTINA	IT0416	46.27 N	9.77 E	5 3 6	NE	N	3500	2790	2205	2.37	3.7	B
498	VITELLI	IT0483	46.50 N	10.43 E	5 3 7	W	NW	3467	3135	2560	1.82	2.9	B
499	ZAI DI DENTRO	IT0749	46.55 N	10.63 E	6 5 0	NW	W	3314	3117	2960	0.45	1.1	B
500	ZAI DI MEZZO	IT0750	46.55 N	10.63 E	6 0 0	NW	W	3520	3020	2880	0.72	1.4	B
501	ZAY DI FUORI	IT0751	46.53 N	10.63 E	6 5 7	NW	NW	3475	2995	2830	0.61	1	B

NR	GLACIER NAME	PSFG NR	LAT	LONG	CODE	EXP AC	EXP AB	ELEVATION MAX	ELEVATION MED	ELEVATION MIN	AREA KM²	LEN KM	TYPE OF DATA
	JAPAN												
502	HAMAGURI YUKI	JP0001	36.60 N	137.62 E	7 3 0	NE	NE	2720		2690	0.003	0.07	C
	KENYA												
503	LEWIS	KE0008	0.15 S	37.30 E	5 3 3	SW	SW	4962		4611	0.242	0.95	C
	MEXICO												
504	VENTORRILLO	MX0101	19.02 N	98.62 W	6 6 6	NW	NW	5400	5115	4830	0.53	0.37	B C F
	NEPAL												
505	AX010	NP0005	27.70 N	86.57 E	6 3 6	E	SE	5360	5220	4961	0.42	1.5	B C D
506	RIKKA SAMBA	NP	28.80 N	83.50 E	5 3 5	S	SE	5990	5650	5295	4.80	6.4	B C
507	YALA	NP0004	28.25 N	85.62 E	6 3 6	SW	SW	5749	5400	5090	2.57	1.5	B D
	NEW ZEALAND												
508	ADAMS	NZ08974	43.32 S	170.72 E	5 1 8	W	N	2470	1880	1295	9.96	6.6	B
509	ALMER	NZ888B1	43.47 S	170.22 E	5 1 8	W	SW	2390	1950	1385	3.1	3.2	B
510	ANDY	NZ863C1	44.43 S	168.37 E	4 1 8	N	N	2190	1750	840	10.49	7.1	B
511	ASHBURTON	NZ688A1	43.37 S	170.97 E	5 3 9	S	S	2590	2085	1575	1.69	2.5	B
512	AXIUS	NZ0864	44.17 S	168.98 E	6 4 8	W	W	2285	1920	1555	0.566	1.3	B
513	BALFOUR	NZ882B1	43.55 S	170.12 E	5 3 9	W	W	3305	1525	730	7	9.9	B
514	BARLOW	NZ893A2	43.30 S	170.63 E	6 2 9	W	W	2440	1705	1220	2.57	3.8	B
515	BARRIER	NZ0851A	44.42 S	168.36 E	6 2 8	S	W	2285	1860	1370	1.885	2.85	B
516	BONAR	NZ863A1	44.40 S	168.72 E	6 2 4	SW	W	3025	2090	1160	15.41	7.9	B
517	BREWSTER	NZ868C1	44.07 S	169.43 E	6 3 8	SW	SW	2390	1920	1705	2.73	2.75	B
518	BURTON	NZ888A1	43.45 S	170.32 E	5 2 9	N	NW	3115	2120	1130	6.74	6.35	B
519	CAMERON	NZ685B2	43.33 S	171.00 E	6 2 9	SW	SE	2470	1980	1380	1.97	3.1	B
520	CLASSEN	NZ711M1	43.50 S	170.42 E	5 3 4	SE	SE	2560	1780	1005	10.32	8.25	B
521	COLIN CAMPBELL	NZ693C1	43.32 S	170.72 E	5 3 9	S	E	2500	1815	1130	3.94	3.65	B
522	CROW	NZ664C2	42.92 S	171.50 E	6 3 6	SE	S	2210	1940	1675	0.47	1.2	B
523	DAINTY	NZ0897	43.23 S	170.89 E	6 4 8	W	W	2255	1950	1645	0.565	1.55	B
524	DART	NZ752C2	44.45 S	168.60 E	5 3 9	SW	SW	2470	1770	1070	9.85	7.6	B
525	DISPUTE	NZ0866	44.14 S	168.96 E	6 4 8	E	E	1720	1660	1600	0.296	0.85	B
526	DONALD	NZ0864	44.24 S	168.87 E	6 2 8	SW	NW	2440	1980	1525	3.635	2.85	B
527	DONNE	NZ851B2	44.58 S	168.02 E	6 3 8	E	SE	2745	1615	1220	3.52	3.6	B
528	DOUGLAS (KAR.)	NZ880B2	43.68 S	170.00 E	5 2 4	SW	W	3160	1980	960	11.76	7.4	B
529	EVANS	NZ8972	43.20 S	170.92 E	5 2 9	SW	W	2455	1860	1250	2.79	2.9	B
530	FITZGERALD	NZ711M	43.47 S	170.57 E	6 3 8	W	SW	2530	2165	1660	1.057	1.8	B
531	FOX	NZ882A1	43.53 S	170.15 E	5 2 8	NW	W	3500	1900	305	34.69	13.2	B
532	FRANZ JOSEF	NZ888B2	43.50 S	170.22 E	5 2 8	NW	NW	2955	1690	425	32.59	10.25	B
533	FRESHFIELD	NZ711I	43.58 S	170.19 E	5 2 9	E	E	2285	2010	1525	0.572	1.2	B
534	GLENMARY	NZ711F1	44.00 S	169.88 E	6 4 8	S	S	2315	2165	1950	0.69	1.45	B
535	GODLEY	NZ711M3	43.43 S	170.57 E	5 2 4	S	SW	2440	1785	1130	15.85	8.6	B
536	GREY AND MAUD	NZ711M2	43.45 S	170.48 E	5 1 4	SW	S	2440	1750	1065	10.87	7.2	B

NR	GLACIER NAME	PSFG NR	LAT	LONG	CODE	EXP AC	EXP AB	ELEVATION MAX	ELEVATION MED	ELEVATION MIN	AREA KM²	LEN KM	TYPE OF DATA
537	HOOKER	NZ711H2	43.60 S	170.12 E	5 3 4	W	S	3765	2320	870	16.54	13.1	B
538	HORACE WALKER	NZ880B1	43.67 S	169.97 E	5 3 8	W	SW	2455	2075	945	5.99	6.6	B
539	IVORY	NZ9011	43.13 S	170.92 E	6 4 4	S	S	1730	1510	1390	0.93	1.35	B F
540	KAHUTEA	NZ685E1	43.02 S	171.38 E	6 3 8	S	SW	2300	2025	1740	0.75	1.6	B
541	LA PEROUSE	NZ882B2	43.57 S	170.12 E	5 3 9	NW	W	3320	1980	855	9.5	11.15	B
542	LAMBERT	NZ8973	43.30 S	170.75 E	2 2 4	E	NW	2425	1810	1190	9.32	5.15	B
543	LAWRENCE	NZ693D	43.32 S	171.00 E	5 2 9	W	E	2375	1860	1480	1.497	2.25	B
544	LEEB	NZ0897	43.22 S	170.90 E	6 2 8	W	W	2635	2135	1190	3.46	3.3	B
545	LYELL	NZ685C2	43.28 S	170.83 E	5 2 9	S	E	2440	1720	1005	10.79	6.2	B
546	MARION	NZ863B4	44.47 S	168.48 E	6 2 8	W	N	2470	1905	1340	7.03	5.1	B
547	MARMADUKE DIXON	NZ664C1	42.98 S	171.38 E	6 4 8	E	SE	2130	1870	1615	0.77	1.7	B
548	MC COY	NZ693C2	43.32 S	170.80 E	5 3 9	SW	SE	2135	1800	1250	1.05	2.6	B
549	MUELLER	NZ711H1	43.75 S	170.02 E	5 2 4	SE	SE	2895	1330	760	18.54	13.65	B
550	MURCHISON	NZ711J1	43.52 S	170.40 E	5 2 9	E	SW	3155	2080	1005	36.57	16.45	B
551	PARK PASS 1	NZ752B1	44.58 S	168.23 E	6 3 8	S	S	2210	1890	1570	3.02	2.55	B
552	RAMSAY	NZ685C3	43.22 S	170.93 E	5 3 4	SW	S	2315	1650	990	9.2	8.6	B
553	REISCHEK	NZ685C1	43.32 S	171.00 E	6 3 8	SW	SW	2440	2075	1615	1.72	2.65	B
554	RICHARDSON	NZ711E1	43.80 S	169.95 E	5 3 9	W	SW	2225	1525	1080	3.86	5.8	B
555	SALE	NZ906B1	43.22 S	170.95 E	6 3 8	E	SE	2134	1753	1372	0.95	1.8	B
556	SEPARATION	NZ711M	43.47 S	170.58 E	5 2 9	S	SW	2560	2025	1495	1.538	2.65	B
557	SIEGE	NZ893A1	43.27 S	170.53 E	5 3 8	SE	SE	2120	1705	1435	1.19	3.05	B
558	SNOW WHITE	NZ863B2	44.45 S	168.58 E	5 3 8	N	E	2425	1950	1220	5.54	5.5	B
559	SNOWBALL	NZ863B3	44.45 S	168.52 E	6 3 8	NW	W	2345	1905	1465	3.31	2.7	B
560	SPENCER	NZ888A2	43.50 S	170.28 E	5 2 9	W	N	3045	1900	760	10.07	7.75	B
561	ST. JAMES	NZ685C	43.28 S	170.89 E	6 2 9	NE	E	2377	1645	1035	0.981	2.8	B
562	STRAUCHON	NZ880A2	43.62 S	170.08 E	5 3 4	W	SW	2530	1745	960	3.62	5.8	B
563	TASMAN	NZ7111	43.52 S	170.32 E	5 2 4	S	S	3690	2210	730	98.34	28.5	B
564	THURNEYSON	NZ711B1	44.17 S	169.60 E	6 2 6	S	S	2425	2010	1355	1.79	1.15	B
565	UNNAMED NZ685C4	NZ685C4	43.25 S	170.93 E	6 2 6	E	SE	2010	1860	1675	0.76	0.6	B
566	UNN. NZ711N/012	NZ	43.49 S	170.60 E	6 2 8	SE	E	2375	2040	1650	0.869	1.45	B
567	UNN. NZ851A/036	NZ	44.44 S	168.36 E	5 2 9	S	W	2225	1800	1675	0.602	1.25	B
568	UNNAMED NZ851B	NZ851B1	44.77 S	168.08 E	6 4 4	SE	E	1860	1615	1495	0.77	1.25	B
569	VICTORIA	NZ882A1	43.50 S	170.17 E	5 3 9	W	W	2560	1890	1065	4.5	6.5	B
570	WHATAROA	NZ893B	43.40 S	170.53 E	6 3 8	W	SW	2180	1590	1005	2.973	3.35	B
571	WHITBOURNE	NZ752C1	44.47 S	168.57 E	5 3 9	W	S	2575	1830	1080	9.47	6.7	B
572	WHITE	NZ664C1	43.00 S	171.38 E	6 3 8	NE	NE	2320	2015	1710	0.6	1.8	B
573	WHYMPER	NZ893B1	43.48 S	170.37 E	5 3 9	NW	NE	2775	1780	790	6.55	7.2	B
574	WIGLEY	NZ873B2	43.42 S	170.35 E	6 9 0	NE	N	2195	1770	1400	1.93	2.8	B
575	WILKINSON	NZ906B2	43.20 S	170.93 E	6 2 4	NE	NE	2286	1615	945	3.95	3.8	B
576	ZORA	NZ868B1	43.75 S	169.83 E	6 2 8	S	S	2455	1920	1095	4.44	3.25	B
	NORWAY												
577	AALFOTBREEN	NO36204	61.75 N	5.65 E	4 3 6	NE	NE	1380	1230	890	4.36	2.9	C
578	AUSTDALSBREEN	NO37323	61.80 N	7.35 E	4 2 4	SE	SE	1630	1480	1160	11.80	5.7	B C

NR	GLACIER NAME	PSFG NR	LAT	LONG	CODE	EXP		ELEVATION			AREA	LEN	TYPE OF
						AC	AB	MAX	MED	MIN	KM²	KM	DATA
579	AUSTRE BROEGGERB.	NO15504	78.88 N	11.83 E	5 2 9	NW	N	600	260	60	6.12	6	C
580	BERGSETBREEN	NO31013	61.65 N	7.03 E	4 3 8	SE	E						B
581	BLOMSTERSKARDBR.	NO01930	59.98 N	6.28 E	4 3 8	SW	SW	1640		820	45.72	10	B
582	BOEDALSBREEN	NO37219	61.77 N	7.12 E	4 3 8	NW	N						B
583	BOEVERBREEN	NO00548	61.32 N	8.04 E	- - -								B
584	BONDHUSBREEN	NO20408	60.03 N	6.33 E	4 3 8	NW	NW	1660	1450	480	10.2	7.8	B
585	BOTNABREEN	NO20515	60.20 N	6.43 E	4 3 8	W	W						B
586	BRENNDALSBREEN	NO37109	61.68 N	6.92 E	4 3 8	W	W						B
587	BRIGSDALSBREEN	NO37110	61.65 N	6.92 E	4 3 8	W	W	1910	1650	350	11.94	6	B
588	BUARBREEN	NO21307	60.02 N	6.40 E	4 3 8	E	NE	1640		620	15.48	7.5	B
589	ENGABREEN	NO67011	66.65 N	13.85 E	4 3 8	N	NW	1594	1220	40	38	11.5	B C
590	FAABERGSTOELSB.	NO31015	61.72 N	7.23 E	4 3 8	E	E	1810	1540	760	15	7	B
591	GRAASUBREEN	NO00547	61.65 N	8.60 E	6 7 6	NE	E	2300	2060	1850	2.25	2.3	C
592	HANSBREEN	NO12419	77.08 N	15.67 E	4 2 4	S	S	600	350	0	56.76	15.8	C
593	HANSEBREEN	NO36206	61.75 N	5.68 E	- - -	NE	N	1320	1160	925	2.91	2.5	C
594	HARBARDSBREEN	NO30704	61.67 N	7.58 E	- - -								C
595	HARDANGERJOEK.	NO22303	60.53 N	7.37 E	4 3 8	W	W	1850	1740	1050	17.1	8.1	C
596	HELLSTUGUBREEN	NO00511	61.57 N	8.43 E	5 1 8	N	N	2130	1900	1470	3.03	3.4	B C
597	JOSTEFONN	NO	60.53 N	7.37 E	- - -						3.8		C
598	KJENNDALSBREEN	NO37223	61.70 N	7.02 E	4 3 8	N	N						B
599	KONGSVEGEN	NO15510	78.80 N	12.98 E	4 2 4	NW	NW	1050	500	0	101.9	27	C
600	KOPPANGSBREEN	NO			- - -								B
601	LANGFJORDJOEKUL	NO85008	70.12 N	21.77 E	4 3 8	SE	E	1062	850	300	3.65	4	B C
602	LEIRBREEN	NO00548	61.57 N	8.10 E	- - -	NW	NW	2070		1530	4.87	3.8	B
603	MIDTDALSBREEN	NO04302	60.57 N	7.47 E	4 3 8	NE	NE				7.07		B C
604	MIDRE LOVENB.	NO15506	78.88 N	12.07 E	5 2 9	NE	N	650	330	50	5.45	4.8	C
605	NIGARDSBREEN	NO31014	61.72 N	7.13 E	4 3 8	SE	SE	1950	1618	355	47.82	9.6	B C
606	OKSTINDBREEN	NO64902	66.23 N	14.37 E	4 3 8	N	NE	1750	1340	730	14.01	7.25	C
607	REMBESDALSKAAKI	NO22303	60.53 N	7.37 E	4 3 8	W	W						B
608	STEGHOLTBREEN	NO31021	61.80 N	7.32 E	4 3 8	S	S	1900	1480	880	15.34	7.7	B
609	STEINDALSBREEN	NO			- - -								B
610	STORBREEN	NO00541	61.57 N	8.13 E	5 2 6	NE	NE	1970	1770	1380	5.35	3	B C
611	STORGJUVBREEN	NO			- - -								B
612	STYGGEDALSBREEN	NO30720	61.48 N	7.88 E	5 2 6	N	N	2240	1650	1270	1.81	3.2	B
613	SUPPHELLEBREEN	NO33014	61.52 N	6.80 E	4 0 8	S	S	1730		730	12	7	B
614	WALDEMARBREEN	NO	78.67 N	12.00 E	5 3 8	NW	SW	570	320	130	2.68	3.42	B C
	PERU												
615	BROGGI	PE0003	8.98 S	77.58 W	6 3 0	NW	NW	5100	4880	4718	0.55	1	B
616	URUASHRAJU	PE0005	9.58 S	77.32 W	5 3 0	SW	SW	5700	5200	4583	2.14	2.4	B
617	YANAMAREY	PE0004	9.65 S	77.27 W	5 2 0	SW	SW	5100	4900	4590	1.29	1.5	B
	POLAND												
618	MIEGUSZOWIECKIE	PL0140	49.18 N	20.07 E	7 8 0	N	N	2080	2015	1960	0.012	0.15	B

NR	GLACIER NAME	PSFG NR	LAT	LONG	CODE	EXP AC	EXP AB	ELEVATION MAX	ELEVATION MED	ELEVATION MIN	AREA KM²	LEN KM	TYPE OF DATA
619	POD BULA	PL0111	49.18 N	20.08 E	7 5 6	NW	NW	1710	1684	1646	0.004	0.1	B
620	POD CUBRYNA	PL0180	49.18 N	20.05 E	7 8 0	N	N	2190	2125	2088	0.011	0.15	B
	SPAIN												
621	MALADETA	ES9020	42.65 N	0.63 E	6 4 8	NE	NE	3180	3025	2790	0.39	1.1	C
	SWEDEN												
622	HYLLGLACIAEREN	SE0780	67.58 N	17.47 E	5 3 8	N	N	1820		1360	1.4	2.1	B
623	ISFALLSGLAC.	SE0787	67.92 N	18.57 E	5 3 6	E	E	1700		1200	1.4	2.1	B
624	KARSOJIETNA	SE0798	68.35 N	18.32 E	5 3 8	NE	E	1500	1100	950	1.1	1.7	B
625	MARMAGLACIAEREN	SE0799	68.83 N	18.67 E	5 2 1	E	E	1740		1340	3.9	3.5	C
626	MIKKAJEKNA	SE0766	67.40 N	17.70 E	5 1 8	S	S	1825		980	7.1	4.3	B
627	PARTEJEKNA	SE0763	67.17 N	17.67 E	5 2 8	E	E	1800		1090	10.0	5.1	B C
628	PASSUSJIETNA E.	SE0797	68.05 N	18.43 E	5 3 8	NE	NW	1630		1270	1.7	1.8	B
629	RABOTS GLACIAER	SE0785	67.90 N	18.55 E	5 2 8	NW	W	1700		1080	3.9	4.1	B C
630	RIUKOJIETNA	SE0790	68.08 N	18.08 E	3 0 3	E	E	1456		1130	4.1	3	B C
631	RUOPSOKJEKNA	SE0764	67.33 N	17.98 E	5 3 6	NE	N	1760		1150	3.5	3.7	B
632	RUOTESJEKNA	SE0767	67.42 N	17.47 E	5 3 8	NE	N	1600		1040	5.2	4.3	B
633	SALAJEKNA	SE0759	67.12 N	16.38 E	5 2 8	SE	S	1580		890	24.5	9.2	B
634	SE KASKASATJ GL	SE0789	67.93 N	18.60 E	5 3 6	SE	S	1890	1560	1440	0.6	1.4	B
635	STORGLACIAEREN	SE0788	67.90 N	18.57 E	5 2 8	E	E	1720		1140	3.1	3.7	B C
636	STOUR RAEITAGL.	SE0784	67.97 N	18.38 E	5 3 9	N	E	1690		1280	1.8	2.2	B
637	SUOTTASJEKNA	SE0768	67.47 N	17.58 E	5 2 8	NE	N	1800		1130	7.9	4.2	B
638	UNNA RAEITA GL.	SE0783	67.97 N	18.43 E	5 3 8	N	NE	1720		1230	1.7	1.9	B
639	VARTASJEKNA	SE0765	67.45 N	17.67 E	5 3 8	NE	NE	1800		1300	3.6	3	B
	SWITZERLAND												
640	ALLALIN	CH0011	46.05 N	7.93 E	6 2 6	N	E	4190	3320	2590	9.94	6.5	B F
641	ALPETLI(KANDER)	CH0109	46.48 N	7.80 E	5 3 6	NW	SW	3270	2800	2250	14.02	6.8	B
642	AMMERTEN	CH0111	46.42 N	7.53 E	6 0 7	NW	NW	3240	2720	2350	1.89	2.8	B
643	AROLLA (BAS)	CH0027	45.98 N	7.50 E	5 1 9	N	N	3720	3080	2135	6.02	5	B
644	BASODINO	CH0104	46.42 N	8.48 E	6 3 6	NE	NE	3230	2880	2540	2.37	1.6	B C
645	BELLA TOLA	CH0021	46.25 N	7.65 E	6 4 6	N	N	3000	2840	2660	0.31	0.6	B
646	BIDER	CH	46.14 N	7.89 E	- - -	NE	NE	3600		2600	1.5	2	F
647	BIFERTEN	CH0077	46.82 N	8.95 E	5 3 8	E	NE	3610	2840	1949	2.86	4.2	B
648	BIS	CH0107	46.12 N	7.73 E	6 2 4	E	E	4510	3440	2000	4.79	3.8	B F
649	BLUEMLISALP	CH0064	46.50 N	7.77 E	6 1 6	NW	NW	3660	2960	2250	2.98	2.9	B
650	BOVEYRE	CH0041	45.97 N	7.27 E	5 2 9	NW	NW	3660	3220	2617	1.99	2.5	B
651	BRENEY	CH0036	45.97 N	7.42 E	5 1 7	S	SW	3830	3240	2575	9.8	6.3	B
652	BRESCIANA	CH0103	46.50 N	9.03 E	6 3 6	W	W	3400	3080	2810	0.94	1.6	B
653	BRUNEGG	CH0020	46.15 N	7.70 E	5 3 0	NW	NW	4130	3160	2468	6.12	4.9	B
654	BRUNNI	CH0072	46.73 N	8.78 E	6 2 4	E	N	3300	2760	2311	2.99	2.9	B
655	CALDERAS	CH0095	46.53 N	9.72 E	6 1 7	N	NE	3360	3070	2743	1.2	2	B
656	CAMBRENA	CH0099	46.40 N	10.00 E	6 1 4	NE	NE	3500	2960	2518	1.72	2.5	B

NR	GLACIER NAME	PSFG NR	LAT	LONG	CODE	EXP AC	EXP AB	ELEVATION MAX	ELEVATION MED	ELEVATION MIN	AREA KM²	LEN KM	TYPE OF DATA
657	CAVAGNOLI	CH0119	46.45 N	8.48 E	6 2 8	NE	E	2880	2720	2540	1.32	2.3	B
658	CHEILLON	CH0029	46.00 N	7.42 E	5 1 7	N	N	3830	2960	2650	4.73	4	B
659	CLARIDEN	CH0141	46.85 N	8.90 E	6 0 0	E	E	3240	2840	2540	5.64	2.9	F
660	CORBASSIERE	CH0038	45.98 N	7.30 E	5 1 9	N	N	4310	3200	2190	17.44	9.8	B
661	CORNO	CH0120	46.45 N	8.38 E	6 5 6	N	N	2880	2720	2550	0.27	0.7	B
662	CROSLINA	CH0121	46.43 N	8.73 E	- - -	NE	NE	3060	2860	2680	0.42	0.8	B
663	DAMMA	CH0070	46.63 N	8.45 E	6 1 6	E	NE	3520	2820	2080	6.32	3.3	B
664	DOLENT	CH	45.92 N	7.65 E	6 4 4	E	E	3500		2550	1.5	2	F
665	EIGER	CH0059	46.57 N	7.98 E	6 1 6	W	NW	4100	3100	2194	2.27	2.6	B
666	EN DARREY	CH0030	46.02 N	7.38 E	6 3 9	NE	NE	3700	3120	2440	1.86	2.4	B
667	FEE NORTH	CH0013	46.08 N	7.88 E	6 0 6	NE	NE	4360	3260	2100	16.66	5.1	B F
668	FERPECLE	CH0025	46.02 N	7.58 E	5 3 8	NW	N	3680	3300	2095	9.79	6	B
669	FIESCHER	CH0004	46.50 N	8.15 E	5 1 9	SE	S	4180	3140	1681	33.06	16	B
670	FINDELEN	CH0016	46.00 N	7.87 E	5 1 6	NW	W	4190	3300	2492	19.09	9.3	B
671	FIRNALPELI	CH0075	46.78 N	8.47 E	6 0 6	NW	N	2920	2680	2180	1.18	1.1	B
672	FORNO	CH0102	46.30 N	9.70 E	5 1 9	N	N	3360	2740	2280	8.77	6.8	B
673	GAMCHI	CH0061	46.52 N	7.80 E	6 1 9	N	N	2840	2260	1950	1.73	2.7	B
674	GAULI	CH0052	46.62 N	8.18 E	5 1 6	E	E	3630	2880	2115	13.7	6.8	B
675	GIETRO	CH0037	46.00 N	7.38 E	6 3 4	NW	W	3830	3240	2525	5.94	5.4	B
676	GLAERNISCH	CH0080	47.00 N	8.98 E	6 2 6	W	W	2910	2600	2298	2.09	2.3	B
677	GORNER	CH0014	45.97 N	7.80 E	5 1 9	N	NW	4610	3220	2150	68.86	14.1	B
678	GRAND DESERT	CH0031	46.08 N	7.35 E	6 3 6	NW	N	3340	2960	2760	1.85	2.3	B
679	GRAND PLAN NEVE	CH0045	46.25 N	7.15 E	6 4 7	N	N	2560	2460	2350	0.2	0.4	B
680	GRIES	CH0003	46.43 N	8.33 E	5 3 4	NE	NE	3370	2920	2389	6.194	6.2	B C
681	GRIESS(KLAUSEN)	CH0074	46.83 N	8.83 E	6 1 7	N	NW	3080	2420	2223	2.48	1.3	B
682	GRIESSEN(OBWA.)	CH0076	46.85 N	8.50 E	6 2 6	W	NW	2890	2600	2510	1.27	1.3	B
683	GROSSER ALETSCH	CH0005	46.50 N	8.03 E	5 1 9	SE	S	4160	3140	1557	81.5	24.7	B
684	GRUBEN	CH	46.17 N	7.98 E	6 3 9	W	NW	3990		2860	2.5	3	F
685	GUTZ	CH	46.64 N	8.11 E	- - -	NW	NW	3360		3060	0.15	0.4	F
686	HUEFI	CH0073	46.82 N	8.85 E	5 1 8	S	SW	3240	2780	1640	13.73	7	B
687	KALTWASSER	CH0007	46.25 N	8.08 E	6 0 6	NW	W	3370	2940	2660	1.85	1.6	B
688	KEHLEN	CH0068	46.68 N	8.42 E	5 1 8	SE	SE	3418	2800	2140	3.15	3.3	B
689	KESSJEN	CH0012	46.07 N	7.93 E	6 5 6	NE	NE	3240	2980	2868	0.61	0.9	B
690	LAEMMERN	CH0063	46.40 N	7.55 E	6 1 6	E	E	3240	2900	2530	3.35	2.5	B
691	L'A NEUVE	CH	45.94 N	7.06 E	- - -	E	E	3800		2100	3	3	F
692	LANG	CH0018	46.47 N	7.93 E	5 1 9	SW	SW	3900	2960	2060	10.03	7.7	B
693	LAVAZ	CH0082	46.63 N	8.93 E	6 1 8	NE	N	3020	2580	2260	1.76	2.6	B
694	LENTA	CH0084	46.52 N	9.05 E	5 2 7	N	N	3400	2820	2320	1.4	2.6	B
695	LIMMERN	CH0078	46.82 N	8.98 E	6 2 7	NE	NE	3420	2760	2270	2.52	2.9	B
696	LISCHANA	CH0098	46.77 N	10.35 E	6 5 9	NW	NW	3030	2880	2750	0.21	0.6	B
697	MITTELALETSCH	CH0106	46.45 N	8.03 E	5 2 7	SE	SE	4200	2100	2294	8.5	5.9	B
698	MOIRY	CH0024	46.08 N	7.60 E	5 1 8	N	N	3850	3120	2390	6.11	5.6	B
699	MOMING	CH0023	46.08 N	7.67 E	6 0 9	N	NW	4070	3160	2580	5.77	3.8	B
700	MONT DURAND	CH0035	45.92 N	7.33 E	5 1 9	E	NE	4280	3060	2340	7.59	6	B

NR	GLACIER NAME	PSFG NR	LAT	LONG	CODE	EXP		ELEVATION			AREA	LEN	TYPE OF
						AC	AB	MAX	MED	MIN	KM²	KM	DATA
701	MONT FORT	CH0032	46.08 N	7.32 E	6 3 6	NW	N	3330	2900	2780	1.1	2	B
702	MONT MINE	CH0026	46.02 N	7.55 E	5 1 9	NW	N	3720	3220	1963	10.89	8.1	B
703	MORTERATSCH	CH0094	46.40 N	9.93 E	5 1 9	N	N	4020	3000	2020	17.15	7	B
704	MUTT	CH0002	46.55 N	8.42 E	6 5 6	NW	NW	3000	2780	2623	0.57	1.1	B
705	OB.GRINDELWALD	CH0057	46.62 N	8.10 E	5 1 8	NW	NW	3740	3000	1250	10.07	5.5	B
706	OBERAAR	CH0050	46.53 N	8.22 E	5 2 4	NE	NE	3460	2860	2300	5.23	5.2	B
707	OBERALETSCH	CH0006	46.42 N	7.97 E	5 1 9	SE	SE	3890	2920	2144	21.71	9.1	B
708	OFENTAL	CH0009	46.02 N	8.00 E	6 5 9	N	N	3030	2820	2693	0.4	0.9	B
709	OTEMMA	CH0034	45.95 N	7.45 E	5 1 7	SW	SW	3800	3020	2460	16.55	8.5	B
710	PALUE	CH0100	46.37 N	9.98 E	6 2 9	E	E	3870	3180	2340	6.62	4	B
711	PANEYROSSE	CH0044	46.27 N	7.17 E	6 4 6	N	N	2760	2560	2380	0.45	0.7	B
712	PARADIES	CH0086	46.50 N	9.07 E	6 0 6	N	NE	3400	2880	2615	4.6	3.6	B
713	PARADISINO	CH0101	46.42 N	10.12 E	6 3 9	NW	W	3250	2980	2825	0.55	1	B
714	PIZOL	CH0081	46.97 N	9.40 E	6 5 6	N	N	2790	2600	2600	0.32	0.6	B
715	PLATTALVA	CH0114	46.83 N	8.98 E	6 5 6	E	E	2980	2740	2565	0.73	1.1	B
716	PORCHABELLA	CH0088	46.63 N	9.88 E	6 1 6	N	N	3390	2880	2641	2.59	2.5	B
717	PRAPIO	CH0048	46.32 N	7.20 E	6 5 7	NW	NW	3020	2780	2400	0.36	0.9	B
718	PUNTEGLIAS	CH0083	46.78 N	8.95 E	6 1 7	SE	S	3010	2520	2360	0.93	2	B
719	RAETZLI	CH0065	46.38 N	7.52 E	6 2 6	N	NW	2970	2760	2450	9.8	4	B
720	RHONE	CH0001	46.62 N	8.40 E	5 1 4	S	S	3620	2940	2193	17.38	10.2	B
721	RIED	CH0017	46.13 N	7.85 E	5 3 9	NW	NW	4280	3460	2067	8.26	6.3	B
722	ROSEG	CH0092	46.38 N	9.83 E	5 1 7	N	N	3650	3060	2159	8.72	5.2	B
723	ROSENLAUI	CH0056	46.65 N	8.15 E	5 2 6	NE	N	3700	3000	1860	6.2	5.2	B
724	ROSSBODEN	CH0105	46.18 N	8.02 E	5 3 9	N	NE	3990	3080	1915	1.89	3.9	B
725	ROTFIRN NORD	CH0069	46.67 N	8.43 E	6 1 9	E	NE	3525	2680	2030	1.21	2.3	B
726	SALEINA	CH0042	45.98 N	7.07 E	5 1 8	E	NE	3900	2940	1764	5.03	6.4	B
727	SANKT ANNA	CH0067	46.60 N	8.60 E	6 3 6	N	N	2905	2720	2580	0.44	0.9	B
728	SARDONA	CH0091	46.92 N	9.27 E	6 4 6	E	E	2790	2580	2500	0.38	0.7	B
729	SCALETTA	CH0115	46.70 N	9.95 E	6 5 0	N	N	3100	2780	2580	0.66	1.1	B
730	SCHWARZ	CH0062	46.42 N	7.67 E	5 1 9	SW	NW	3670	2800	2245	1.6	3.9	B
731	SCHWARZBERG	CH0010	46.02 N	7.93 E	6 2 6	NE	NE	3650	3080	2658	6.2	4.3	B
732	SESVENNA	CH0097	46.72 N	10.42 E	6 5 6	NE	N	3150	2940	2760	0.67	1.2	B
733	SEX ROUGE	CH0047	46.33 N	7.22 E	6 5 6	N	NW	2890	2820	2650	0.72	1.2	B
734	SILLERN	CH	46.47 N	7.72 E	- - -	SW	W	3340		2500	0.3	1.2	F
735	SILVRETTA	CH0090	46.85 N	10.08 E	6 2 6	NW	W	3160	2780	2465	3.01	3.5	B C
736	STEIN	CH0053	46.70 N	8.43 E	5 2 8	N	N	3490	2880	1936	6.52	4.7	B F
737	STEINLIMMI	CH0054	46.70 N	8.40 E	5 1 7	N	N	3300	2640	2096	2.21	2.7	B
738	SULZ	CH0079	46.88 N	9.05 E	6 5 8	N	N	2480	2000	1798	0.2	0.5	B
739	SURETTA	CH0087	46.52 N	9.38 E	6 1 7	NE	NE	3010	2720	2165	1.17	1.6	B
740	TAELLIBODEN	CH0008	46.00 N	7.98 E	6 5 6	NW	NW	2940	2760	2631	0.26	0.8	B
741	TIATSCHA	CH0096	46.83 N	10.1 E	6 3 4	S	S	3130	2900	2510	2.11	2.2	B
742	TIEFEN	CH0066	46.62 N	8.43 E	5 1 9	SE	SE	3530	2960	2520	3.17	3.4	B
743	TOURNELON BLANC	CH	45.98 N	7.32 N	- - -	NE	NE	3700		3300	0.5	0.5	F
744	TRIENT	CH0043	46.00 N	7.03 E	5 3 8	N	N	3490	3140	1793	6.58	5	B

NR	GLACIER NAME	PSFG NR	LAT	LONG	CODE	EXP AC	EXP AB	ELEVATION MAX	ELEVATION MED	ELEVATION MIN	AREA KM²	LEN KM	TYPE OF DATA
745	TRIFT (GADMEN)	CH0055	46.67 N	8.37 E	5 1 8	N	N	3505	2900	1710	17.19	7.1	B F
746	TSANFLEURON	CH0033	46.32 N	7.23 E	6 0 6	NE	E	3020	2760	2420	3.78	3.6	B
747	TSCHIERVA	CH0093	46.40 N	9.88 E	5 1 8	NW	NW	4000	3060	2221	6.83	5	B
748	TSCHINGEL	CH0060	46.50 N	7.85 E	6 2 7	N	E	3510	2680	2266	6.18	3.8	B
749	TSEUDET	CH0040	45.90 N	7.25 E	6 1 7	N	N	3730	2900	2449	1.73	3	B
750	TSIDJIORE NOUVE	CH0028	46.00 N	7.45 E	5 2 8	N	NE	3800	3260	2205	3.12	5	B
751	TURTMANN (WEST)	CH0019	46.13 N	7.68 E	5 2 8	NW	N	4190	3380	2262	6.98	5.8	B
752	UNT.GRINDELWALD	CH0058	46.58 N	8.07 E	5 1 9	N	N	4100	2780	1090	21.71	9	B F
753	UNTERAAR	CH0051	46.57 N	8.22 E	5 1 7	E	E	4090	2660	1930	28.41	13.5	B
754	VAL TORTA	CH0118	46.47 N	8.53 E	6 4 9	N	N	2740	2580	2500	0.17	0.6	B
755	VALLEGGIA	CH0117	46.47 N	8.52 E	6 4 8	NE	NE	2820	2560	2540	0.59	1.2	B
756	VALSOREY	CH0039	45.90 N	7.27 E	5 1 8	NE	NW	3730	3100	2395	2.34	4.1	B
757	VERSTANKLA	CH0089	46.85 N	10.07 E	6 1 7	NW	NW	3100	2680	2380	1.06	2	B
758	VORAB	CH0085	46.88 N	9.17 E	6 0 6	E	SE	2980	2720	2560	2.51	2	B
759	WALLENBUR	CH0071	46.72 N	8.47 E	6 1 9	E	SE	3280	2580	2250	1.7	2.2	B
760	ZINAL	CH0022	46.07 N	7.63 E	5 1 9	N	N	4260	3060	2040	16.24	8	B
761	ZMUTT	CH0015	46.00 N	7.63 E	5 1 7	NE	E	4100	2980	2235	17.22	8.5	B
	U.S.A.												
762	BLUE GLACIER	US2126	47.82 N	123.68 W	5 2 8	NE	N	2380	1815	1235	4.3	4.3	C
763	COLUMBIA (2057)	US2057	47.97 N	121.35 W	6 4 8	S	S	1750	1600	1450	0.9	1.5	C
764	DANIELS	US2052	47.57 N	121.17 W	6 3 6	NE	NE	2300	2200	1970	0.4	0.8	C
765	EASTON	US2008	48.75 N	120.83 W	5 3 8	SW	S	2900	2200	1700	2.9	4	C
766	FOSS	US2053	47.55 N	121.20 W	6 3 8	NE	NE	2225	2125	1840	0.4	1	C
767	GULKANA	US0200	63.25 N	145.42 W	5 2 9	S	SW	2460	1840	1165	19.3	8.5	C
768	ICE WORM	US2054	47.55 N	121.17 W	6 4 8	E	E	2100	2010	1900	0.1	0.5	C
769	LECONTE	US1900	56.82 N	132.37 W	- - -	SW	SW				469	35	F
770	LOWER CURTIS	US2055	48.83 N	121.62 W	6 4 8	W	W	1850	1620	1460	0.8	1.6	C
771	LYNCH	US2056	47.57 N	121.18 W	6 5 4	N	N	2300	2185	1950	0.7	1.2	C
772	MCCALL	US0001	69.28 N	143.83 W	5 2 8	NW	N	2700	2010	1348	7.6	7.6	B C
773	NOISY CREEK	US2078	48.67 N	121.53 W	6 4 8	N	N	1890	1791	1683	0.58	1.14	C
774	NORTH KLAWATTI	US2076	48.57 N	121.12 W	- 5 5	SE	SE	2399	1729	1729	1.46	2.77	C
775	RAINBOW	US2003	48.80 N	121.77 W	6 3 8	E	E	2040	1740	1310	1.60	2.7	C
776	SANDALEE	US2079	48.42 N	120.80 W	6 4 5	N	N	2280	2154	1965	0.19	0.79	C
777	SILVER	US2077	48.98 N	121.25 W	6 4 8	N	NE	2698	2309	2080	0.41	1.08	C
778	SOUTH CASCADE	US2013	48.37 N	121.05 W	5 3 8	N	N	2100	1850	1635	1.95	2	B C
779	WOLVERINE	US0411	60.40 N	148.92 W	5 3 8	S	S	1700	1310	400	17.24	8	C
780	YAWNING	US2050	48.45 N	121.03 W	6 5 8	NE	NE	2100	1975	1880	0.3	0.8	C

Notes

Notes

Notes

WORLD GLACIER MONITORING SERVICE

VARIATIONS IN THE POSITION OF GLACIER FRONTS 1995–2000

TABLE B

NR	Record number
GLACIER NAME	15 alphabetic or numeric digits
PSFG NUMBER	5 digits identifying glacier with alphabetic prefix denoting country
METHOD	a = aerial photogrammetry b = terrestrial photogrammetry c = geodetic ground survey (theodolite, tape etc.) d = combination of a, b or c e = other methods or no information
1ST SURVEY	Year when first front variation data is available (at WGMS)
LAST SURVEY	Last survey before reported period
VARIATION IN METRES	Variation in the position of the glacier front in horizontal projection expressed as the change in length between the surveys

Key to Symbols

+X :	Glacier in advance
- X :	Glacier in retreat
ST :	Glacier stationary
SN :	Glacier front covered by snow

NR	GLACIER NAME	PSFG NR	FIRST	LAST	METHOD	VARIATIONS IN METRES				
			SURVEY			1996	1997	1998	1999	2000
	ARGENTINA									
1	DE LOS TRES	AR	1995	1995	C	-3	-5.7	-3		
	AUSTRIA									
2	AEU.PIRCHLKAR	AT0229	1982	1995		-11.5	6	-8.8	-17	3.3
3	ALPEINER F.	AT0307	1895	1995		-12.9	-X	-X	-X	-X
4	BACHFALLEN F.	AT0304	1905	1995		-12.3	-X	-X	-X	-X
5	BAERENKOPF K.	AT0702	1926	1995		0.9	-2.3	-6.5	-7	-14.2
6	BERGLAS F.	AT0308	1892	1995		-11.4	-1.7	-11.3	-7.6	-10.2
7	BIELTAL F. W	AT0105B	1970	1996			-9	-20.3	-13.3	-4.2
8	BIELTAL F.	AT0105A	1927	1996			-1.2	-16.2	-2.5	-4.6
9	BRENNKOGL K.	AT0727	1988	1995		-1.1	-4.5	-16.1	-12.1	-10.6
10	DAUNKOGEL F.	AT0310A	1904	1995		-5.9	-1.7	-13	-6.2	-13
11	DIEM F.	AT0220	1900	1995		-7.2	-3.6		-8.8	-11.1
12	DORFER K.	AT0509	1897	1996			-7.9		-X	-X
13	EISKAR G.	AT1301	1993	1995		-4.7	-0.5	-1.1	-1.1	-5.5
14	FERNAU F.	AT0312	1903	1995		-2.7	-0.7	-3.9	-3	-8
15	FREIGER F.	AT0320	1899	1995		-6.5	-4.1	-2.2	-6.2	-3.7
16	FREIWAND K.	AT0706	1951	1997				-1.4	-1.2	-2.2
17	FROSNITZ K.	AT0507	1925	1996			-3.2		-29.1	-6.5
18	FURTSCHAGL K.	AT0406	1897	1996			-X	-X	-X	-X
19	GAISKAR F.	AT0325	1986	1995		-4.3	-5.5	-6.1	0.1	-9.8
20	GAISSBERG F.	AT0225	1895	1995		-16.3	-14.3	-16	-9.9	-13.5
21	GEPATSCH F.	AT0202	1891	1995		-22.7	-6.9	-16.2	-20.4	-24
22	GOESSNITZ K.	AT1201	1983	1995		-7.3	-9.2	-8.7	-7.6	-7.9
23	GR GOLDBERG KEES	AT0802B	1880	1995		-9.6	-2.8	-14	-4.2	-28.2
24	GR.GOSAU G.	AT1101	1933	1997				-10.9	-1.4	-5.7
25	GROSSELEND K.	AT1001	1900	1995		-7.9	-0.9	-20.6	-4.8	-12.7
26	GRUENAU F.	AT0315	1903	1995		-12.1	1.3	-X		-X
27	GURGLER F.	AT0222	1897	1995		-2.8	-12	-15.8	-4	-7.2
28	GUSLAR F.	AT0210	1900	1995		-13.2	-7.8	-15.8	-11.1	-18.1
29	HALLSTAETTER G.	AT1102	1933	1995		-6.1	-0.1	-8.2	-1.7	-5.5
30	HINTEREIS FERNER	AT0209	1899	1995		-17	-13.4	-26.6	-15.7	-19.5
31	HOCHALM K.	AT1005	1900	1995		-4.4	1.3	-9.7	-7.5	-8
32	HOCHJOCH F.	AT0208	1900	1995		-34	-32.1	-50.6	-26.6	-28.8
33	HORN K.(SCHOB.)	AT1202	1984	1995		-4.2	-2.2	-7.7	-5.2	-10.5
34	HORN K.(ZILLER)	AT0402	1897	1995		-10	-10	-23	-28	-23
35	INN.PIRCHLKAR	AT0228	1982	1995		-1.2	3.6	-10.2	-0.3	5.5
36	JAMTAL F.	AT0106	1903	1995		-12.1	-9.6	-12	-6.7	-7.3
37	KAELBERSPITZ K.	AT1003	1928	1995		-7.6	4.5	-17.2	-10	-12.3
38	KARLES F.	AT0207	1951	1995		-11.2	-7.4			
39	KARLINGER K.	AT0701	1897	1995		-X	-X	-X	-X	-X
40	KESSELWAND FERNER	AT0226	1900	1995		-28.3	-14.4	-26.9	-13.2	-14.3
41	KL.FLEISS K.	AT0801	1902	1995		-13.3	-4.3	-15.1	-24.2	-12.5

NR	GLACIER NAME	PSFG NR	FIRST	LAST	METHOD	VARIATIONS IN METRES				
			SURVEY			1996	1997	1998	1999	2000
42	KLEINEISER K.	AT0717	1963	1996			1	-1.3	0.3	-2.3
43	KLEINELEND K.	AT1002	1900	1996			-1	-8.1	4.9	-8.8
44	KLOSTERTALER M	AT0102B	1969	1995		-9.2	1.7	-8.5	-0.7	-5.2
45	KLOSTERTALER N	AT0102A	1969	1995		-4.3	-1.2	-4.6		-1.3
46	KRIMMLER K.	AT0501A	1897	1996			-8	-9.5	-2.1	-3.5
47	LAENGENTALER F.	AT0305	1924	1995		-X	-X	-16.4	-3.6	-16
48	LANDECK K.	AT0604	1980	1996			-2.2		-1	-6.9
49	LANGTALER F.	AT0223	1897	1995		-24	-13	-15.8	-32	-14
50	LIESENSER F.	AT0306	1909	1995		-4.3	-3.4		-8	-9
51	LITZNERGL.	AT0101	1934	1995		0.4	0.5	-3.1	-3	-1.7
52	MARZELL F.	AT0218	1897	1995		-6.7	-9.9	-10.4	-9.1	-9.2
53	MAURER K.(GLO.)	AT0714	1963	1996			4	-3.4	0	-2.2
54	MAURER K.(VEN.)	AT0510	1897	1998					-X	
55	MITTERKAR F.	AT0214	1896	1995		-2.4	-0.9	-15.6	-8.5	2.4
56	MUTMAL F.	AT0227	1969	1996			-11.9		-21.4	-X
57	NIEDERJOCH F.	AT0217	1897	1995		-9.6	-8.8	-12.2	-15.3	-30.8
58	OBERSULZBACH K.	AT0502	1899	1995		-11	-15.8	-19.7	-15	-18
59	OCHSENTALERGL.	AT0103	1960	1995		-16.5	-10	-30.6	-7.8	-20.5
60	OEDENWINKEL K.	AT0712	1961	1996			-0.7	-4.3	-2.1	-4.1
61	PASTERZEN K.	AT0704	1897	1995		-14.2	-10.2	-17.7	-25.8	-30.6
62	PFAFFEN F.	AT0324	1981	1995		-6.3	-8.2	-7.4	-3.3	-1.1
63	PRAEGRAT K.	AT0603	1963	1996			3.8		-3.9	-3.2
64	RETTENBACH F.	AT0212	1954	1995		-3.7	-3.7	-6.7	-9.8	-8.8
65	RIFFL K. N	AT0718	1963	1996			-3.6	-7.9	-8.7	-4.7
66	ROFENKAR F.	AT0215	1897	1995		-16	-9	-11.5	-5.1	-8.5
67	ROTMOOS F.	AT0224	1897	1995		-13.3	-8.9	-13.5	-11.7	-21.2
68	SCHALF F.	AT0219	1929	1995		-16.6	-13.4		-28.5	-29.6
69	SCHAUFEL F.	AT0311	1912	1995		-4.4	-0.7	-4.5	-5.6	-24.9
70	SCHLADMINGER G.	AT1103	1935	1995		-0.8	3.1	-3.6	-0.8	-0.2
71	SCHLAPPEREBEN K	AT0805	1984	1996			-2.7		-2.4	
72	SCHLATEN K.	AT0506	1897	1995		-X	-6.4	-10.9	-9.6	-8
73	SCHLEGEIS K.	AT0405	1979	1996			-X		-X	-X
74	SCHMIEDINGER K.	AT0726	1960	1996			1		-0.9	-3.4
75	SCHNEEGLOCKEN	AT0109	1974	1995		-4	-0.3	-15.6	-1.2	-2.3
76	SCHNEELOCH G.	AT1104	1970	1997				-7.3	-1.4	-3.6
77	SCHWARZENBERG F	AT0303	1912	1995		-11.1	-1.2	-15.3	-7	-10.2
78	SCHWARZENSTEIN	AT0403	1897	1995		-4	-8	-15	-13	-5
79	SCHWARZKARL K.	AT0716	1963	1996			-1.1	-12.1	-2.4	-7.5
80	SCHWARZKOEPFL K	AT0710	1960	1995		-14.2	-14	-25.3	-28.5	-25
81	SEXEGERTEN F.	AT0204	1932	1995		-15.5	-6.8	-43.2	-17.3	-10.6
82	SIMMING F.	AT0318	1924	1995		-12	-9.1	-9.4	-8.7	-15.3
83	SIMONY K.	AT0511	1897	1996			-5.8	-22.8	-15	-8
84	SONNBLICK KEES	AT0601A	1961	1995		-2	1	-4.4	-2.5	-1.4
85	SPIEGEL F.	AT0221	1897	1995		-4.6	-3.1		-6.3	-5.6

NR	GLACIER NAME	PSFG NR	FIRST	LAST	METHOD	VARIATIONS IN METRES				
			SURVEY			1996	1997	1998	1999	2000
86	SULZENAU F.	AT0314A	1898	1995		-44.6	-30.4	-9.1	-6.3	-7.4
87	SULZTAL F.	AT0301	1924	1995		-9.3	-7.9	-26.5	-11.7	-27
88	TASCHACH F.	AT0205	1902	1995		-12	-11	-14.6	-18.3	-18.9
89	TAUFKAR F.	AT0216	1896	1996			-7.2	-17.3		-12.8
90	TOTENFELD	AT0110	1977	1995		-3.4	-0.9	-8.2		-2.2
91	TRIEBENKARLAS F.	AT0323	1978	1996			-13.2	-13.6	-8.5	-8.4
92	UMBAL K.	AT0512	1897	1996			-17.4	-20	-14.5	-18.8
93	UNTERSULZBACH K.	AT0503	1897	1996			-7.7	-12.8	-17.1	-19.3
94	VERBORGENBERG F.	AT0322	1977	1995		-5	1.8	-6.8	-1.1	-12.6
95	VERMUNTGL.	AT0104	1903	1995		-8	-7.6	-10.7	-5.1	-8.7
96	VERNAGT FERNER	AT0211	1891	1995		-19.7	-7.3	-21.9	-12.1	-21.7
97	VILTRAGEN K.	AT0505	1897	1995		-X	-8		-33.8	-11.5
98	W.TRIPP K.	AT1004	1928	1995		-2.2	8.1	-3.5	2.7	0.7
99	WASSERFALLWINKL	AT0705	1944	1995		-6.5		-1.3	0.4	-1.5
100	WAXEGG K.	AT0401	1897	1995		-30	-X	-25	-60	-24
101	WEISSEE F.	AT0201	1896	1995		-7.6	-9.5	-16.8	-26.5	-7.7
102	WILDGERLOS	AT0404	1973	1996			-6	-8.8	-5.3	-12.2
103	WINKL K.	AT1006	1936	1996			-0.6	-9	0.5	-7.1
104	WURTEN K.	AT0804	1870	1995		-13.4	0	-13	-6.6	-7.4
105	ZETTALUNITZ K.	AT0508	1960	1995		-X	-7.1		-32.4	-31.5
	<u>BOLIVIA</u>									
106	CHACALTAYA	BO5180	1983	1995	D	-15	-14	-31	-15	-5
107	ZONGO	BO5150	1992	1995	C	-12	-16	-25	-27	-12
	<u>CHILE</u>									
108	AMALIA	CL0056	1975	1986	A	-1021				
109	BLANCO CHICO	CL0074	1981	1995	A		-34			
110	CASA PANGUE	CL0073	1945	1995	D		-134			-21
111	CERRO BLANCO	CL0034	1975	1975	A		-420			
112	CHICO	CL0059	1975	1986	A	-153				
113	CIPRESES	CL0071	1888	1968	D		-870			
114	DICKSON	CL0063	1945	1995	D			-180		
115	G30	CL0068	1955	1955	A		-517			
116	G32	CL0069	1955	1955	A		-527			
117	GALERIA	CL1016	1986	1984	D			-325		
118	GCN09	CL1009	1986	1986	D			-571		
119	GCN13	CL1013	1986	1984	D			SN		
120	GCN22	CL1021	1984	1986	D			SN		
121	GCN37	CL1036	1986	1986	D			-251		
122	GCN38	CL1037	1986	1986	D			-407		
123	GCN40	CL1039	1986	1986	D			-382		
124	GCN41	CL1040	1986	1986	D			ST		

NR	GLACIER NAME	PSFG NR	FIRST	LAST	METHOD	VARIATIONS IN METRES				
			SURVEY			1996	1997	1998	1999	2000
125	GCN42	CL1041	1986	1986	D			ST		
126	JUNCAL NORTE	CL0064	1955	1955	D		-170			-12
127	JUNCAL SUR	CL0065	1955	1955	A		-2108			
128	LENGUA	CL1019	1984	1986	D			-60		
129	OLIVARES BETA	CL0067	1955	1955	A		-898			
130	OLIVARES GAMA	CL0066	1955	1955	A		-623			
131	PIO XI	CL0044	1925	1995	A					ST
132	RISOPATRON	CL0070	1955	1955	A		-530			
133	TRINIDAD	CL0055	1986	1995	D					245
134	TRONQUITOS	CL0029	1984	1984	A	-279				
135	UNIVERSIDAD	CL0072	1955	1955	A		-760			
136	VERDE	CL0075	1981	1995	A		-211			
	<u>CHINA</u>									
137	LAPATE NO.51	CN0027	1981	1999	C					-4.9
138	URUMQIHE E-BR.	CN1001	1995	1995	C	-3.4	-3.7	-3.5	-3.4	-3.4
139	URUMQIHE W-BR.	CN1002	1995	1995	C	-4.6	-4.8	-4.5	-4.9	-6.9
	<u>C.I.S.</u>									
140	ABRAMOV	SU4101	1967	1994	C		-79			
141	BEZENGI	SU3006	1965	1995	C		-17	-7		
142	BIRDZHALYCHIRAN	SU3026	1986	1986	A		160			
143	BITYUKTYUBE	SU3034	1986	1988	A		130			
144	BOLSHOY AZAU	SU3004	1970	1987	A		-150			
145	CHUNGURCHATCHIR	SU3027	1986	1986	A		160			
146	DJANKUAT	SU3010	1974	1995	B	-1		-8	-4.5	
147	DZHELO	SU7106	1952	1995	C	-8	-6	-15.5	-9.3	-7.9
148	GARABASHI	SU3031	1987	1987	A		0			
149	IRIK	SU3029	1983	1983	A		-50			
150	IRIKCHAT	SU3028	1983	1983	A		-170			
151	KARA-BATKAK	SU5080	1972	1995	C	-7.5	-12.4	-6.8		
152	KARACHAUL	SU3022	1986	1986	A		10			
153	KHAKEL	SU3003	1966	1995	C			0		-15
154	KORUMDU	SU7103	1937	1995	C	-6	-4	-9	-7.1	-8.4
155	KORYTO	SU8003	1982	1995	D	SN	SN	-5	-5	-5
156	KOZELSKIY	SU8005	1967	1995	D	10	10			20
157	KOZITSITI	SU3009	1975	1993	C		2			-40
158	KROPOTKINA	SU8006	1986	1986	D					-100
159	KYUKYURTLYU	SU3033	1983	1983	A		-90			
160	LEVIY AKTRU	SU7102	1976	1995	D	-12	-6	-8	-7	-9.2
161	LEVIY KARAGEMSK	SU7107	1938	1995	C	-14	-9	-17	-6.9	-7.5
162	MALIY AKTRU	SU7100	1936	1995	D	-5	-3	-16	-7.5	-12.5
163	MALIY AZAU	SU3032	1987	1987	A		-10			
164	MARUKHSKIY	SU3001	1966	1995	C	0	-8	-13	-10	-4

NR	GLACIER NAME	PSFG NR	FIRST	LAST	METHOD	VARIATIONS IN METRES				
			SURVEY			1996	1997	1998	1999	2000
165	MIKELCHIRAN	SU3025	1986	1986	A		45			
166	MIZHIRGICHIRAN	SU3043	1989	1995	C		29	3		
167	MUTNOVSKIY NE	SU8011	1995	1995	D	80	70	-3	-10	-17
168	MUTNOVSKIY SW	SU8012	1995	1995	D	SN	SN	ST	ST	
169	NO. 125 (VODOPADNIY)	SU7105	1986	1995	D	-1.6	-1.1	-3.5	-2.4	-3.1
170	NO. 462V (KULAK N.)	SU3005	1971	1991	C			-16		
171	PRAVIY KARAGEMSKIY	SU7109	1952	1995	C	-8	-6	-11	-5.8	-7.6
172	SKAZKA	SU3008	1970	1995	C				-6	-9
173	TERSKOL	SU3030	1987	1987	A		70			
174	TS.TUYUKSUYSKIY	SU5075	1908	1986	C	-10	-20	-9.2	-10.7	-11.5
175	TSEYA	SU3007	1965	1995	C		-13		-8	-53
176	ULLUCHIRAN	SU3021	1986	1986	A		100			
177	ULLUKAM	SU	1959	1959	A		45			
178	ULLUKOL	SU3023	1986	1986	A		-45			
179	ULLUMALIENDERKU	SU3024	1986	1986	A		100			
180	YUGO-VOSTOCHNIY	SU3018	1960	1995	C	-4	-12	-6	-1	-8
181	YUZHNIY	SU3017	1960	1995	C	-7	-11	0	-2	-6
	COLOMBIA									
182	ALFOMBRALES	CO0013	1987	1987	D					-580
183	CENTRAL	CO0032	1987	1987	D					-177
184	EL OSO	CO0010	1987	1987	D					-370
185	GUALI	CO0003	1987	1987	D					-550
186	LA CONEJERA	CO0033	1987	1987	D					-147
187	LA LISA	CO0004	1987	1987	D					-530
188	LAGUNA AZUL	CO0026	1987	1987	D					-190
189	MOLINOS	CO0002	1987	1987	D					-850
190	NEREIDAS	CO0014	1986	1987	D					-850
191	TRIDENTE	CO0012	1987	1987	D					-400
	ECUADOR									
192	ANTIZANA15ALPHA	EC0001	1995	1995	C	-54	-60	-26	16	27
	FRANCE									
193	ARGENTIERE	FR0002	1883	1995	C	-41	-40	-52	-39	-15
194	BLANC	FR0031	1899	1995	C	-20	-28	-25	-26	-23
195	BOSSONS	FR0004	1874	1995	C	-22	30	22	9	-18
196	GEBROULAZ	FR0009	1908	1995	C	-6	-6	-6	-7	-8
197	MER DE GLACE	FR0003	1866	1995	C	-55	-33	-5	-30	-39
198	SAINT SORLIN	FR0015	1923	1995	C	-5				
	ICELAND									
199	BREIDAMJOK.E.B	IS1126B	1937	1993			-186		-81	-56
200	BREIDAMJOK.W.A	IS1125A	1934	1995		-20	0	-15	-50	-5

NR	GLACIER NAME	PSFG NR	FIRST	LAST	METHOD	VARIATIONS IN METRES				
			SURVEY			1996	1997	1998	1999	2000
201	BREIDAMJOK.W.C	IS1125C	1933	1995		-45	-55	-60	-40	-40
202	FALLJOKULL	IS1021	1958	1995		1	-11	-33	-12	-37
203	FJALLS.FITJAR	IS1024B	1936	1995		23	-18	-10	-10	-63
204	FJALLSJ. BRMFJ	IS1024A	1934	1995		-10	0	-20	-15	-5
205	FJALLSJ.G-SEL	IS1024C	1934	1995		12	-20	-10	-50	-20
206	FLAAJ E148	IS1930C	1931	1994		10		-23		-53
207	GIGJOKULL	IS0112	1934	1994		10		-100		-136
208	GLJUFURARJOKULL	IS0103	1933	1995		-3	-X	-X	-2	-16
209	HAGAFELLSJOK.E	IS0306	1902	1997				-359	1165	-44
210	HAGAFELLSJOK.W	IS0204	1972	1993				-306		-94
211	HOFFELLSJ.W	IS2031	1931	1992				-72		
212	HRUTARJOKULL	IS0923	1948	1995		-20	-10	0	0	0
213	HYRNINGSJOKULL	IS0100	1933	1995		-19	-21	-2	-2	SN
214	JOKULKROKUR	IS0007	1936	1991			28			-22
215	KALDALONSJOKULL	IS0102	1931	1995		38	669	150	146	0
216	KVERKJOKULL	IS2500	1971	1993						-42
217	KVIARJOKULL	IS0822	1935	1995		4	0	-10	-5	0
218	LEIRUFJ.JOKULL	IS0200	1886	1995		737	169	75	94	36
219	MORSARJOKULL	IS0318	1935	1995		-31	9	0	-8	-14
220	MULAJOKULL S.	IS0311A	1935	1995		-8	-60	-106	-14	-50
221	NAUTHAGAJOKULL	IS0210	1935	1995		-5	-4	-15	-13	-5
222	OLDUFELLSJOKULL	IS0114	1967	1993		-88				
223	REYKJAFJARDARJ.	IS0300	1914	1995		-12	-7	-11	0	-5
224	SATUJOKULL	IS0530	1991	1993		-200		-27		-51
225	SIDUJOK.E M177	IS0015B	1934	1995		-14	-42	-26	-92	
226	SKAFTAFELLSJ.	IS0419	1934	1995		51	15	24	-40	-70
227	SKEIDARARJ. E1	IS0117A	1951	1995		-33	-14	-32	-53	-1
228	SKEIDARARJ. E2	IS0117B	1932	1995		-31	-13	-36	-13	-10
229	SKEIDARARJ. E3	IS0117C	1932	1995		-4		-12	-4	-14
230	SKEIDARARJ. W	IS0116	1932	1995		-13	-38	-35	-150	-110
231	SOLHEIMAJOK. W	IS0113A	1931	1995		-3	-10	-30	-20	-24
232	SVINAFELLSJ.	IS0520A	1951	1995		5	-13	-3	0	-5
233	TUNGNAARJOKULL	IS2214	1946	1995		-53	-6	-12		-19
234	VIRKISJOKULL	IS0721	1933	1995		0				
	ITALY									
235	AGNELLO	IT0029	1960	1995	C		-3.5		-14	-2
236	ALTA (VEDRETTA)	IT0730	1924	1995	C	-12	-11	-16	-13	-14.5
237	AMOLA	IT0644	1952	1995	C	2	-8	-15	-15	-9
238	ANDOLLA NORD	IT0336	1981	1995	C	-2.5	-1.5	-14	-7	-1
239	ANTELAO INF.	IT0967	1957	1995	C	-6.5	-2.5	-0.5	-5.5	-7
240	ANTELAO SUP.	IT0966	1957	1995	C	-6.5	-1	-3.5	-4	-11
241	AURONA	IT0338	1962	1983	C		-147			
242	BARBADORSO D.	IT0778	1936	1993	C				-197	

NR	GLACIER NAME	PSFG NR	FIRST	LAST	METHOD	VARIATIONS IN METRES				
			SURVEY			1996	1997	1998	1999	2000
243	BASEI	IT0064	1970	1994	C	SN		-18	-1	-0.5
244	BELVEDERE	IT0325	1938	1995	C	-6	-2	-14	-2.5	-30
245	BESSANESE	IT0040	1948	1995	C	-1.5	-1.5	-1	-1.5	-2
246	BRENVA	IT0219	1948	1993	C	7.5				
247	CASPOGGIO	IT0435	1927	1995	C	-7.5	-23	-18	-X	-X
248	CEVEDALE	IT0732	1899	1995	C	-19.5	-21	-24	-X	-50
249	CHAVANNES	IT0204	1957	1994	C	-19	-1.5			-11
250	CIARDONEY	IT0081	1973	1994	C	-8	-5	-18	-10.5	-17
251	COLLALTO	IT0927	1975	1995	C	-9.5	-4	-6	-4	-31
252	CORNISELLO MER.	IT0646	1928	1995	C	-4	0	-2	-25.5	-13.5
253	CRODA ROSSA	IT0828	1973	1994	C	-13	-11		-6	-40
254	DOSDE OR.	IT0473	1933	1995	C	-10.5	-17	-16	-11.5	-X
255	DOSEGU	IT0512	1926	1995	C	-8	-26	-X	-27.5	-X
256	FELLARIA OCC.	IT0439	1898	1995	C	-29	-15	-22	-18	-10.5
257	FORCOLA	IT0731	1899	1995	C	-29	-15	-40	-33	-58
258	FORNI	IT0507	1970	1995	C	-20.5	-15	-28	-26	-42
259	FRADUSTA	IT0950	1995	1995	C	-3	-2.5		-7.5	-7.5
260	GIGANTE CENTR.	IT0929	1974	1995	C	-16	-15		-31	-19
261	GIGANTE OCC.	IT0930	1973	1995	C	-10	-2.5	-7.5	-2.5	-4
262	GOLETTA	IT0148	1948	1995	C	-5.5	-1.5	-12		-13.5
263	GR. MURAILLES	IT0260	1961	1995	C	-11	49.5	-32.5		-48
264	GRAN PILASTRO	IT0893	1969	1993	C	-47.5	-5	-14	-19.5	-17
265	HOHSAND SETT.	IT0357	1926	1995	C	-15	-1.5	-8.5	0	
266	LA MARE	IT0699	1897	1995	C	-30.5	-2	-18	2.5	-29
267	LANA	IT0913	1978	1995	C	-13	-3	-5	-6	-2
268	LARES	IT0634	1920	1995	C	-16	-10	-20	-17.5	-15.5
269	LAUSON	IT0116	1969	1995	C	-3	-2	-6	-3	-6.5
270	LEX BLANCHE	IT0209	1930	1995	C	-20	-X	-30		
271	LOBBIA	IT0637	1899	1995	C	-6	-11	-10	-17	
272	LUNGA (VEDRETTA)	IT0733	1901	1995	C	-20	-4	-26	-28	-67
273	LYS	IT0304	1902	1995	C	-9	-6	-20	-13	-15
274	MALAVALLE	IT0875	1915	1995	C	-5	-4	-13	-6	-7
275	MANDRONE	IT0639	1911	1995	C	-3	-1	-19.5	-16.5	-18.5
276	MARMOLADA	IT0941	1902	1994	C	-8.5	SN		-2.5	-X
277	MONACHE OR.	IT0723	1995	1995	C	-3	-25	-14	-13	-23
278	NARDIS OCC.	IT0640	1927	1995	C	-13	-6	-18	2.5	-6.5
279	NEVES OR.	IT0902	1910	1995	C	-16.5	-11	-13	-18	-20
280	NISCLI	IT0633	1920	1995	C	3.5	0	-9.5	-15.5	-7
281	PENDENTE	IT0876	1932	1995	C	-7	-3	-11	-1	-7
282	PIODE	IT0312	1915	1995	C	-5	-22	-7	-16.5	
283	PISGANA OCC.	IT0577	1918	1992	C		SN	-X	-X	-109
284	PIZZO SCALINO	IT0443	1899	1995	C	-4	-7	-3	-15	0
285	PRE DE BAR	IT0235	1904	1995	C	-22.5	-12.5	-22.5	-16	-24
286	PRESANELLA	IT0678	1925	1995	C		-6.5		-4.5	

NR	GLACIER NAME	PSFG NR	FIRST	LAST	METHOD	VARIATIONS IN METRES				
			SURVEY			1996	1997	1998	1999	2000
287	QUAIRA BIANCA	IT0889	1930	1993	C	-30	-5	-13	-9	-14
288	ROSIM	IT0754	1898	1995	C	-9	-1	-18.5	-3	-16
289	ROSSA (VEDR.)	IT0697	1898	1995	C	-12	-7		-70.5	-8
290	ROSSO DESTRO	IT0920	1930	1994	C		-40	-9.5	-7.5	-15.5
291	RUTOR	IT0189	1933	1995	C	-1.5	0	-14.5	-6	-17.5
292	SFORZELLINA	IT0516	1926	1995	C	-0.5	-2	-12	-4	-7
293	TESSA	IT0829	1973	1994	C	-23.5	-10.5		0	0
294	TOULES	IT0221	1933	1995	C	-X	-X	-X	-X	-X
295	TRAVIGNOLO	IT0947	1953	1995	C	-3.5	+X		-6	-X
296	TRESERO	IT0511	1926	1995	C	-9	-X	-11	0	-9
297	TZA DE TZAN	IT0259	1937	1995	C	-12	-10			-62.5
298	VALLE DEL VENTO	IT0919	1981	1994	C		-33	-11	-24.5	9.5
299	VALLELUNGA	IT0777	1923	1993	C				-82	
300	VALTOURNENCHE	IT0289	1928	1994	C	4.5	-5.5	-12	-6	-3
301	VENEROCOLO	IT0581	1920	1995	C			0	-8	-3.5
302	VENEZIA (VEDR.)	IT0698	1987	1995	C	-31	-6		-42	-10.5
303	VENTINA	IT0416	1907	1995	C	-8	-14	-8	-7	-26.5
304	VITELLI	IT0483	1923	1995	C		-4	-5	-10	
305	ZAI DI DENTRO	IT0749	1930	1995	C	-5	-2	-12.5	-6.5	-18
306	ZAI DI MEZZO	IT0750	1934	1995	C	-5	-1	-9.5	-16.5	-11.5
307	ZAY DI FUORI	IT0751	1899	1995	C	-2.5	-0.5	SN	-15	-11
	MEXICO									
308	VENTORRILLO	MX0101	1950	1982	A	-25	-X	-3	-5	
	NEPAL									
309	AX010	NP0005	1989	1995	C	0	-26	-13	-51	
310	RIKKA SAMBA	NP	1994	1994	C			-72.8	-11.5	
311	YALA	NP0004	1987	1994	C	-8.6				
	NEW ZEALAND									
312	ADAMS	NZ8974	1892	1995	A	+X	ST		ST	
313	ALMER	NZ888B1	1993	1995	A	+X	+X	+X	+X	+X
314	ANDY	NZ863C1	1993	1995	A	+X	+X	+X	ST	-X
315	ASHBURTON	NZ688A1	1993	1995	A		ST		+X	+X
316	AXIUS	NZ	1987	1987	A			-X	-X	ST
317	BALFOUR	NZ882B1	1995	1995	A		-X	-X	-X	ST
318	BARLOW	NZ893A2	1992	1995	A			+X		-X
319	BARRIER	NZ	1987	1987	A			+X	+X	
320	BONAR	NZ863A1	1995	1995	A				-X	+X
321	BREWSTER	NZ868C1	1992	1995	A	ST	-X	ST	-X	-X
322	BURTON	NZ888A1	1993	1995	A	ST	+X	ST	ST	-X
323	CAMERON	NZ685B2	1993	1995	A	+X	+X	+X		-X
324	CLASSEN	NZ711M1	1994	1995	A	-X			-X	-X

NR	GLACIER NAME	PSFG NR	FIRST	LAST	METHOD	VARIATIONS IN METRES				
			SURVEY			1996	1997	1998	1999	2000
325	COLIN CAMPBELL	NZ693C1	1995	1995	A					-X
326	CROW	NZ664C2	1995	1995	A		ST			-X
327	DAINTY	NZ	1994	1994	A	ST	ST	-X	-X	-X
328	DART	NZ752C2	1981	1995	A					-X
329	DISPUTE	NZ	1988	1988	A			-X	-X	-X
330	DONALD	NZ	1988	1988	A					+X
331	DONNE	NZ851B2	1995	1995	A	-X		+X		-X
332	DOUGLAS (KAR.)	NZ880B2	1993	1995	A	-X	+X	+X	+X	ST
333	EVANS	NZ8972	1992	1995	A	ST		ST	ST	-X
334	FITZGERALD	NZ	1988	1988	A					+X
335	FOX	NZ882A1	1991	1995	A		+X	+X	-X	-X
336	FRANZ JOSEF	NZ888B2	1981	1995	A	+X	+X	+X	+X	-X
337	FRESHFIELD	NZ	1988	1988	A	+X				
338	GLENMARY	NZ711F1	1994	1995	A		-X		-X	ST
339	GODLEY	NZ711M3	1995	1995	A	-X			-X	-X
340	GREY AND MAUD	NZ711M2	1994	1995	A	ST			ST	-X
341	HOOKER	NZ711H2	1992	1995	A	+X	+X	-X	+X	-X
342	HORACE WALKER	NZ880B1	1988	1995	A	ST			-X	-X
343	IVORY	NZ9011	1981	1995	A	-X	-X	-X	-X	-X
344	KAHUTEA	NZ685E1	1995	1995	A	+X	+X	ST	ST	ST
345	LA PEROUSE	NZ882B2	1995	1984	A	ST	+X	ST	ST	+X
346	LAMBERT	NZ8973	1992	1994	A		ST		-X	ST
347	LAWRENCE	NZ	1996	1996	A		ST	ST		-X
348	LEEB	NZ	1985	1985	A				-X	
349	LYELL	NZ685C2	1995	1995	A		-X	-X	-X	-X
350	MARION	NZ863B4	1993	1995	A		+X	ST	-X	-X
351	MARMADUKE DIXON	NZ664C1	1993	1995	A	-X	ST	ST	-X	-X
352	MC COY	NZ693C2	1995	1995	A				+X	ST
353	MUELLER	NZ711H1	1991	1995	A					-X
354	MURCHISON	NZ711J1	1993	1995	A		-X	-X	-X	-X
355	PARK PASS 1	NZ752B1	1994	1995	A		ST	-X	-X	-X
356	RAMSAY	NZ685C3	1995	1995	A		-X	+X		-X
357	REISCHEK	NZ685C1	1995	1995	A		-X	-X		-X
358	RICHARDSON	NZ711E1	1993	1995	A	ST				ST
359	SALE	NZ906B1	1995	1995	A			ST	-X	-X
360	SEPARATION	NZ	1995	1995	A	+X				-X
361	SIEGE	NZ893A1	1992	1996	A		-X	-X	-X	-X
362	SNOW WHITE	NZ863B2	1993	1995	A		-X			-X
363	SNOWBALL	NZ863B3	1993	1995	A		+X	-X		-X
364	SPENCER	NZ888A2	1992	1995	A		+X	ST	ST	ST
365	ST. JAMES	NZ	1985	1985	A	+X			+X	+X
366	STRAUCHON	NZ880A2	1994	1995	A	ST		-X		-X
367	TASMAN	NZ7111	1991	1995	A	-X	-X	-X	-X	-X
368	THURNEYSON	NZ711B1	1992	1994	A	ST	+X	+X	-X	-X

NR	GLACIER NAME	PSFG NR	FIRST SURVEY	LAST SURVEY	METHOD	VARIATIONS IN METRES 1996	1997	1998	1999	2000
369	UNNAMED NZ685C4	NZ685C4	1992	1995	A	SN	+X	-X	-X	-X
370	UNNAMED NZ711N/012	NZ	1988	1988	A					-X
371	UNNAMED NZ851A/036	NZ	1987	1987	A			+X	-X	
372	UNNAMED NZ851B	NZ851B1	1993	1995	A		ST	-X	ST	-X
373	VICTORIA	NZ882A1	1995	1995	A			ST		ST
374	WHATAROA	NZ	1988	1988	A				-X	-X
375	WHITBOURNE	NZ752C1	1995	1995	A					-X
376	WHITE	NZ664C1	1993	1995	A	+X	+X	-X	-X	-X
377	WHYMPER	NZ893B1	1995	1995	A	-X	-X	-X	-X	-X
378	WIGLEY	NZ873B2	1992	1995	A	-X		-X	-X	-X
379	WILKINSON	NZ906B2	1995	1995	A	ST				-X
380	ZORA	NZ868B1	1995	1995	A	ST			-X	ST
	NORWAY									
381	AUSTDALSBREEN	NO37323	1913	1995		10	20	5	0	5
382	BERGSETBREEN	NO31013	1996	1996			18	1	-3	9
383	BLOMSTERSKARDBR	NO01930	1998	1998					0	
384	BOEDALSBREEN	NO37219	1996	1996			30	9	20	4
385	BOEVERBREEN	NO00548	1904	1997				1.5	2	4
386	BONDHUSBREEN	NO20408	1903	1996			-43	14	-1	-24
387	BOTNABREEN	NO20515	1996	1996			-7.5	10	12	6
388	BRENNDALSBREEN	NO37109	1996	1996			8.5	10.5	5	0
389	BRIGSDALSBREEN	NO37110	1899	1995		58	-2	-3	-2	-30
390	BUARBREEN	NO21307	1909	1995		19	9	4.5	-27	-1
391	ENGABREEN	NO67011	1910	1995		35	-3	33	0	-10
392	FAABERGSTOELSB.	NO31015	1903	1995		14	12	23	28	25
393	HELLSTUGUBREEN	NO00511	1902	1995		-3	2	-9	-7	0
394	KJENNDALSBREEN	NO37223	1996	1996			10	-4	-7	-1
395	KOPPANGSBREEN	NO	1998	1998					-31	-6
396	LANGFJORDJOEKUL	NO85008	1998	1998					-39	-12
397	LEIRBREEN	NO00548	1908	1995		-3	-9	-10	-28	-7
398	MIDTDALSBREEN	NO04302	1983	1995		1	-7	-1	3	8
399	NIGARDSBREEN	NO31014	1909	1995		40	19	23	17	23
400	REMBESDALSKAAKI	NO22303	1995	1995		0		24	-20	21
401	STEGHOLTBREEN	NO31021	1909	1995		-3	8	9	6	8
402	STEINDALSBREEN	NO	1998	1998					-16	-9
403	STORBREEN	NO00541	1902	1995		-7	ST	-7	1	0
404	STORGJUVBREEN	NO	1997	1997				6.5	6	6
405	STYGGEDALSBREEN	NO30720	1902	1995		9	-17	8	3	-2
406	SUPPHELLEBREEN	NO33014	1903	1998					24	0
407	WALDEMARBREEN	NO	1936	1995	C	-X	-X	-X	-X	-7
	PERU									
408	BROGGI	PE0003	1968	1995		-13.7	-9.6			

NR	GLACIER NAME	PSFG NR	FIRST	LAST	METHOD	VARIATIONS IN METRES				
			SURVEY			1996	1997	1998	1999	2000
409	URUASHRAJU	PE0005	1968	1995	C	-35.2	-20.7			
410	YANAMAREY	PE0004	1972	1995	C	-23.7	-26.5			
	<u>POLAND</u>									
411	MIEGUSZOWIECKIE	PL0140	1981	1995	E	SN	-2	0	-1.7	
412	POD BULA	PL0111	1981	1995	E	-26.8	-14	14	-10.6	5.2
413	POD CUBRYNA	PL0180	1981	1995	E	SN	-45	43	1	
	<u>SWEDEN</u>									
414	HYLLGLACIAEREN	SE0780	1968	1996	C		SN	-X		-X
415	ISFALLSGLAC.	SE0787	1910	1995	C	1.4	0	3.8		0
416	KARSOJIETNA	SE0798	1909	1995	C	-22.3	-X			
417	MIKKAJEKNA	SE0766	1899	1995	C	-11.9	-8.5	-22.5		-X
418	PARTEJEKNA	SE0763	1970	1995	C	-20.9	-10.2	-X	-14.9	-10
419	PASSUSJIETNA E.	SE0797	1969	1995	C	-X	-16.5	-20	-X	0
420	RABOTS GLACIAER	SE0785	1951	1995	C	-10.6	-7.5	-X	-19.3	-7.7
421	RIUKOJIETNA	SE0790	1968	1995	C	-3.8	-X	-11.7		-8.3
422	RUOPSOKJEKNA	SE0764	1967	1995	C	-9.1	-0.1	-21.7		-19.1
423	RUOTESJEKNA	SE0767	1967	1995	C	-20.4		-41.6		-X
424	SALAJEKNA	SE0759	1908	1995	C	-9.7	-9.4	-X	-19.3	-5
425	SE KASKASATJ GL	SE0789	1951	1995	C	-4.1		-X		-X
426	STORGLACIAEREN	SE0788	1908	1995	C	SN	SN	-X	-X	0
427	STOUR RAEITAGL.	SE0784	1971	1995	C	-6.2	0	-X		
428	SUOTTASJEKNA	SE0768	1901	1995	C	-36.9	-0.6	SN		SN
429	UNNA RAEITA GL.	SE0783	1951	1995	C	-2.6	-X	SN		SN
430	VARTASJEKNA	SE0765	1968	1996	C		SN	SN		-X
	<u>SWITZERLAND</u>									
431	ALLALIN	CH0011	1884	1995	A	-36	-6	-140	-106	-218
432	ALPETLI(KANDER)	CH0109	1894	1995	C	-7	-7	-15	-14	-10
433	AMMERTEN	CH0111	1970	1995	C	-1	-2	-3	-3	-2
434	AROLLA (BAS)	CH0027	1886	1995	C	-16	-7	-5	-15	-14
435	BASODINO	CH0104	1894	1995	C	-3	-7	-9	-7	-20
436	BELLA TOLA	CH0021	1946	1995	C	-9	26	-8	-3	-2
437	BIFERTEN	CH0077	1884	1995	C	-7	-8	-10	-6	-10
438	BIS	CH0107	1901	1995	E	-X				
439	BLUEMLISALP	CH0064	1894	1995	C	-18	-11	-16	-9	-32
440	BOVEYRE	CH0041	1890	1994	C	-7		-37	-10	
441	BRENEY	CH0036	1882	1994	C	-20	-27	-31	-4	-16
442	BRESCIANA	CH0103	1898	1995	C	-11	-17	-29	-71	-23
443	BRUNEGG	CH0020	1941	1995	C	-14	-6	-13	27	-12
444	BRUNNI	CH0072	1883	1990	C		-9			
445	CALDERAS	CH0095	1921	1995	C	-12	-2	-27	-13	-8
446	CAMBRENA	CH0099	1889	1995	C		-5	-6	-6	-X

NR	GLACIER NAME	PSFG NR	FIRST	LAST	METHOD	VARIATIONS IN METRES				
			SURVEY			1996	1997	1998	1999	2000
447	CAVAGNOLI	CH0119	1894	1995	C	-13	-13	-23	-13	-11
448	CHEILLON	CH0029	1925	1995	C	-4	-17	-12	-4	-7
449	CORBASSIERE	CH0038	1890	1993	A	-38	-12	-12	-15	-10
450	CORNO	CH0120	1895	1995	C	3	-1	-7	1	-3
451	CROSLINA	CH0121	1990	1995	C		1	-3	-2	-4
452	DAMMA	CH0070	1922	1995	C	-6	-9	-8	-6	-21
453	EIGER	CH0059	1883	1995	C	-20	-13	-23	-7	-29
454	EN DARREY	CH0030	1929	1995	C	-1	15	-8	0	ST
455	FEE NORTH	CH0013	1884	1995	C	-27	-25	-111	-87	-37
456	FERPECLE	CH0025	1892	1995	C	-2	-10	-34	-1	-15
457	FIESCHER	CH0004	1892	1995	C	-7	-13	-66	-26	-8
458	FINDELEN	CH0016	1886	1995	D	-72			-114	-59
459	FIRNALPELI	CH0075	1895	1995	C		-17		-4	-3
460	FORNO	CH0102	1864	1995	C	-23	-24	-19	-16	-22
461	GAMCHI	CH0061	1884	1995	C	-3	-5	-14	-11	-8
462	GAULI	CH0052	1886	1995	C	-14	-6	-13	-5	-11
463	GIETRO	CH0037	1890	1990	A	-50	-8	-12	-8	-3
464	GLAERNISCH	CH0080	1926	1995	C	1	-2	-19	5	-9
465	GORNER	CH0014	1883	1995	C	-10	-31	-43	-12	
466	GRAND DESERT	CH0031	1893	1995	C	0	-1	-30	3	-13
467	GRAND PLAN NEVE	CH0045	1894	1995	C	-3	-6	-4	10	-3
468	GRIES	CH0003	1880	1995	A	-12	-10	-22	-16	-23
469	GRIESS(KLAUSEN)	CH0074	1930	1995	C	-8	-6	-12	0	-4
470	GRIESSEN(OBWA.)	CH0076	1895	1995	C		-1			-8
471	GROSSER ALETSCH	CH0005	1881	1995	A	-30	-43		-46	-19
472	HUEFI	CH0073	1883	1994	C	-11	-24	-26	-7	-9
473	KALTWASSER	CH0007	1892	1995	C	1	14	-27	-11	-10
474	KEHLEN	CH0068	1894	1995	C	-24	-29	-42	-19	-33
475	KESSJEN	CH0012	1931	1992	A	SN			-16	-13
476	LAEMMERN	CH0063	1919	1995	C	-30	-9	-16	-3	-12
477	LANG	CH0018	1889	1995	C	-15	-35	-2	-18	-31
478	LAVAZ	CH0082	1886	1995	C				-215	
479	LENTA	CH0084	1897	1995	C	-20	-22	-18	-56	-17
480	LIMMERN	CH0078	1886	1995	C	-5	0			
481	LISCHANA	CH0098	1897	1995	C		-2		-9	SN
482	MITTELALETSCH	CH0106	1960	1992	E	-X	-29			
483	MOIRY	CH0024	1892	1995	C	-1	-5	-14	-12	-5
484	MOMING	CH0023	1880	1995	C	-30	-36	-45	-42	-29
485	MONT DURAND	CH0035	1891	1995	C	0	-3	7	-6	1
486	MONT FORT	CH0032	1893	1995	C	SN	-21		-43	-3
487	MONT MINE	CH0026	1957	1995	C	-98	-7	-15	-12	-20
488	MORTERATSCH	CH0094	1880	1995	C	-26	-11	-7	-39	-30
489	MUTT	CH0002	1919	1994	C	SN				-112
490	OB.GRINDELWALD	CH0057	1880	1995	C	-70	-10	-15	-25	-50

NR	GLACIER NAME	PSFG NR	FIRST SURVEY	LAST SURVEY	METHOD	VARIATIONS IN METRES 1996	1997	1998	1999	2000
491	OBERAAR	CH0050	1880	1995	A	-1	-5	-33		
492	OBERALETSCH	CH0006	1881	1990	C		-25		-22	
493	OFENTAL	CH0009	1923	1995	D	SN				
494	OTEMMA	CH0034	1882	1995	C	-70	-44	-22	-24	-34
495	PALUE	CH0100	1895	1995	C	-10	-7	-11	-19	-57
496	PANEYROSSE	CH0044	1887	1995	C	-7	-2	-3	11	ST
497	PARADIES	CH0086	1898	1995	C	-12	-11	-5	-5	-3
498	PARADISINO	CH0101	1956	1995	C	-13		-11		-X
499	PIZOL	CH0081	1894	1994	C	32	-17	-10	30	ST
500	PLATTALVA	CH0114	1970	1995	C	-1	-2			
501	PORCHABELLA	CH0088	1894	1994	C	SN	-14	-16	-7	-7
502	PRAPIO	CH0048	1899	1995	C		ST	ST	SN	-X
503	PUNTEGLIAS	CH0083	1897	1995	C	-6	-2		-28	
504	RAETZLI	CH0065	1928	1995	C		-5		-8	ST
505	RHONE	CH0001	1880	1995	A	-9	-18		-11	-6
506	RIED	CH0017	1896	1992	C	-60	-15	-12	-16	-32
507	ROSEG	CH0092	1881	1995	C	-36	-63	-42	-35	-54
508	ROSENLAUI	CH0056	1882	1995	E	-X				
509	ROSSBODEN	CH0105	1892	1995	C	4	5	-2	-2	3
510	ROTFIRN NORD	CH0069	1957	1995	C	1	-7	-13	-10	-12
511	SALEINA	CH0042	1880	1995	C		-79	-55	-13	
512	SANKT ANNA	CH0067	1882	1995	C		-3		-16	-11
513	SARDONA	CH0091	1897	1995	C	-31	-6	SN	4	1
514	SCALETTA	CH0115	1998	1998	C				-3	-5
515	SCHWARZ	CH0062	1925	1995	C	-6	-1	-8	-10	-X
516	SCHWARZBERG	CH0010	1909	1995	A	-5	-12		-13	-11
517	SESVENNA	CH0097	1957	1995	C	-4	-7	-6	-7	-2
518	SEX ROUGE	CH0047	1899	1995	C					-X
519	SILVRETTA	CH0090	1957	1995	A		-10	-12	-6	-2
520	STEIN	CH0053	1894	1995	C	-6	-11	-1	-6	-16
521	STEINLIMMI	CH0054	1962	1995	C	-18	-9	-27	-3	-15
522	SULZ	CH0079	1913	1995	C	-3	-2	-9	-4	4
523	SURETTA	CH0087	1931	1995	C	-35	-14	0	0	-12
524	TAELLIBODEN	CH0008	1923	1995	D	SN				
525	TIATSCHA	CH0096	1894	1995	C	-15	8	-13	-18	-19
526	TIEFEN	CH0066	1923	1995	C	-14	-11		-20	-17
527	TRIENT	CH0043	1880	1995	C	-21	-50	-60	-80	-180
528	TRIFT (GADMEN)	CH0055	1892	1995	E			-X	-60	-50
529	TSANFLEURON	CH0033	1885	1995	C	-8	-5	-15	-7	-5
530	TSCHIERVA	CH0093	1943	1995	C	-32	-25	-28	-40	-53
531	TSCHINGEL	CH0060	1894	1995	C	-6	-3	-4	-1	-3
532	TSEUDET	CH0040	1891	1995	C		-52	-14	39	
533	TSIDJIORE NOUVE	CH0028	1882	1995	C	-1	-108	-13	-21	-17
534	TURTMANN (WEST)	CH0019	1886	1995	C	55	-84	-9	83	5

NR	GLACIER NAME	PSFG NR	FIRST	LAST	METHOD	VARIATIONS IN METRES				
			SURVEY			1996	1997	1998	1999	2000
535	UNT.GRINDELWALD	CH0058	1880	1995	E	-X	-X	-X	-X	-X
536	UNTERAAR	CH0051	1880	1995	A	-28	-31	-94		-X
537	VAL TORTA	CH0118	1971	1995	C	1	3	-8	-6	-19
538	VALLEGGIA	CH0117	1973	1995	C	-4	0		-4	-8
539	VALSOREY	CH0039	1890	1995	C		-31	-19	-12	
540	VERSTANKLA	CH0089	1927	1995	C	-4	-2	-9	-10	-15
541	VORAB	CH0085	1886	1994	C	-22	-10	-15	SN	-5
542	WALLENBUR	CH0071	1894	1995	C	-13	0		-11	-5
543	ZINAL	CH0022	1892	1995	C	-18	-14	-30	-45	-18
544	ZMUTT	CH0015	1893	1994	C	1	0			
	U.S.A.									
545	MCCALL	US0001	1969	1993	C			-76	-13	-14
546	SOUTH CASCADE	US2013	1965	1995	A	-15	-18	-20	-5	-12

Notes

WORLD GLACIER MONITORING SERVICE

VARIATIONS IN THE POSITION OF GLACIER FRONTS

TABLE BB

ADDENDA FROM EARLIER YEARS

NR	Record number
GLACIER NAME	15 alphabetic or numeric digits
PSFG NUMBER	5 digits identifying glacier with alphabetic prefix denoting country
METHOD	a = aerial photogrammetry b = terrestrial photogrammetry c = geodetic ground survey (theodolite, tape etc.) d = combination of a, b or c e = other methods or no information
1ST SURVEY	Day, month and year of survey
2ND SURVEY	Day, month and year of following survey
VARIATION IN METRES	Variation in the position of the glacier front in horizontal projection expressed as the change in length between the surveys

Key to Symbols

+X : Glacier in advance
- X : Glacier in retreat
ST : Glacier stationary
SN : Glacier front covered by snow

NR	GLACIER NAME	PSFG NR	METHOD	1ST SURVEY D M Y	2ND SURVEY D M Y	VARIATIONS METRES
	ARGENTINA					
1	MARTIAL	AR0131	D	1898	28.12.1943	-190
			D	28.12.1943	24.02.1970	-80
			D	24.02.1970	1984	-165
	AUSTRIA					
2	GR GOLDBERG KEE	AT0802B		1978	1979	-1.7
				1979	1980	8.2
				1980	1981	-10.8
				1981	1982	-6.3
				1982	1983	-3.3
				1983	1984	-1.7
				1984	1985	0
				1985	1986	-0.6
				1986	1987	-3.4
				1987	1988	-7.5
				1988	1989	-1.9
				1989	1990	-5.2
	BOLIVIA					
3	CHACALTAYA	BO5180	A	01.09.1963	01.09.1983	-65
			A	01.09.1983	01.09.1991	-30
			C	01.12.1991	01.12.1992	-5.2
			C	01.12.1992	01.12.1993	-4.7
			C	01.12.1993	01.10.1994	-4.6
			C	01.10.1994	01.09.1995	-17.6
	CHILE					
4	AMALIA	CL0056	A	1945	1975	-8040
			A	1975	1986	-197
5	BLANCO CHICO	CL0074	A	13.12.1961	17.02.1981	-236
			A	17.02.1981	18.11.1995	-839
6	CASA PANGUE	CL0073	D	1911	1945	-172
			D	1945	13.12.1961	-512
			D	13.12.1961	17.02.1981	-367
			D	17.02.1981	18.11.1995	-732
7	CERRO BLANCO	CL0034	A	1945	1975	-867
8	CHICO	CL0059	A	1945	1975	-1560
			A	1975	1986	-275
9	CIPRESES	CL0071	D	1860	1888	-623
			D	1888	1955	-737
			D	1955	1968	-351
10	DICKSON	CL0063	D	1901	1945	-1570
			D	1945	1975	-1214

NR	GLACIER NAME	PSFG NR	METHOD	1ST SURVEY D M Y	2ND SURVEY D M Y	VARIATIONS METRES
10	DICKSON	CL0063	D	1975	1984	-1078
			D	1984	1995	-409
11	GALERIA	CL1016	D	1984	1986	-60
12	GCN09	CL1009	D	1984	1986	-161
13	GCN13	CL1013	D	1984	1986	-80
14	GCN22	CL1021	D	1942	1984	SN
			D	1984	1986	SN
15	GCN37	CL1036	D	1984	1986	ST
16	GCN38	CL1037	D	1984	1986	-40
17	GCN40	CL1039	D	1942	1986	-809
18	GCN41	CL1040	D	1942	1986	-1060
19	GCN42	CL1041	D	1942	1986	-X
20	LENGUA	CL1019	D	1942	1984	-370
			D	1984	1986	ST
21	PIO XI	CL0044	A	1830	1925	11900
22	TRINIDAD	CL0055	D	1945	1986	870
			D	1986	1995	840
23	TRONQUITOS	CL0029	A	1955	27.04.1984	-420
24	VERDE	CL0075	A	13.12.1961	17.02.1981	-362
			A	17.02.1981	18.11.1995	-70
	C.I.S..					
25	1.14.03.17	SU	E	11.09.1973	07.09.1980	-20
			E	07.09.1980	12.09.1990	-5
26	10.14.03.17	SU	E	11.09.1973	07.09.1980	-25
			E	07.09.1980	12.09.1990	-40
27	100.14.03.14	SU	E	11.09.1973	26.09.1978	-20
			E	26.09.1978	12.09.1990	-70
28	101.14.03.14	SU	E	11.09.1973	12.09.1990	-50
29	12.14.03.17	SU	E	07.09.1980	12.09.1990	-40
30	134.14.03.17	SU	E	11.09.1973	07.09.1980	-10
31	136.14.03.17	SU	E	11.09.1973	07.09.1980	-15
			E	07.09.1980	12.09.1990	-40
32	139.14.03.17	SU	E	11.09.1973	07.09.1980	0
			E	07.09.1980	12.09.1990	-15
33	15.14.03.17	SU	E	07.09.1980	12.09.1990	-5
34	152.14.03.14	SU	E	11.09.1973	12.09.1990	-105
35	155.14.03.14	SU	E	11.09.1973	12.09.1990	-90
36	159.14.03.14	SU	E	11.09.1973	12.09.1990	-70
37	16.14.03.17	SU	E	07.09.1980	12.09.1990	0
38	160.14.03.14	SU	E	11.09.1973	12.09.1990	-45
39	161.14.03.14	SU	E	11.09.1973	12.09.1990	-20
40	165.14.03.14	SU	E	11.09.1973	12.09.1990	-40
41	168.14.03.14	SU	E	11.09.1973	12.09.1990	-50

NR	GLACIER NAME	PSFG NR	METHOD	1ST SURVEY D M Y	2ND SURVEY D M Y	VARIATIONS METRES
42	169.14.03.14	SU	E	11.09.1973	12.09.1990	-70
43	170.14.03.14	SU	E	11.09.1973	12.09.1990	-75
44	172.14.03.14	SU	E	11.09.1973	12.09.1990	-55
45	173.14.03.14	SU	E	11.09.1973	12.09.1990	-125
46	174.14.03.14	SU	E	11.09.1973	12.09.1990	-80
47	208.14.03.14	SU	E	11.09.1973	12.09.1990	-40
48	239.14.03.17	SU	E	11.09.1973	07.09.1980	-25
			E	07.09.1980	12.09.1990	-40
49	240.14.03.17	SU	E	11.09.1973	07.09.1980	-30
			E	07.09.1980	12.09.1990	-50
50	241.14.03.17	SU	E	11.09.1973	07.09.1980	0
			E	07.09.1980	12.09.1990	-100
51	242.14.03.14	SU	E	11.09.1973	12.09.1990	-80
52	242.14.03.17	SU	E	11.09.1973	07.09.1980	-10
			E	07.09.1980	12.09.1990	-55
53	243.14.03.14	SU	E	11.09.1973	12.09.1990	-20
54	254.14.03.17	SU	E	11.09.1973	07.09.1980	-50
			E	07.09.1980	12.09.1990	-110
55	257.14.03.17	SU	E	07.09.1980	12.09.1990	-90
56	259.14.03.17	SU	E	11.09.1973	07.09.1980	-20
			E	07.09.1980	12.09.1990	-30
57	26.14.03.17	SU	E	07.09.1980	12.09.1990	-30
58	260.14.03.17	SU	E	07.09.1980	12.09.1990	-15
59	261.14.03.17	SU	E	07.09.1980	12.09.1990	-100
60	262.14.03.17	SU	E	11.09.1973	07.09.1980	-30
			E	07.09.1980	12.09.1990	-85
61	263.14.03.17	SU	E	11.09.1973	07.09.1980	-50
			E	07.09.1980	12.09.1990	-70
62	264.14.03.17	SU	E	11.09.1973	07.09.1980	-10
63	268.14.03.17	SU	E	11.09.1973	07.09.1980	-20
			E	07.09.1980	12.09.1990	-50
64	269.14.03.17	SU	E	11.09.1973	07.09.1980	-25
			E	07.09.1980	12.09.1990	-60
65	270.14.03.17	SU	E	11.09.1973	07.09.1980	-10
			E	07.09.1980	12.09.1990	-30
66	271.14.03.17	SU	E	11.09.1973	07.09.1980	-10
			E	07.09.1980	12.09.1990	-25
67	273.14.03.14	SU	E	11.09.1973	12.09.1990	-135
68	273.14.03.17	SU	E	11.09.1973	07.09.1980	-110
			E	07.09.1980	12.09.1990	-110
69	279.14.03.14	SU	E	11.09.1973	12.09.1990	-150
70	280.14.03.14	SU	E	11.09.1973	12.09.1990	-80
71	281.14.03.14	SU	E	11.09.1973	12.09.1990	-115
72	284.14.03.14	SU	E	11.09.1973	12.09.1990	-100

NR	GLACIER NAME	PSFG NR	METHOD	1ST SURVEY D M Y	2ND SURVEY D M Y	VARIATIONS METRES
73	3.14.03.17	SU	E	11.09.1973	07.09.1980	0
			E	07.09.1980	12.09.1990	0
74	30.14.03.17	SU	E	07.09.1980	12.09.1990	-25
75	306.14.03.14	SU	E	11.09.1973	12.09.1990	-45
76	31.14.03.14	SU	E	11.09.1973	26.09.1978	95
			E	26.09.1978	12.09.1990	145
77	31.14.03.17	SU	E	07.09.1980	12.09.1990	-40
78	314.14.03.08	SU	E	11.09.1973	07.09.1980	-20
			E	07.09.1980	12.09.1990	-70
79	315.14.03.08	SU	E	11.09.1973	07.09.1980	-25
			E	07.09.1980	12.09.1990	-40
80	324.14.03.08	SU	E	07.09.1980	12.09.1990	-80
81	329.14.03.14	SU	E	11.09.1973	12.09.1990	-30
82	331.14.03.14	SU	E	11.09.1973	12.09.1990	-25
83	336.14.03.14	SU	E	11.09.1973	12.09.1990	-55
84	34.14.03.17	SU	E	07.09.1980	12.09.1990	-20
85	36.14.03.17	SU	E	07.09.1980	12.09.1990	-30
86	375.14.03.15	SU	E	11.09.1973	12.09.1990	-15
87	38.14.03.14	SU	E	11.09.1973	26.09.1978	0
			E	26.09.1978	12.09.1990	-10
88	385.14.03.15	SU	E	11.09.1973	12.09.1990	-100
89	388.14.03.15	SU	E	11.09.1973	12.09.1990	0
90	39.14.03.14	SU	E	11.09.1973	26.09.1978	0
			E	26.09.1978	12.09.1990	0
91	390.14.03.15	SU	E	11.09.1973	12.09.1990	-190
92	394.14.03.15	SU	E	11.09.1973	12.09.1990	-100
93	40.14.03.17	SU	E	07.09.1980	12.09.1990	-45
94	41.14.03.17	SU	E	07.09.1980	12.09.1990	-65
95	42.14.03.17	SU	E	11.09.1973	07.09.1980	0
			E	07.09.1980	12.09.1990	-30
96	429.14.03.15	SU	E	11.09.1973	12.09.1990	-85
97	434.14.03.15	SU	E	11.09.1973	12.09.1990	-40
98	44.14.03.14	SU	E	11.09.1973	26.09.1978	0
			E	26.09.1978	12.09.1990	-10
99	446.14.03.13	SU	E	07.09.1980	12.09.1990	-80
100	447.14.03.08	SU	E	11.09.1973	07.09.1980	-35
			E	07.09.1980	12.09.1990	-90
101	448.14.03.08	SU	E	11.09.1973	07.09.1980	-30
			E	07.09.1980	12.09.1990	0
102	449.14.03.08	SU	E	11.09.1973	07.09.1980	-35
			E	07.09.1980	12.09.1990	-65
103	449.14.03.13	SU	E	07.09.1980	12.09.1990	-80
104	453.14.03.13	SU	E	07.09.1980	12.09.1990	-55
105	46.14.03.14	SU	E	11.09.1973	26.09.1978	-15

NR	GLACIER NAME	PSFG NR	METHOD	1ST SURVEY D M Y	2ND SURVEY D M Y	VARIATIONS METRES
105	46.14.03.14	SU	E	26.09.1978	12.09.1990	-55
106	464.14.03.08	SU	E	11.09.1973	07.09.1980	-40
			E	07.09.1980	12.09.1990	-60
107	469.14.03.08	SU	E	11.09.1973	07.09.1980	-30
			E	07.09.1980	12.09.1990	-60
108	47.14.03.14	SU	E	11.09.1973	26.09.1978	0
			E	26.09.1978	12.09.1990	-40
109	471.14.03.08	SU	E	11.09.1973	07.09.1980	0
			E	07.09.1980	12.09.1990	0
110	473.14.03.08	SU	E	11.09.1973	07.09.1980	0
			E	07.09.1980	12.09.1990	-50
111	474.14.03.08	SU	E	11.09.1973	07.09.1980	-25
			E	07.09.1980	12.09.1990	-40
112	499.14.03.13	SU	E	07.09.1980	12.09.1990	-30
113	5.14.03.17	SU	E	11.09.1973	07.09.1980	0
			E	07.09.1980	12.09.1990	0
114	503.14.03.08	SU	E	11.09.1973	07.09.1980	-10
			E	07.09.1980	12.09.1990	-60
115	506.14.03.08	SU	E	11.09.1973	07.09.1980	0
			E	07.09.1980	12.09.1990	-60
116	508.14.03.08	SU	E	11.09.1973	07.09.1980	-20
			E	07.09.1980	12.09.1990	-30
117	509.14.03.08	SU	E	11.09.1973	07.09.1980	-20
			E	07.09.1980	12.09.1990	-30
118	512.14.03.08	SU	E	11.09.1973	07.09.1980	-20
			E	07.09.1980	12.09.1990	-40
119	514.14.03.08	SU	E	11.09.1973	07.09.1980	-50
			E	07.09.1980	12.09.1990	-110
120	519.14.03.08	SU	E	11.09.1973	07.09.1980	0
			E	07.09.1980	12.09.1990	-25
121	52.14.03.14	SU	E	11.09.1973	26.09.1978	-10
			E	26.09.1978	12.09.1990	-40
122	520.14.03.08	SU	E	11.09.1973	07.09.1980	-40
			E	07.09.1980	12.09.1990	-50
123	531.14.03.08	SU	E	11.09.1973	07.09.1980	-20
			E	07.09.1980	12.09.1990	-25
124	532.14.03.08	SU	E	11.09.1973	07.09.1980	-30
			E	07.09.1980	12.09.1990	-35
125	538.14.03.08	SU	E	11.09.1973	07.09.1980	-15
			E	07.09.1980	12.09.1990	-45
126	54.14.03.14	SU	E	11.09.1973	26.09.1978	-20
			E	26.09.1978	12.09.1990	-50
127	541.14.03.08	SU	E	11.09.1973	07.09.1980	0
			E	07.09.1980	12.09.1990	-30

NR	GLACIER NAME	PSFG NR	METHOD	1ST SURVEY D M Y	2ND SURVEY D M Y	VARIATIONS METRES
128	543.14.03.08	SU	E	11.09.1973	07.09.1980	-5
			E	07.09.1980	12.09.1990	-50
129	544.14.03.08	SU	E	11.09.1973	07.09.1980	-15
			E	07.09.1980	12.09.1990	-35
130	549.14.03.08	SU	E	11.09.1973	07.09.1980	-15
			E	07.09.1980	12.09.1990	-40
131	551.14.03.08	SU	E	11.09.1973	07.09.1980	-15
			E	07.09.1980	12.09.1990	-65
132	558.14.03.08	SU	E	11.09.1973	07.09.1980	-30
			E	07.09.1980	12.09.1990	-80
133	560.14.03.08	SU	E	11.09.1973	07.09.1980	-20
			E	07.09.1980	12.09.1990	-60
134	572.14.03.08	SU	E	11.09.1973	07.09.1980	0
			E	07.09.1980	12.09.1990	-30
135	573.14.03.08	SU	E	11.09.1973	07.09.1980	0
			E	07.09.1980	12.09.1990	-20
136	578.14.03.08	SU	E	11.09.1973	07.09.1980	0
			E	07.09.1980	12.09.1990	-15
137	579.14.03.08	SU	E	11.09.1973	07.09.1980	-5
			E	07.09.1980	12.09.1990	-40
138	580.14.03.08	SU	E	07.09.1980	12.09.1990	-20
139	582.14.03.08	SU	E	11.09.1973	07.09.1980	-20
			E	07.09.1980	12.09.1990	-50
140	586.14.03.08	SU	E	11.09.1973	07.09.1980	-30
			E	07.09.1980	12.09.1990	-80
141	591.14.03.08	SU	E	11.09.1973	07.09.1980	-15
			E	07.09.1980	12.09.1990	-40
142	593.14.03.08	SU	E	11.09.1973	07.09.1980	-40
			E	07.09.1980	12.09.1990	-105
143	597.14.03.14	SU	E	11.09.1973	12.09.1990	-135
144	598.14.03.14	SU	E	07.09.1980	12.09.1990	-35
145	599.14.03.08	SU	E	11.09.1973	07.09.1980	-90
			E	07.09.1980	12.09.1990	-200
146	600.14.03.08	SU	E	11.09.1973	07.09.1980	-100
			E	07.09.1980	12.09.1990	-245
147	605.14.03.08	SU	E	11.09.1973	07.09.1980	-55
			E	07.09.1980	12.09.1990	-80
148	606.14.03.08	SU	E	11.09.1973	07.09.1980	-20
			E	07.09.1980	12.09.1990	-75
149	608.14.03.08	SU	E	11.09.1973	07.09.1980	-10
			E	07.09.1980	12.09.1990	-65
150	612.14.03.08	SU	E	11.09.1973	07.09.1980	0
			E	07.09.1980	12.09.1990	-55
151	614.14.03.08	SU	E	11.09.1973	07.09.1980	-35

NR	GLACIER NAME	PSFG NR	METHOD	1ST SURVEY D M Y	2ND SURVEY D M Y	VARIATIONS METRES
151	614.14.03.08	SU	E	07.09.1980	12.09.1990	-55
152	617.14.03.08	SU	E	11.09.1973	07.09.1980	-90
			E	07.09.1980	12.09.1990	-50
153	622.14.03.08	SU	E	11.09.1973	07.09.1980	-5
			E	07.09.1980	12.09.1990	-40
154	623.14.03.08	SU	E	11.09.1973	07.09.1980	-120
			E	07.09.1980	12.09.1990	-120
155	72.14.03.17	SU	E	07.09.1980	12.09.1990	-20
156	8.14.03.17	SU	E	07.09.1980	12.09.1990	-30
157	83.14.03.14	SU	E	11.09.1973	26.09.1978	-20
			E	26.09.1978	12.09.1990	-45
158	87.14.03.14	SU	E	11.09.1973	12.09.1990	0
159	89.14.03.14	SU	E	11.09.1973	12.09.1990	-50
160	93.14.03.14	SU	E	11.09.1973	12.09.1990	-30
161	93.14.03.17	SU	E	07.09.1980	12.09.1990	-15
162	96.14.03.17	SU	E	07.09.1980	12.09.1990	-50
163	AKBAYTAL	SU4036	E	07.09.1980	12.09.1990	-50
164	BAKCHIGIR	SU4038	E	11.09.1973	26.09.1978	-50
			E	26.09.1978	12.09.1990	-215
165	BELEULI	SU	E	11.09.1973	07.09.1980	-115
166	BUZ-CHUBEK	SU	E	07.09.1980	12.09.1990	-55
167	CHAKYDZHILGA	SU	E	11.09.1973	07.09.1980	-55
			E	07.09.1980	12.09.1990	-195
168	DUSAKASAY	SU	E	11.09.1973	07.09.1980	155
			E	07.09.1980	12.09.1990	65
169	DZHAYLYAUKUMSAY	SU	E	11.09.1973	07.09.1980	-100
			E	07.09.1980	12.09.1990	-220
170	ICHKELSAY	SU	E	11.09.1973	07.09.1980	-125
			E	07.09.1980	12.09.1990	-220
171	KARA-ART	SU	E	11.09.1973	07.09.1980	0
			E	07.09.1980	12.09.1990	-50
172	KHAKEL	SU3003	C	19.09.1990	07.10.1994	-5
			C	19.09.1994	24.09.1995	3
173	KOZITSITI	SU3009	C	22.09.1988	23.09.1993	0
174	KRASNOSLOBODTSEV	SU	E	11.09.1973	07.09.1980	-30
			E	07.09.1980	12.09.1990	-70
175	KYZYLDZHILGA	SU	E	07.09.1980	12.09.1990	-55
176	M. OKTYABRSKIY	SU4037	E	11.09.1973	07.09.1980	-120
			E	07.09.1980	12.09.1990	40
177	MARUKHSKIY	SU3001	C	15.09.1990	24.08.1994	0
			C	24.08.1994	27.08.1995	3
178	NANKALDY	SU	E	07.09.1980	12.09.1990	-35
179	NICHKEDZHILGA	SU	E	11.09.1973	07.09.1980	-170
			E	07.09.1980	12.09.1990	-165

NR	GLACIER NAME	PSFG NR	METHOD	1ST SURVEY D M Y	2ND SURVEY D M Y	VARIATIONS METRES
180	SEVERNIY DZHAYL.	SU	E	11.09.1973	07.09.1980	-105
			E	07.09.1980	12.09.1990	-150
181	SEVERNIY ZULUMART	SU	E	11.09.1973	07.09.1980	-65
			E	07.09.1980	12.09.1990	-275
182	SKAZKA	SU3008	C	08.09.1990	22.09.1991	-2
			C	22.09.1991	19.09.1992	3
			C	19.09.1992	22.09.1993	-9
			C	22.09.1993	08.09.1995	-6
183	URTA-BAKCHIGIR 1	SU	E	11.09.1973	12.09.1990	-290
184	URTA-BAKCHIGIR 2	SU	E	11.09.1973	26.09.1978	-70
			E	26.09.1978	12.09.1990	-335
185	VOLODARSKIY 1	SU	E	11.09.1973	07.09.1980	-270
			E	07.09.1980	12.09.1990	-125
186	VOLODARSKIY 2	SU	E	11.09.1973	07.09.1980	-270
			E	07.09.1980	12.09.1990	-100
187	VOLODARSKIY 3	SU	E	11.09.1973	07.09.1980	-105
			E	07.09.1980	12.09.1990	-80
188	YUGO-VOSTOCHNIY	SU3018	C	31.08.1991	31.08.1992	-5
			C	31.08.1992	31.08.1993	-2
			C	31.08.1993	01.10.1994	5
			C	01.10.1994	01.10.1995	7
189	YUZHNIY KARAYK.	SU	E	11.09.1973	07.09.1980	-60
			E	07.09.1980	12.09.1990	-30
190	ZAPADNIY OKTYABR.	SU	E	11.09.1973	07.09.1980	-185
			E	07.09.1980	12.09.1990	-245
191	ZORTASHKOL	SU	E	07.09.1980	12.09.1990	-115
192	ZULUMART	SU	E	11.09.1973	07.09.1980	-30
			E	07.09.1980	12.09.1990	-60
	ECUADOR					
193	ANTIZANA15ALPHA	EC0001	C	1994	1995	-40.6
	NEPAL					
194	AX010	NP0005	C	1978	1989	-30
			C	1989	1991	-28
			C	1991	11.10.1995	-12
195	RIKKA SAMBA	NP	C	1974	10.10.1994	-215.8
196	YALA	NP0004	C	15.10.1982	1987	2.5
			C	1987	1989	-6.8
			C	04.12.1989	27.08.1994	-19.5
	NEW ZEALAND					
197	HORACE WALKER	NZ880B1	A	05.03.1996	04.03.1988	-X

NR	GLACIER NAME	PSFG NR	METHOD	1ST SURVEY D M Y	2ND SURVEY D M Y	VARIATIONS METRES
	NORWAY					
198	MIDTDALSBREEN	NO04302		1982	1983	8
				1983	1984	-5
				1984	1985	-11
				1985	1986	-9
				1986	1987	10
				1987	1988	-5
				1988	1989	9
				1989	1990	15
				1990	1991	-8
				1991	1992	2
				1992	1993	7
				1993	1994	12
				1994	1995	5
199	WALDEMARBREEN	NO		1909	1936	-54
				1936	1966	-369
				1966	1977	-40
				1977	1978	-3
				1978	1985	-40
				1985	1989	-75
				1989	1995	-50
	SWEDEN					
200	PASSUSJIETNA E.	SE0797	C	1994	03.09.1995	-2.3
201	RUOTESJEKNA	SE0767	C	15.08.1994	09.09.1995	-20.7
	SWITZERLAND					
202	CROSLINA	CH0121	C	21.09.1989	06.09.1990	-3
				06.09.1990	18.09.1991	-6
				18.09.1991	02.09.1993	-8
				02.09.1993	30.09.1994	0
				30.09.1994	10.10.1995	-8
203	FIRNALPELI	CH0075	C	29.08.1994	11.10.1995	-5
204	GRIESSEN (OBWA.)	CH0076	C	22.10.1994	10.10.1995	ST
205	KALTWASSER	CH0007	C	04.10.1994	22.09.1995	-4

Notes

WORLD GLACIER MONITORING SERVICE

MASS BALANCE STUDY RESULTS SUMMARY DATA 1995–2000

TABLE C

NR	Record number
GLACIER NAME	15 alphabetic or numeric digits
PSFG NUMBER	5 digits identifying glacier with alphabetic prefix denoting country
SYS	System of measurement: STR = Stratigraphic FXD = Fixed date COM = Combined System OTH = Other System
FROM	Day, month and year of beginning of balance/measurement year
TO	Day, month and year of end of balance/measurement year
BW	Mean specific winter balance in mm water equivalent
BS	Mean specific summer balance in mm water equivalent
BN/BA	Mean specific net balance or annual balance in mm water equivalent
ELA	Altitude of equilibrium line or annual equilibrium line in metres above sea level
AAR	Ratio of accumulation area to total area of the glacier in percent
AREA	Area of the glacier used for calculation of mean specific quantities

NR	GLACIER NAME	PSFG NR	SYS	FROM D M Y	TO D M Y	BW MM	BS MM	BN/BA MM	ELA M	AAR %	AREA KM²
	ARGENTINA										
1	DE LOS TRES	AR	STR	1995	07.03.1996	2320	-2250	70	1440	66	0.976
			STR	07.03.1996	18.03.1997	2040	-1390	650	1410	72	0.976
			STR	18.03.1997	08.03.1998			-280	1440	48	0.976
	AUSTRIA										
2	HINTEREIS FERNER	AT0209	FXD	01.10.1995	30.09.1996			-827	3100	41	8.716
			FXD	01.10.1996	30.09.1997			-591	3050	48	8.703
			FXD	01.10.1997	30.09.1998			-1232	3160	25	8.297
			FXD	01.10.1998	30.09.1999			-861	3105	39	8.221
			FXD	01.10.1999	30.09.2000			-633	3050	48	8.106
3	JAMTAL F.	AT0106	FXD	01.10.1995	30.09.1996			-550	2900	34	3.79
			FXD	01.10.1996	30.09.1997			-217	2800	56	3.79
			FXD	01.10.1997	30.09.1998			-1319	3120	9	3.45
			FXD	01.10.1998	30.09.1999			-257	2870	47	3.78
			FXD	01.10.1999	30.09.2000			-81	2765	62	3.68
4	KESSELWAND FERNER	AT0226	FXD	01.10.1995	30.09.1996			-111	3160	55	4.285
			FXD	01.10.1996	30.09.1997			11	3120	74	4.261
			FXD	01.10.1997	30.09.1998			-604	3235	18	4.238
			FXD	01.10.1998	30.09.1999			-12	3125	72	4.18
			FXD	01.10.1999	30.09.2000			140	3120	74	4.165
5	OCHSENTALERGL.	AT0103	FXD	01.10.1995	30.09.1996			-270	2880	59	2.6
			FXD	01.10.1996	30.09.1997			60	2940	66	2.59
			FXD	1997	1998			-936	2980	36	2.59
			FXD	1998	1999			-30	2850	65	2.59
6	SONNBLICK KEES	AT0601A	STR	28.08.1995	31.08.1996			-245	2780	48	1.5
			STR	01.09.1996	10.10.1997			314	2780	78	1.5
			STR	11.10.1997	12.09.1998			-1696	2960	5	1.5
			STR	13.09.1998	26.09.1999			-652	2865	28	1.5
			STR	27.09.1999	17.10.2000			-33	2725	60	1.5
7	VERMUNTGL.	AT0104	FXD	01.10.1995	30.09.1996			-720	2970	13	2.24
			FXD	1996	1997			-500	2955	18	2.21
			FXD	1997	1998			-1544	3130	3	2.16
			FXD	1998	1999			-528	2980	20	2.16
8	VERNAGT FERNER	AT0211	FXD	01.10.1995	30.09.1996	486	-899	-413	3225	40	9.088
			FXD	01.10.1996	30.09.1997	924	-1411	-487	3220	41	9.065
			FXD	01.10.1997	30.09.1998	812	-1815	-1003	3280	30	9.053
			FXD	01.10.1998	30.09.1999	1087	-1195	-108	3097	56	8.676
			FXD	01.10.1999	30.09.2000	1074	-1361	-287	3123	48	8.668
9	WURTEN K.	AT0804	FXD	01.10.1995	30.09.1996	770	-1408	-638	2860	11	1.024
			FXD	01.10.1996	30.09.1997	2066	-2221	-154	2880	45	1.007
			FXD	01.10.1997	30.09.1998	1306	-2620	-1313	3070	8	0.99
			FXD	01.10.1998	30.09.1999	1635	-2807	-1135	3040	13	0.972
			FXD	01.10.1999	30.09.2000	1498	-2178	-680	2990	30	0.972

NR	GLACIER NAME	PSFG NR	SYS	FROM D M Y	TO D M Y	BW MM	BS MM	BN/BA MM	ELA M	AAR %	AREA KM²
	BOLIVIA										
10	CHACALTAYA	BO5180	FXD	01.09.1995	01.09.1996			-1874	5454	0	0.082
			FXD	01.09.1996	01.09.1997			-659	5322	10	0.084
			FXD	01.09.1997	01.09.1998			-3716	5770	0	0.075
			FXD	01.09.1998	01.09.1999			-1827	5475	0	0.06
			FXD	01.09.1999	01.09.2000			-852	5383	0	0.054
11	ZONGO	BO5150	FXD	01.09.1995	01.09.1996			-675	5425	47	
			FXD	01.09.1996	01.09.1997			797	5075	89	
				1997	1998			-1962	5500	39	2.1
				1998	1999			-333	5350	59	
				01.09.1999	31.08.2000			116	5212	58	
	CANADA										
12	DEVON ICE CAP	CA0431	STR	1995	1996	120	-201	-80	1280		1699
			STR	1996	1997	134	-147	-13	1093		1699
			STR	1997	1998	141	-417	-276	1300		1699
			STR	1998	1999	84	-301	-217	1267		1667.6
			STR	1999	2000	99	-418	-320	1430		1667.6
13	HELM	CA0855	STR	1995	1996			211	1967	47	
			STR	1996	1997			-1073	2035	22	
				1997	1998			-2850	2150	0	
				1998	1999			1500	1920	68	
				1999	2000			110	1945	57	
14	MEIGHEN ICE CAP	CA1335	STR	1995	1996	180	10	190			85
			STR	1996	1997	240	-300	-60			85
			STR	1997	1998	220	-320	-100			85
			STR	1998	1999	140	-490	-350			85
			STR	1999	2000	150	-640	-490			85
15	PEYTO	CA1640	STR	1995	1996			129	2581	62	
			STR	1996	1997			-818	2722	34	
				1997	1998			-2210	3190	0	
				1998	1999			-320	2580	51	
				1999	2000			810	2503	73	
16	PLACE	CA1660	STR	1995	1996			-221	2055	54	
			STR	1996	1997			-888	2240	24	
				1997	1998			-2450	2610	0	
				1998	1999			620	1985	76	
				1999	2000			130	2050	54	
17	WHITE	CA2340	COM	1995	1996			38	759	82	
			COM	1996	1997			-56	1055	65	
				1997	1998			-229	1061	65	
				1998	1999			-494	1249	40	
				1999	2000			-401	1264	36	

NR	GLACIER NAME	PSFG NR	SYS	FROM D M Y	TO D M Y	BW MM	BS MM	BN/BA MM	ELA M	AAR %	AREA KM²
	CHILE										
18	ECHAURREN NORTE	CL0001B	COM	01.04.1995	31.03.1996	1760	-2940	-1180			0.4
			COM	01.04.1996	31.03.1997	480	-3364	-2880			0.4
			COM	01.04.1997	31.03.1998	5520	-2630	2890			0.4
			COM	01.04.1998	31.03.1999	740	-5000	-4260			0.4
			COM	01.04.1999	31.03.2000	2090	-2830	-740			0.4
	CHINA										
19	URUMQIHE E-BR.	CN1001	FXD	31.08.1995	01.09.1996	108	-62	46	3947	65.5	1.163
			FXD	01.09.1996	31.08.1997	29	-802	-773	4079	24.7	1.115
			FXD	31.08.1997	01.09.1998	62	-888	-826	4055	28.2	1.115
			FXD	01.09.1998	29.08.1999	38	-863	-825	4095	27.6	1.115
			FXD	29.08.1999	30.08.2000	147	-526	-379	4048	46.9	1.115
20	URUMQIHE S.NO.1	CN0010	FXD	30.09.1995	01.09.1996	92	-50	42	3976	66	1.84
			FXD	01.09.1996	02.09.1997	11	-864	-853	4137	24	1.742
			FXD	02.09.1997	02.09.1998	29	-819	-790	4085	33	1.742
			FXD	02.09.1998	30.08.1999	47	-838	-791	4122	31	1.742
			FXD	30.08.1999	31.08.2000	170	-499	-330	4063	50	1.742
21	URUMQIHE W-BR.	CN1002	FXD	31.08.1995	02.09.1996	66	30	37	3910	69.1	0.677
			FXD	02.09.1996	02.09.1997	21	-1016	-995	4240	24.1	0.627
			FXD	02.09.1997	02.09.1998	-29	-697	-726	4138	40.8	0.627
			FXD	02.09.1998	29.08.1999	67	-804	-737	4170	36.8	0.627
			FXD	29.08.1999	31.08.2000	210	-452	-242	4090	54.9	0.627
	C.I.S.										
22	ABRAMOV	SU4101	COM	01.10.1995	30.09.1996	1410	-1764	-354	4210	48	25.84
			COM	01.10.1996	30.09.1997	970	-2710	-1737	4410	12	25.83
			COM	01.10.1997	30.09.1998	1900	-1700	204	4130	64	25.83
23	DJANKUAT	SU3010	STR	23.09.1995	11.10.1996	2270	-2420	-150	3200	62	3.1
			STR	11.10.1996	25.09.1997	2810	-2540	270	3150	67	3.1
			STR	25.09.1997	17.10.1998	2540	-3540	-1000	3380	33	2.857
			STR	17.10.1998	07.10.1999	2430	-2990	-560	3270	49	2.857
			STR	07.10.1999	15.11.2000	2490	-3630	-1140	3400	26	2.737
24	GARABASHI	SU3031	STR	17.09.1995	09.09.1996	860	-890	-30	3840	55	4.47
			STR	09.09.1996	04.09.1997	1130	-940	190	3780	66	4.47
			STR	04.09.1997	23.09.1998	1020	-2530	-1510	4350	13	4.47
			STR	23.09.1998	14.09.1999	1110	-1930	-820	4000	34	4.47
			STR	14.09.1999	26.09.2000	900	-1960	-1060	4050	27	4.47
25	KARA-BATKAK	SU5080	STR	10.09.1995	18.09.1996	585	-959	-374	3900	51.3	4.19
			STR	18.09.1996	29.09.1997	462	-1110	-648	4000	41.8	4.19
			STR	29.09.1997	01.10.1998	771	-1131	-360	3950	54	4.19
26	KORYTO	SU8003	STR	1995	07.10.1996	5890	-4750	1140	565	83.1	7.543
			STR	07.10.1996	15.09.1997	6200	-3850	2350	525	89.8	7.543
			STR	15.09.1997	07.10.1998	3140	-5260	-2120	820	42.5	7.543

NR	GLACIER NAME	PSFG NR	SYS	FROM D M Y	TO D M Y	BW MM	BS MM	BN/BA MM	ELA M	AAR %	AREA KM²
			STR	07.10.1998	16.10.1999			660	600	85.4	7.543
			STR	16.10.1999	15.09.2000	3430	-3870	-440	790	45.4	7.542
27	KOZELSKIY	SU8005	STR	1995	1996	4100	-3500	600	1200	68	1.8
			STR	1996	1997	4640	-3700	940	1150	70	1.8
28	LEVIY AKTRU	SU7102	STR	27.08.1995	29.08.1996	530	-700	-170	3210	61	5.95
			STR	29.08.1996	31.08.1997	650	-800	-150	3220	60	5.95
			STR	31.08.1997	11.09.1998	520	-1640	-1120	3380	44	5.95
			STR	11.09.1998	02.09.1999	620	-760	-140	3220	60	5.95
			STR	02.09.1999	03.09.2000	660	-950	-290	3240	58	5.95
29	MALIY AKTRU	SU7100	STR	28.08.1995	29.08.1996	530	-660	-130	3220	68	2.73
			STR	29.08.1996	05.09.1997	660	-710	-50	3200	68	2.73
			STR	05.09.1997	15.09.1998	540	-1770	-1230	3390	27	2.73
			STR	15.09.1998	07.09.1999	630	-740	-110	3210	72	2.73
			STR	07.09.1999	05.09.2000	720	-930	-210	3250	61	2.73
30	NO. 125 (VODOPADNIY)	SU7105	STR	24.08.1995	28.08.1996	290	-410	-120	3240	68	0.75
			STR	28.08.1996	26.08.1997	220	-390	-170	3250	66	0.75
			STR	26.08.1997	06.09.1998	240	-1220	-980	3552	0	0.75
			STR	06.09.1998	26.08.1999	260	-350	-90	3220	71	0.75
			STR	26.08.1999	31.08.2000	290	-480	-190	3240	67	0.75
31	TS.TUYUKSUYSKIY	SU5075	STR	26.09.1995	06.09.1996	476	-932	-456	3850	34	2.62
			STR	06.09.1996	11.09.1997	391	-1858	-1467	4290	0	2.585
			STR	11.09.1997	11.09.1998	618	-961	-359	3780	45	2.568
			STR	11.09.1998	12.09.1999	469	-687	-230	3785	45	2.561
			STR	12.09.1999	09.09.2000	787	-885	-113	3780	51	2.549
	ECUADOR										
32	ANTIZANA15ALPHA	EC0001	FXD	30.12.1995	30.12.1996			- 428	5115	60	0.36
			FXD	30.12.1996	30.12.1997			-612	5110	62	0.35
			FXD	30.12.1997	30.12.1998			-845	5100	65	0.34
			FXD	30.12.1998	30.12.1999			515	4960	84	0.33
			FXD	30.12.1999	30.12.2000			393	4980	80	0.34
	FRANCE										
33	SAINT SORLIN	FR0015	STR	20.10.1995	03.10.1996			-510			3
			STR	03.10.1996	25.09.1997			-160			3
			STR	25.09.1997	23.09.1998			-2220			3
			STR	23.09.1998	29.09.1999			-1040			3
			STR	29.09.1999	22.09.2000			-1240			3
34	SARENNES	FR0029	STR	14.09.1995	18.10.1996	1550	-1550	0			0.5
			STR	18.10.1996	02.10.1997	1770	-2200	-430			0.5
			STR	02.10.1997	24.09.1998	1470	-3810	-2340			0.5
			STR	24.09.1998	06.10.1999	1620	-2680	-1060			0.5
			STR	06.10.1999	19.10.2000	2000	-3530	-1530			0.5

NR	GLACIER NAME	PSFG NR	SYS	FROM D M Y	TO D M Y	BW MM	BS MM	BN/BA MM	ELA M	AAR %	AREA KM²
	ICELAND										
35	BREIDAMJOK.E.B	IS1126B		1997	1998			-1430	1180	47	
				1999	2000			-1220	1180	48	
36	BRUARJOKULL	IS2400		1995	1996			-220	1230	53	
37	DYNGJUJOKULL	IS2600		1995	1996			-390	1410	58	
38	EYJABAKKAJOKULL	IS2300		1995	1996			-850	1080	53	
39	HOFSJOKULL E	IS0510B		1995	1996			-1170	1360	31	
				1996	1997			-1150	1370	30	
40	HOFSJOKULL N	IS0510A		1995	1996			-780	1340	36	
				1996	1997			-1050	1400	31	
41	HOFSJOKULL SW	IS0510C		1995	1996			-1230	1370	24	
				1996	1997			-1420	1410	18	
42	KOELDUKVISLARJ.	IS2700		1995	1996			-630	1410	48	
43	LANGJOKULL S. DOME	IS		1996	1997			-1300	1100	30	
				1997	1998			-1700	1175	10	
				1998	1999			-770	1050	40	
				1999	2000			-750	1025	43	
44	THRANDARJOKULL	IS1940		1995	1996			-450	1130	32	
	ITALY										
45	CARESER	IT0701	FXD	24.10.1995	28.08.1996			-1320	3463	0	3.86
			FXD	29.08.1996	04.10.1997			-930	3264	2	3.86
			FXD	05.10.1997	04.09.1998			-2240	3651	0	3.36
			FXD	05.09.1998	09.10.1999			-1800	3398	0	3.36
			FXD	10.10.1999	18.09.2000			-1610	3740	0	3.36
46	CIARDONEY	IT0081	FXD	29.09.1995	17.09.1996	870	-1240	-370	3085	23	0.83
			FXD	18.09.1996	17.09.1997	470	-1130	-660	3100	25	0.83
			FXD	18.09.1997	09.09.1998	650	-4010	-3360	>3150	0	0.83
			FXD	10.09.1998	07.10.1999	880	-3310	-2430	>3150	0	0.83
			FXD	08.10.1999	05.09.2000	760	-1990	-1230	>3150	0	0.83
47	FONTANA BIANCA	IT0713	FXD	01.10.1995	30.09.1996	540	-980	-440	>3400	0	0.659
			FXD	01.10.1996	30.09.1997	830	-1450	-620	>3400	6	0.659
			FXD	01.10.1997	30.09.1998	860	-2470	-1620	>3400	0	0.659
			FXD	01.10.1998	30.09.1999	990	-1960	-970	>3400	0	0.636
			FXD	01.10.1999	30.09.2000	1130	-1870	-740	>3400	5	0.626
48	PENDENTE	IT0876	FXD	15.07.1995	15.09.1996			-534	2940	10	1.143
			FXD	16.09.1996	21.09.1997			-11	2780	60	1.119
			FXD	22.09.1997	30.09.1998			-1210	3050	5	1.067
			FXD	01.10.1998	12.09.1999	1823	-2364	-541	2912	10	1.067
			FXD	13.09.1999	16.09.2000	1745	-3124	-1379	3110	0	1.067
49	SFORZELLINA	IT0516	FXD	20.09.1995	21.09.1996			-816	3045	10.1	0.4
			FXD	22.09.1996	17.09.1997			-814	3000	22.5	0.4
			FXD	18.09.1997	23.09.1998			-1682	3054	7.8	0.4
			FXD	24.09.1998	28.09.1999			-1209	3017	17.8	0.4

NR	GLACIER NAME	PSFG NR	SYS	FROM D M Y	TO D M Y	BW MM	BS MM	BN/BA MM	ELA M	AAR %	AREA KM²
			FXD	29.09.1999	25.09.2000			-1440	3045	10.3	0.4
	<u>JAPAN</u>										
50	HAMAGURI YUKI	JP0001	FXD	09.10.1995	03.10.1996	10063	-7663	2400			
			FXD	03.10.1996	03.10.1997	6790	-9551	-2761			
			FXD	03.10.1997	11.10.1998	6340	-8494	-2151			
			FXD	11.10.1998	03.10.1999	11107	-10900	207			
			FXD	03.10.1999	05.10.2000	12291	-9493	2798			
	<u>KENYA</u>										
51	LEWIS	KE0008	FXD	01.03.1995	01.03.1996			-490	4875	46	0.21
	<u>MEXICO</u>										
52	VENTORRILLO	MX0101	OTH	26.05.1996	28.02.1997			-1917	5105	48	0.527
	<u>NEPAL</u>										
53	AX010	NP0005	FXD	11.10.1995	15.10.1996			-281	5213	38	0.48
			FXD	15.10.1996	05.11.1997			-391	5219	41	0.46
			FXD	05.11.1997	28.10.1998			-1328		0	0.448
			FXD	28.10.1998	26.10.1999			-502	5196	33	0.42
54	RIKKA SAMBA	NP	FXD	06.10.1998	28.09.1999			-731	5790		4.8
	<u>NORWAY</u>										
55	AALFOTBREEN	NO36204	OTH	1995	23.09.1996	1830	-3710	-1880	1380	0	4.815
			OTH	1996	20.11.1997	4220	-4140	80	1200	60	4.36
			OTH	1997	02.10.1998	3660	-3550	110	1240	66	4.36
			OTH	1998	18.10.1999	4610	-4550	60	1245	64	4.36
			OTH	1999	08.11.2000	5570	-3580	1990	1025	96	4.36
56	AUSTDALSBREEN	NO37323	OTH	1995	1996			-1070	1565	30	
				1996	1997			-530	1450	70	
				1997	1998	2200	-2030	190	1420	71	11.8
57	AUSTRE BROEGGERBR.	NO15504		15.09.1995	15.09.1996			-170	310	49	
				15.09.1996	15.09.1997			-710	490	7	
				1997	1998			-860	>600	0	
				1998	1999			-360	450		
				1999	2000			-20	319	31	
58	ENGABREEN	NO67011	OTH	1995	19.09.1996	2970	-2140	830	970	88	38
			OTH	1996	10.10.1997	4440	-3220	1220	1010	85	38
			OTH	1997	29.09.1998	2980	-2820	210	1100	74	38
			OTH	1998	22.09.1999	2120	-2150	-30	1215	51	38.03
			OTH	1999	21.09.2000	2760	-1270	1490	970	89	38
59	GRAASUBREEN	NO00547	OTH	1995	18.09.1996	530	-980	-450	2205	14	2.2
			OTH	1996	27.09.1997	700	-2390	-1690	2290	0	2.2
			OTH	1997	25.09.1998	780	-670	110	2140	30	2.2

NR	GLACIER NAME	PSFG NR	SYS	FROM D M Y	TO D M Y	BW MM	BS MM	BN/BA MM	ELA M	AAR %	AREA KM²
			OTH	1998	25.09.1999	910	-1300	-390	2210	18	2.2
			OTH	1999	21.09.2000	870	-920	-50			2.25
60	HANSBREEN	NO12419	FXD	08.10.1997	10.10.1998	1110	-1710	-600	390	25	56.76
			FXD	10.10.1998	04.10.1999	1010	-1370	-350	350	39	56.76
			FXD	04.10.1999	28.09.2000	930	-1410	-480	600	0	56.76
61	HANSEBREEN	NO36206		1995	1996	1737	-3758	-2020	1320	0	3.323
				1996	1997	3774	-3922	-150	1160	50	2.906
				1997	1998			-300	1170	64	
				1998	1999			110	1155	70	
				1999	2000			870	1075	81	
62	HARBARDSBREEN	NO30704		1997	1998			60	1500	84	
				1998	1999			-340		0	
				1999	2000			780	1250	100	
63	HARDANGERJOEKULEN	NO22303	OTH	1995	28.10.1996	990	-2100	-1070	1860	0	17.2
			OTH	1996	25.11.1997	2940	-3410	-530	1700	74	17.1
			OTH	1997	23.09.1998	2470	-1780	690	1585	84	17.1
			OTH	1998	06.10.1999	2040	-1990	50	1685	72	17.12
			OTH	1999	13.09.2000	2930	-1500	1430	1425	92	17.1
64	HELLSTUGUBREEN	NO00511	OTH	1995	17.09.1996	650	-1390	-740	1995	38	2.98
			OTH	1996	14.10.1997	1120	-2770	-1650	2200	0	2.98
			OTH	1997	23.09.1998	1000	-1020	-20	1870	68	2.98
			OTH	1998	23.09.1999	1220	-1640	-420	1930	55	2.98
			OTH	1999	21.09.2000	1290	-1100	190	1840	66	3.03
65	JOSTEFONN	NO		1995	1996	1190	-2810	-1620	1615	0	3.8
				1996	1997	3450	-3870	-420	1400	63	3.8
				1997	1998	2840	-2540	300	1250	76	3.8
				1998	1999			380	1200	79	
				1999	2000			1020	1050	90	
66	KONGSVEGEN	NO15510		15.09.1995	15.09.1996			390	435	59	
				15.09.1996	15.09.1997			100	540	45	
				1997	1998			-710	705	8	
				1998	1999			-150	575		
				1999	2000			330	459	63	
67	LANGFJORDJOEKUL	NO85008	OTH	1995	1996	2250	-2230	20	680	77	3.65
			OTH	1996	1997	2650	-3340	-690	820	58	3.65
				1997	1998	1800	-3240	-1440	1050	0	
				1998	1999	1330	-2910	-1580	960	45	
				1999	2000	2510	-3120	-610	860	44	
68	MIDTDALSBREEN	NO04302	OTH	1999	05.01.2001	2890	-1570	1320	1500	89	7.07
69	MIDRE LOVENBREEN	NO15506		15.09.1995	15.09.1996			20	305	58	
				15.09.1996	15.09.1997			-430	390	36	
				1997	1998			-590	425	30	5.45
				1998	1999			-340	425		5.45
				1999	2000	510	-540	-30	338	36	

NR	GLACIER NAME	PSFG NR	SYS	FROM D M Y	TO D M Y	BW MM	BS MM	BN/BA MM	ELA M	AAR %	AREA KM²
70	NIGARDSBREEN	NO31014	OTH	1995	16.09.1996	1400	-1810	-410	1660	55	47.82
			OTH	1996	24.09.1997	2660	-2620	470	1500	83	47.82
			OTH	1997	22.09.1998	2500	-1530	970	1350	93	47.82
			OTH	1998	30.09.1999	2380	-2210	170	1450	90	47.82
			OTH	1999	13.09.2000	3380	-1660	1720	1250	93	47.82
71	OKSTINDBREEN	NO64902	OTH	1995	1996	1620	-1920	-300	1330	57	14.01
			OTH	1996	1997			-1330	1301	63	
72	STORBREEN	NO00541	OTH	1995	27.09.1996	810	-1840	-1030	1890	19	5.26
			OTH	1996	14.10.1997	1750	-2780	-1030	1875	23	5.26
			OTH	1997	22.09.1998	1550	-1330	220	1690	77	5.35
			OTH	1998	21.09.1999	1670	-1910	-240	1850	42	5.36
			OTH	1999	21.09.2000	2040	-1490	550	1650	76	5.35
73	WALDEMARBREEN	NO	FXD	1995	1996	746	-724	22	270	48	2.71
			FXD	1996	1997	480	-860	-390	300	42	2.705
			FXD	1997	1998	416	-1205	-798	> 570	0	2.7
			FXD	1998	1999	330	-1014	-684	450	7	2.69
			FXD	1999	2000	316	-635	-319	385	21	2.68
	<u>SPAIN</u>										
74	MALADETA	ES9020	FXD	1995	1996			207	3049	41	
			FXD	1996	1997			512	3025	49	
			FXD	1997	1998			-955	3100	21	
			FXD	1998	1999			-912	3104	20	
			FXD	1999	2000			-1178	3131	12	
	<u>SWEDEN</u>										
75	MARMAGLACIAEREN	SE0799	FXD	1995	1996	820	-1210	-380	1631	19	4.011
				1996	1997	1700	-1900	-200	1634	15	4.038
				1997	1998	830	-1110	-280	1611	23	4.074
				1998	1999	1100	-1400	-300	1644	15	3.957
				1999	2000	1160	-1030	130	1670	22	3.957
76	PARTEJEKNA	SE0763		1996	1997	1718	-2585	-867	1703	2	9.913
				1997	1998	1203	-1684	-481			9.913
				1998	1999	1168	-1563	-395			9.913
				1999	2000	1157	-1258	-101			9.913
77	RABOTS GLACIAER	SE0785	COM	1995	1996			-470	1475	30	
			COM	1996	1997			-140	1485	30	
				1997	1998			-470	1485	42	
				1998	1999			-400			
				1999	2000			-230	1411	40	
78	RIUKOJIETNA	SE0790	FXD	1995	1996	1400	-1450	-60	1346	59	4.648
			FXD	1996	1997	1700	-2680	-980	1460	0	4.648
				1997	1998			-840	1460	5	
				1998	1999	917	-1718	-801	1460	5	4.648

NR	GLACIER NAME	PSFG NR	SYS	FROM D M Y	TO D M Y	BW MM	BS MM	BN/BA MM	ELA M	AAR %	AREA KM²
				1999	2000	1411	-1723	-312	1394	37	4.648
79	STORGLACIAEREN	SE0788	COM	1995	1996	1260	-1650	-390	1493	42	3.24
			COM	1996	1997	1870	-2500	-630	1498	41	3.24
				1997	1998	1350	-1870	-520	1504	36	3.24
				1998	1999	1330	-1510	-180	1492	42	3.24
				1999	2000	1620	-1040	580	1410	53	3.128
	SWITZERLAND										
80	BASODINO	CH0104	FXD	1995	1996			170	2820	62	2.37
			FXD	1996	1997			-210	2865	51	2.37
			FXD	1997	1998			-1070	3200	0	2.37
			FXD	1998	1999			-440	3100	5	2.37
			FXD	06.10.1999	25.10.2000			-780	3000	15	2.37
81	GRIES	CH0003	FXD	29.09.1995	25.09.1996			-230	2884	58	6.194
			FXD	25.09.1996	09.09.1997			-270	2893	57	6.194
			FXD	09.09.1997	04.09.1998			-1660	3401	1	6.194
			FXD	04.09.1998	10.09.1999			-580	2979	44	6.194
			FXD	10.09.1999	12.09.2000			-847	3009	38	6.194
82	SILVRETTA	CH0090	FXD	18.09.1995	11.09.1996			-70	2754	57	3.009
			FXD	11.09.1996	16.09.1997			540	2650	80	3.009
			FXD	16.09.1997	25.09.1998			-1530	3101	1	3.009
			FXD	25.09.1998	10.09.1999			520	2654	79	3.009
			FXD	10.09.1999	25.10.2000			218	2751	59	3.009
	U.S.A.										
83	BLUE GLACIER	US2126		1995	1996			-790	1750		4.3
				1996	1997			-490	1790		4.3
				1997	1998			-880	1825	47	
				1998	1999			1090	1500	92	
84	COLUMBIA (2057)	US2057	FXD	28.09.1995	28.09.1996			-620			
			FXD	28.09.1996	30.09.1997			350			
			FXD	30.09.1997	01.10.1998			-1460			
			FXD	01.10.1998	28.09.1999			1750			
			FXD	28.09.1999	02.10.2000			400			
85	DANIELS	US2052	FXD	26.09.1995	26.09.1996			450			
			FXD	26.09.1996	27.09.1997			880			
			FXD	27.09.1997	01.10.1998			-1820			
			FXD	01.10.1998	30.09.1999			1520			
			FXD	30.09.1999	30.09.2000			-250			
86	EASTON	US2008	FXD	28.09.1995	28.09.1996			220			
			FXD	28.09.1996	28.09.1997			530			
			FXD	28.09.1997	28.09.1998			-1870			
			FXD	28.09.1998	01.10.1999			1610			
			FXD	01.10.1999	28.09.2000			-100			

NR	GLACIER NAME	PSFG NR	SYS	FROM D M Y	TO D M Y	BW MM	BS MM	BN/BA MM	ELA M	AAR %	AREA KM²
87	FOSS	US2053	FXD	26.09.1995	26.09.1996			340			
			FXD	26.09.1996	26.09.1997			500			
			FXD	26.09.1997	01.10.1998			-1950			
			FXD	01.10.1998	30.09.1999			1560			
			FXD	30.09.1999	30.09.2000			-100			
88	GULKANA	US0200	COM	01.10.1995	30.09.1996			-710	1787	55	
			FXD	01.10.1996	30.09.1997			-1760	1871	44	
				1997	1998			-760	1793	55	19.3
				1998	1999			-1200	1835	49	19.3
				1999	2000			-50	1704	69	
89	ICE WORM	US2054	FXD	26.09.1995	26.09.1996			570			
			FXD	26.09.1996	26.09.1997			760			
			FXD	26.09.1997	01.10.1998			-1640			
			FXD	01.10.1998	30.09.1999			2150			
			FXD	30.09.1999	30.09.2000			-330			
90	LOWER CURTIS	US2055	FXD	30.09.1995	30.09.1996			-180			
			FXD	30.09.1996	30.09.1997			270			
			FXD	30.09.1997	29.09.1998			-1380			
			FXD	29.09.1998	27.09.1999			1550			
			FXD	27.09.1999	26.09.2000			-250			
91	LYNCH	US2056	FXD	26.09.1995	26.09.1996			530			
			FXD	26.09.1996	26.09.1997			620			
			FXD	26.09.1997	01.10.1998			-1970			
			FXD	01.10.1998	30.09.1999			1450			
			FXD	30.09.1999	30.09.2000			-240			
92	MCCALL	US0001	STR	06.09.1995	05.09.1996			30	2000	58	7.6
			STR	05.09.1996	05.09.1997			-450	2100	50	7.6
			STR	05.09.1997	31.08.1998			-860	2200	30	7.6
			STR	31.08.1998	10.09.1999			-560	2100	44	7.6
			STR	10.09.1999	16.09.2000			-310	2000	55	7.6
93	NOISY CREEK	US2078	STR	05.10.1995	23.09.1996	3039	-2815	224	1768	63.8	0.58
94	NORTH KLAWATTI	US2076	STR	14.10.1995	23.09.1996	3208	-2865	343	2040	74	1.46
95	RAINBOW	US2003	FXD	29.09.1995	29.09.1996			120			
			FXD	29.09.1996	28.09.1997			510			
			FXD	28.09.1997	27.09.1998			-1490			
			FXD	27.09.1998	28.09.1999			1840			
			FXD	28.09.1999	28.09.2000			150			
96	SANDALEE	US2079	STR	14.10.1995	23.09.1996	3224	-2398	826	2075	84.2	0.19
97	SILVER	US2077	STR	14.10.1995	23.09.1996	2918	-2030	888	2088	73.2	0.41
98	SOUTH CASCADE	US2013	COM	01.10.1995	30.09.1996			100	1901	40	2.02
			COM	01.10.1996	30.09.1997			630	1857	70	2
			COM	01.10.1997	30.09.1998			-1860	2125	0	1.97
			COM	01.10.1998	30.09.1999			1020	1800	84	1.96
			COM	01.10.1999	30.09.2000			380	1840	1	1.95

NR	GLACIER NAME	PSFG NR	SYS	FROM D M Y	TO D M Y	BW MM	BS MM	BN/BA MM	ELA M	AAR %	AREA KM²
99	WOLVERINE	US0411	COM	01.10.1995	30.09.1996			-1190	1245	54	
			COM	1996	1997			-2480	1419	15	
			COM	1997	1998			490	1072	74	
				1998	1999			-990	1207	60	
				1999	2000			-930	1253	52	
100	YAWNING	US2050	FXD	28.09.1995	28.09.1996			340			
			FXD	28.09.1996	30.09.1997			500			
			FXD	30.09.1997	29.09.1998			-2030			
			FXD	29.09.1998	02.10.1999			1630			
			FXD	02.10.1999	02.10.2000			-180			

Notes

Notes

Notes

WORLD GLACIER MONITORING SERVICE

MASS BALANCE STUDY RESULTS
SUMMARY DATA

TABLE CC

ADDENDA FROM EARLIER YEARS

NR	Record number
GLACIER NAME	15 alphabetic or numeric digits
PSFG NUMBER	5 digits identifying glacier with alphabetic prefix denoting country
SYS	System of measurement: STR = Stratigraphic FXD = Fixed date COM = Combined System OTH = Other System
FROM	Day, month and year of beginning of balance/measurement year
TO	Day, month and year of end of balance/measurement year
BW	Mean specific winter balance in mm water equivalent
BS	Mean specific summer balance in mm water equivalent
BN/BA	Mean specific net balance or annual balance in mm water equivalent
ELA	Altitude of equilibrium line or annual equilibrium line in metres above sea level
AAR	Ratio of accumulation area to total area of the glacier in percent
AREA	Area of the glacier used for calculation of mean specific quantities

NR	GLACIER NAME	PSFG NR	SYS	FROM D M Y	TO D M Y	BW MM	BS MM	BN/BA MM	ELA M	AAR %	AREA KM²
	AUSTRIA										
1	VERNAGT FERNER	AT0211	FXD	1964	1965			751	2946	92	9.52
			FXD	1965	1966	1547	-915	632	2940	93	9.52
			FXD	1966	1967	1128	-1045	83	3015	70	9.52
			FXD	1967	1968	699	-398	301	2995	86	9.52
			FXD	1968	1969	483	-790	-307	3153	56	9.45
			FXD	1969	1970	751	-975	-224	3113	61	9.45
			FXD	1970	1971			-424	3155	39	9.45
			FXD	1971	1972			137	3028	79	9.45
			FXD	1972	1973			-460	3185	43	9.3
			FXD	1973	1974	986	-756	230	2999	81	9.3
			FXD	1974	1975	1268	-1097	171	3025	80	9.3
			FXD	1975	1976	620	-570	50	3036	75	9.3
			FXD	1976	1977	1109	-757	352	2984	88	9.3
			FXD	1977	1978	1040	-752	288	3004	85	9.55
			FXD	1978	1979	1146	-1102	44	3059	73	9.55
			FXD	1979	1980	1089	-949	140	3027	77	9.55
			FXD	1980	1981	1012	-1067	-55	3101	72	9.55
			FXD	1981	1982	1315	-2160	-845	3418	24	9.35
			FXD	1982	1983	1113	-1650	-537	3304	25	9.35
			FXD	1983	1984	946	-926	20	3063	71	9.34
			FXD	1984	1985	1386	-1498	-112	3102	61	9.34
			FXD	1985	1986	875	-1683	-808	3291	19	9.34
			FXD	1986	1987	894	-1184	-290	3143	55	9.34
			FXD	1987	1988	897	-1394	-497	3230	39	9.09
			FXD	1988	1989	944	-1256	-312	3170	50	9.09
			FXD	1989	1990	847	-1415	-568	3283	32	9.09
			FXD	1990	1991	912	-1991	-1079	>3630	8	9.09
			FXD	1991	1992	952	-1810	-858	3268	22	9.09
			FXD	1992	1993	896	-1368	-472	3225	37	9.09
			FXD	1993	1994	1066	-2094	-1028	>3630	22	9.09
			FXD	1994	1995	971	-1369	-398	3226	39	9.09
	CHILE										
2	ECHAURREN NORTE	CL0001B	COM	01.04.1975	31.03.1976	1390	-2310	-920			0.4
			COM	01.04.1976	31.03.1977	1890	-3190	-1300			0.4
			COM	01.04.1977	31.03.1978	3230	-3050	180			0.4
			COM	01.04.1978	31.03.1979	2370	-1700	670			0.4
			COM	01.04.1979	31.03.1980	2900	-2600	300			0.4
			COM	01.04.1980	31.03.1981	3110	-2750	360			0.4
			COM	01.04.1981	31.03.1982	1560	-3980	-2420			0.4
			COM	01.04.1982	31.03.1983	5810	-2110	3700			0.4
			COM	01.04.1983	31.03.1984	1890	-3130	-1240			0.4
			COM	01.04.1984	31.03.1985	2240	-1900	340			0.4

NR	GLACIER NAME	PSFG NR	SYS	FROM	TO	BW	BS	BN/BA	ELA	AAR	AREA
				D M Y	D M Y	MM	MM	MM	M	%	KM²
			COM	01.04.1985	31.03.1986	5080	-3570	1510			0.4
			COM	01.04.1986	31.03.1987	3030	-2080	950			0.4
			COM	01.04.1987	31.03.1988	4910	-2478	2430			0.4
			COM	01.04.1988	31.03.1989	1830	-3090	-1260			0.4
			COM	01.04.1989	31.03.1990	1610	-3138	-1530			0.4
			COM	01.04.1990	31.03.1991	2010	-3058	-1050			0.4
			COM	01.04.1991	31.03.1992	3450	-1710	1740			0.4
			COM	01.04.1992	31.03.1993	2050	-2340	-290			0.4
			COM	01.04.1993	31.03.1994	2570	-4430	-1860			0.4
			COM	01.04.1994	31.03.1995	2640	-3590	-950			0.4
	C.I.S.										
3	SHUMSKIY	SU6001	FXD	10.09.1989	09.09.1990	533	-1114	-581	3727	37	2.82
			FXD	10.09.1990	09.09.1991	318	-1419	-1101	3825	24	2.81
	ECUADOR										
4	ANTIZANA15ALPHA	EC0001	FXD	30.12.1994	30.12.1995			-1830	5250	45	0.35
	SWITZERLAND										
5	BASODINO	CH0104	FXD	1992	1993			-80	2845	55	2.37
			FXD	1993	1994			440	2800	67	2.37
			FXD	1994	1995			610	2785	70	2.37
	U.S.A.										
6	COLUMBIA (2057)	US2057	FXD	30.09.1990	02.10.1991			380			
			FXD	02.10.1991	03.10.1992			-1850			
			FXD	03.10.1992	03.10.1993			-900			
			FXD	03.10.1993	01.10.1994			-960			
			FXD	01.10.1994	01.10.1995			-450			
7	DANIELS	US2052	FXD	27.09.1990	28.09.1991			-70			
			FXD	28.09.1991	29.09.1992			-1700			
			FXD	29.09.1992	29.09.1993			-830			
			FXD	29.09.1993	29.09.1994			-450			
			FXD	29.09.1994	27.09.1995			240			
8	EASTON	US2008	FXD	29.09.1990	30.09.1991			-1670			
			FXD	30.09.1991	01.10.1992			-1010			
			FXD	01.10.1992	01.10.1993			-920			
			FXD	01.10.1993	01.10.1994			-310			
9	FOSS	US2053	FXD	27.09.1990	28.09.1991			300			
			FXD	28.09.1991	29.09.1992			-2230			
			FXD	29.09.1992	29.09.1993			-730			
			FXD	29.09.1993	29.09.1994			-680			
			FXD	29.09.1994	27.09.1995			310			
10	ICE WORM	US2054	FXD	27.09.1990	28.09.1991			630			

NR	GLACIER NAME	PSFG NR	SYS	FROM D M Y	TO D M Y	BW MM	BS MM	BN/BA MM	ELA M	AAR %	AREA KM²
			FXD	28.09.1991	29.09.1992			-1760			
			FXD	29.09.1992	29.09.1993			-1020			
			FXD	29.09.1993	29.09.1994			-1230			
			FXD	29.09.1994	29.09.1995			470			
11	LOWER CURTIS	US2055	FXD	01.10.1990	03.10.1991			40			
			FXD	03.10.1991	30.09.1992			-1380			
			FXD	30.09.1992	30.09.1993			-480			
			FXD	30.09.1993	30.09.1994			-550			
			FXD	30.09.1994	30.09.1995			-210			
12	LYNCH	US2056	FXD	27.09.1990	28.09.1991			360			
			FXD	28.09.1991	29.09.1992			-1650			
			FXD	29.09.1992	29.09.1993			-620			
			FXD	29.09.1993	29.09.1994			-400			
			FXD	29.09.1994	27.09.1995			180			
13	RAINBOW	US2003	FXD	02.10.1990	03.10.1991			440			
			FXD	03.10.1991	01.10.1992			-2060			
			FXD	01.10.1992	03.10.1993			-800			
			FXD	03.10.1993	01.10.1994			-720			
			FXD	01.10.1994	01.10.1995			-200			
14	YAWNING	US2050	FXD	28.09.1990	28.09.1991			230			
			FXD	04.10.1992	04.10.1993			-660			
			FXD	04.10.1993	04.10.1994			-620			
			FXD	04.10.1994	28.09.1995			-260			

Notes

Notes

Notes

Notes

WORLD GLACIER MONITORING SERVICE

MASS BALANCE VERSUS ALTITUDE FOR SELECTED GLACIERS

TABLE CCC

NR	Record number
GLACIER NAME	15 alphabetic or numeric digits
YEAR	Balance year or measurement year
SYS	System of measurement: STR = Stratigraphic FXD = Fixed date COM = Combined System OTH = Other System
ALTITUDE	Altitude interval in metres above sea level
AREA	Area of altitude band and in square kilometres
BW	Mean specific winter balance in mm water equivalent
BS	Mean specific summer balance in mm water equivalent
BN/BA	Mean specific net balance or annual balance in mm water equivalent
SUMMARY	Total and mean specific values computed from data for the individual altitude intervals

NR	GLACIER NAME	PSFG NR	YEAR	SYS	ALTITUDE FROM	TO	AREA KM²	BW MM	BS MM	BN/BA MM
	ARGENTINA									
1.1	DE LOS TRES	AR	1996	STR	1700	1830	0.075	2350	-1460	890
					1600	1700	0.100	2340	-1610	730
					1500	1600	0.278	2510	-1790	720
					1400	1500	0.269	2270	-2060	210
					1300	1400	0.176	2170	-3370	-1200
					1220	1300	0.078	2070	-3880	-1810
					1220	1830	0.976	2320	-2250	70
1.2	DE LOS TRES	AR	1997	STR	1700	1830	0.075	2990	-590	2400
					1600	1700	0.100	2810	-650	2160
					1500	1600	0.278	2140	-970	1170
					1400	1500	0.269	1920	-1410	510
					1300	1400	0.176	1400	-2160	-760
					1220	1300	0.078	1740	-2760	-1020
					1220	1830	0.976	2040	-1390	650
	AUSTRIA									
2.1	HINTEREIS FERNER	AT0209	1996	FXD	3700	3750	0.004			125
					3650	3700	0.023			125
					3600	3650	0.032			-15
					3550	3600	0.023			243
					3500	2550	0.022			273
					3450	3500	0.086			233
					3400	3450	0.165			323
					3350	3400	0.294			377
					3300	3350	0.420			481
					3250	3300	0.468			335
					3200	3250	0.512			202
					3150	3200	0.702			243
					3100	3150	0.861			109
					3050	3100	0.801			-111
					3000	3050	0.616			-430
					2950	3000	0.606			-652
					2900	2950	0.606			-973
					2850	2900	0.502			-1585
					2800	2850	0.394			-1931
					2750	2800	0.598			-2438
					2700	2750	0.316			-3259
					2650	2700	0.343			-3623
					2600	2650	0.183			-4206
					2550	2600	0.097			-4945
					2500	2550	0.042			-5821
					2500	3750	8.716			-827
2.2	HINTEREIS FERNER	AT0209	1997	FXD	3700	3750	0.004			380
					3650	3700	0.023			240
					3600	3650	0.032			190
					3550	3600	0.023			80
					3500	3550	0.022			30
					3450	3500	0.086			340
					3400	3450	0.165			370
					3350	3400	0.293			370
					3300	3350	0.420			460
					3250	3300	0.465			360

NR	GLACIER NAME	PSFG NR	YEAR	SYS	ALTITUDE FROM	ALTITUDE TO	AREA KM²	BW MM	BS MM	BN/BA MM
					3200	3250	0.512			270
					3150	3200	0.699			210
					3100	3150	0.859			180
					3050	3100	0.798			90
					3000	3050	0.616			-90
					2950	3000	0.605			-280
					2900	2950	0.606			-560
					2850	2900	0.502			-780
					2800	2850	0.394			-1480
					2750	2800	0.598			-1940
					2700	2750	0.316			-2832
					2650	2700	0.343			-3571
					2600	2650	0.183			-4000
					2550	2600	0.097			-4580
					2500	2550	0.042			-5630
					2500	3750	8.703			-591
2.3	HINTEREIS FERNER	AT0209	1998	FXD	3700	3750	0.004			125
					3650	3700	0.021			-70
					3600	3650	0.032			-100
					3550	3600	0.021			-40
					3500	3550	0.022			-150
					3450	3500	0.077			90
					3400	3450	0.152			200
					3350	3400	0.290			150
					3300	3350	0.380			300
					3250	3300	0.435			210
					3200	3250	0.476			110
					3150	3200	0.605			70
					3100	3150	0.793			-130
					3050	3100	0.745			-530
					3000	3050	0.618			-820
					2950	3000	0.549			-1230
					2900	2950	0.601			-1700
					2850	2900	0.533			-2040
					2800	2850	0.323			-2340
					2750	2800	0.574			-2960
					2700	2750	0.317			-3520
					2650	2700	0.311			-3860
					2600	2650	0.233			-4420
					2550	2600	0.123			-5170
					2500	2550	0.056			-5900
					2500	3750	8.297			-1232
2.4	HINTEREIS FERNER	AT0209	1999	FXD	3700	3750	0.004			125
					3650	3700	0.021			125
					3600	3650	0.032			90
					3550	3600	0.021			125
					3500	3550	0.022			148
					3450	3500	0.077			442
					3400	3450	0.152			493
					3350	3400	0.290			500
					3300	3350	0.377			705
					3250	3300	0.435			471
					3200	3250	0.476			330
					3150	3200	0.605			293

NR	GLACIER NAME	PSFG NR	YEAR	SYS	ALTITUDE FROM	TO	AREA KM²	BW MM	BS MM	BN/BA MM
					3100	3150	0.792			101
					3050	3100	0.744			-151
					3000	3050	0.618			-344
					2950	3000	0.549			-696
					2900	2950	0.596			-827
					2850	2900	0.531			-1312
					2800	2850	0.317			-1960
					2750	2800	0.542			-2360
					2700	2750	0.310			-3409
					2650	2700	0.308			-4355
					2600	2650	0.226			-4819
					2550	2600	0.119			-5170
					2500	2550	0.052			-5817
					2500	3750	8.221			-861
2.5	HINTEREIS FERNER	AT0209	2000	FXD	3700	3750	0.004			130
					3650	3700	0.021			40
					3600	3650	0.032			50
					3550	3600	0.021			70
					3500	3550	0.022			-10
					3450	3500	0.077			210
					3400	3450	0.125			390
					3350	3400	0.290			480
					3300	3350	0.377			600
					3250	3300	0.435			610
					3200	3250	0.476			440
					3150	3200	0.605			420
					3100	3150	0.792			350
					3050	3100	0.744			150
					3000	3050	0.618			-140
					2950	3000	0.545			-460
					2900	2950	0.596			-750
					2850	2900	0.531			-1200
					2800	2850	0.311			-1640
					2750	2800	0.517			-2250
					2700	2750	0.290			-2940
					2650	2700	0.292			-3770
					2600	2650	0.208			-4280
					2550	2600	0.104			-4890
					2500	2550	0.046			-5670
					2500	3750	8.106			-633
3.1	JAMTAL F.	AT0106	1996	FXD	3100	3200				-10
					3000	3100				310
					2900	3000				200
					2800	2900				-210
					2700	2800				-730
					2600	2700				-1090
					2500	2600				-1880
					2400	2500				-2950
					2400	3200	3.79			-550
3.2	JAMTAL F.	AT0106	1997	FXD	3100	3200				120
					3000	3100				300
					2900	3000				320
					2800	2900				80

NR	GLACIER NAME	PSFG NR	YEAR	SYS	ALTITUDE FROM	TO	AREA KM²	BW MM	BS MM	BN/BA MM
					2700	2800				-90
					2600	2700				-640
					2500	2600				-1520
					2400	2500				-2560
					2400	3200	3.79			-217
4.1	KESSELWAND F.	AT0226	1996	FXD	3450	3500				30
					3400	3450				-28
					3350	3400				29
					3300	3350				401
					3250	3300				502
					3200	3250				361
					3150	3200				73
					3100	3150				-213
					3050	3100				-268
					3000	3050				-502
					2950	3000				-1191
					2900	2950				-1357
					2850	2900				-1755
					2800	2850				-2399
					2750	2800				-3414
					2700	2750				-3972
					2700	3500	4.285			-111
4.2	KESSELWAND F.	AT0226	1997	FXD	3450	3500				100
					3400	3450				280
					3350	3400				110
					3300	3350				550
					3250	3300				490
					3200	3250				400
					3150	3200				210
					3100	3150				50
					3050	3100				-320
					3000	3050				-680
					2950	3000				-1000
					2900	2950				-1050
					2850	2900				-1170
					2800	2850				-2590
					2750	2800				-3740
					2700	2750				-4750
					2700	3500	4.261			11
4.3	KESSELWAND F.	AT0226	1998	FXD	3450	3500	0.026			-70
					3400	3450	0.030			-80
					3350	3400	0.068			-140
					3300	3350	0.294			150
					3250	3300	0.643			200
					3200	3250	0.872			-50
					3150	3200	0.743			-230
					3100	3150	0.560			-880
					3050	3100	0.436			-1210
					3000	3050	0.166			-1790
					2950	3000	0.129			-2000
					2900	2950	0.081			-1910
					2850	2900	0.074			-3070
					2800	2850	0.076			-4340

NR	GLACIER NAME	PSFG NR	YEAR	SYS	ALTITUDE FROM	ALTITUDE TO	AREA KM²	BW MM	BS MM	BN/BA MM
					2750	2800	0.040			-5350
					2750	3500	4.238			-603
4.4	KESSELWAND F.	AT0226	1999	FXD	3450	3500	0.026			90
					3400	3450	0.030			160
					3350	3400	0.068			50
					3300	3350	0.294			370
					3250	3300	0.643			500
					3200	3250	0.872			360
					3150	3200	0.743			230
					3100	3150	0.560			10
					3050	3100	0.436			-450
					3000	3050	0.164			-780
					2950	3000	0.118			-1010
					2900	2950	0.070			-1110
					2850	2900	0.066			-2310
					2800	2850	0.066			-3170
					2750	2800	0.024			-4040
					2750	3500	4.180			-12
4.5	KESSELWAND F.	AT0226	2000	FXD	3450	3500	0.026			100
					3400	3450	0.030			290
					3350	3400	0.068			230
					3300	3350	0.294			790
					3250	3300	0.643			700
					3200	3250	0.872			640
					3150	3200	0.743			440
					3100	3150	0.560			40
					3050	3100	0.436			-380
					3000	3050	0.160			-540
					2950	3000	0.116			-960
					2900	2950	0.067			-1630
					2850	2900	0.064			-2960
					2800	2850	0.066			-4040
					2750	2800	0.020			-5150
					2750	3500	4.165			140
5.1	OCHSENTALERGL.	AT0103	1996	FXD	3100	3200				180
					3000	3100				530
					2900	3000				390
					2800	2900				-170
					2700	2800				-660
					2600	2700				-1680
					2500	2600				-2450
					2400	2500				-3190
					2300	2400				-3750
					2300	3200	2.6			-270
5.2	OCHSENTALERGL.	AT0103	1997	FXD	3100	3200				370
					3000	3100				740
					2900	3000				650
					2800	2900				110
					2700	2800				-450
					2600	2700				-1080
					2500	2600				-1870

NR	GLACIER NAME	PSFG NR	YEAR	SYS	ALTITUDE FROM	ALTITUDE TO	AREA KM²	BW MM	BS MM	BN/BA MM
					2400	2500				-2750
					2400	3200	2.59			60
6.1	VERMUNTGL.	AT0104	1996	FXD	3100	3200				375
					3000	3100				310
					2900	3000				-80
					2800	2900				-450
					2700	2800				-630
					2600	2700				-1610
					2500	2600				-2590
					2500	3200	2.24			-720
6.2	VERMUNTGL.	AT0104	1997	FXD	3100	3200				250
					3000	3100				210
					2900	3000				0
					2800	2900				-290
					2700	2800				-580
					2600	2700				-1130
					2500	2600				-2170
					2500	3200	2.21			-500
7.1	VERNAGT FERNER	AT0211	1996	FXD	3550	3600	0.008			154
					3500	3550	0.018			149
					3450	3500	0.158			198
					3400	3450	0.198			155
					3350	3400	0.247			118
					3300	3350	0.448			159
					3250	3300	0.944			150
					3200	3250	1.014			19
					3150	3200	1.260			-50
					3100	3150	1.274			-158
					3050	3100	1.161			-390
					3000	3050	0.967			-816
					2950	3000	0.651			-1454
					2900	2950	0.401			-1862
					2850	2900	0.225			-2403
					2800	2850	0.089			-2908
					2750	2800	0.025			-3249
					2750	3600	9.088			-413
7.2	VERNAGT FERNER	AT0211	1997	FXD	3550	3600	0.007			100
					3500	3550	0.015			100
					3450	3500	0.160			129
					3400	3450	0.209			82
					3350	3400	0.239			61
					3300	3350	0.447			95
					3250	3300	0.907			66
					3200	3250	1.005			-11
					3150	3200	1.239			-117
					3100	3150	1.335			-251
					3050	3100	1.144			-506
					3000	3050	1.000			-944
					2950	3000	0.643			-1547
					2900	2950	0.401			-1997
					2850	2900	0.199			-2234

NR	GLACIER NAME	PSFG NR	YEAR	SYS	ALTITUDE FROM	TO	AREA KM²	BW MM	BS MM	BN/BA MM
					2800	2850	0.089			-2687
					2750	2800	0.025			-3059
					2750	3600	9.065			-487
7.3	VERNAGT FERNER	AT0211	1998	FXD	3550	3600	0.005			150
					3500	3550	0.008			151
					3450	3500	0.152			225
					3400	3450	0.214			67
					3350	3400	0.243			34
					3300	3350	0.406			60
					3250	3300	0.920			-24
					3200	3250	1.026			-231
					3150	3200	1.230			-416
					3100	3150	1.329			-774
					3050	3100	1.156			-1422
					3000	3050	1.010			-1958
					2950	3000	0.633			-2379
					2900	2950	0.400			-2892
					2850	2900	0.202			-3220
					2800	2850	0.093			-3586
					2750	2800	0.025			-3821
					2750	3600	9.053			-1003
7.4	VERNAGT FERNER	AT0211	1999	FXD	3600	3650				398
					3550	3600	0.007			400
					3500	3550	0.015			443
					3450	3500	0.137			639
					3400	3450	0.203			489
					3350	3400	0.249			371
					3300	3350	0.398			475
					3250	3300	0.874			591
					3200	3250	0.967			334
					3150	3200	1.169			261
					3100	3150	1.279			164
					3050	3100	1.121			-125
					3000	3050	0.964			-536
					2950	3000	0.594			-1169
					2900	2950	0.421			-1808
					2850	2900	0.177			-2131
					2800	2850	0.086			-2605
					2750	2800	0.016			-3435
					2750	3650	8.676			-108
7.5	VERNAGT FERNER	AT0211	2000	FXD	3600	3650				448
					3550	3600	0.007			500
					3500	3550	0.015			490
					3450	3500	0.139			518
					3400	3450	0.201			435
					3350	3400	0.256			396
					3300	3350	0.397			416
					3250	3300	0.863			485
					3200	3250	0.965			257
					3150	3200	1.169			110
					3100	3150	1.276			18
					3050	3100	1.116			-363
					3000	3050	0.970			-847

NR	GLACIER NAME	PSFG NR	YEAR	SYS	ALTITUDE FROM	ALTITUDE TO	AREA KM²	BW MM	BS MM	BN/BA MM
					2950	3000	0.592			-1538
					2900	2950	0.420			-1960
					2850	2900	0.177			-2495
					2800	2850	0.087			-3208
					2750	2800	0.016			-4060
					2750	3650	8.668			-287
8.1	WURTEN K.	AT0804	1996	FXD	3100	3150	0.005	1200	-700	500
					3050	3100	0.033	1192	-622	570
					3000	3050	0.074	983	-863	120
					2950	3000	0.097	802	-602	200
					2900	2950	0.085	735	-435	300
					2850	2900	0.109	767	-237	530
					2800	2850	0.093	629	-1459	-830
					2750	2800	0.042	475	-1625	-1150
					2700	2750	0.084	828	-1380	-552
					2650	2700	0.176	824	-1524	-700
					2600	2650	0.131	689	-1699	-1010
					2550	2600	0.068	589	-2109	-1520
					2500	2550	0.026	978	-2778	-1800
					2500	3150	1.024	770	-1408	-638
8.2	WURTEN K.	AT0804	1997		3100	3150	0.004	2424	-1424	1000
					3050	3100	0.033	2459	-1268	1192
					3000	3050	0.074	2057	-1044	1014
					2950	3000	0.098	1644	-1070	575
					2900	2950	0.084	1623	-1455	168
					2850	2900	0.108	1695	-1746	-51
					2800	2850	0.093	1638	-2002	-364
					2750	2800	0.038	1764	-2567	-803
					2700	2750	0.080	2637	-2657	-20
					2650	2700	0.172	2764	-2897	-133
					2600	2650	0.130	1906	-2617	-711
					2550	2600	0.068	1949	-3854	-1905
					2500	2550	0.026	2214	-3140	-926
					2500	3150	1.007	2066	-2221	-154
8.3	WURTEN K.	AT0804	1998		3100	3150	0.004	1166	-866	300
					3050	3100	0.033	1410	-1408	2
					3000	3050	0.074	1353	-1547	-194
					2950	3000	0.098	1209	-1870	-660
					2900	2950	0.082	1201	-2499	-1297
					2850	2900	0.107	1169	-2662	-1493
					2800	2850	0.092	1258	-2863	-1605
					2750	2800	0.034	1234	-2720	-1486
					2700	2750	0.076	1577	-2402	-825
					2650	2700	0.167	1547	-2900	-1353
					2600	2650	0.128	1210	-3226	-2017
					2550	2600	0.068	1049	-3364	-2315
					2500	2550	0.026	1054	-3290	-2236
					2500	3150	0.990	1306	-2620	-1313
8.4	WURTEN K.	AT0804	1999		3100	3150	0.004	1492	-1487	5
					3050	3100	0.032	1517	-1476	41
					3000	3050	0.074	1606	-1558	48
					2950	3000	0.099	1618	-1972	-355
					2900	2950	0.081	1630	-2865	-1235

NR	GLACIER NAME	PSFG NR	YEAR	SYS	ALTITUDE FROM	TO	AREA KM²	BW MM	BS MM	BN/BA MM
					2850	2900	0.105	1638	-3147	-1510
					2800	2850	0.092	1440	-3205	-1765
					2750	2800	0.030	1267	-3191	-1924
					2700	2750	0.072	1948	-2280	-332
					2650	2700	0.162	2012	-2646	-634
					2600	2650	0.127	1529	-3455	-1927
					2550	2600	0.069	1294	-4002	-2708
					2500	2550	0.027	1271	-4067	-2796
					2500	3150	0.972	1635	-2807	-1135
8.5	WURTEN K.	AT0804	2000		3100	3150	0.004	1749	-1504	245
					3050	3100	0.032	1665	-1343	322
					3000	3050	0.074	1521	-1277	244
					2950	3000	0.099	1462	-1594	-132
					2900	2950	0.081	1449	-2094	-645
					2850	2900	0.105	1566	-2362	-797
					2800	2850	0.092	1274	-2359	-1085
					2750	2800	0.030	1052	-1954	-901
					2700	2750	0.072	1897	-1747	149
					2650	2700	0.162	1851	-1847	4
					2600	2650	0.127	1315	-2653	-1337
					2550	2600	0.069	1057	-3677	-2620
					2500	2550	0.027	1272	-4171	-2899
					2500	3150	0.972	1498	-2178	-680
	BOLIVIA									
9.1	CHACALTAYA	BO5180	1996	FXD	5275	5360	0.020			-476
					5250	5275	0.009			-212
					5225	5250	0.016			-264
					5200	5225	0.013			-282
					5175	5200	0.012			-318
					5150	5175	0.009			-239
					5125	5150	0.004			-102
					5125	5360	0.082			-1874
9.2	CHACALTAYA	BO5180	1997	FXD	5275	5360	0.020			-101
					5250	5275	0.010			-66
					5225	5250	0.017			-103
					5200	5225	0.014			-137
					5175	5200	0.012			-150
					5150	5175	0.008			-72
					5130	5150	0.003			-28
					5130	5360	0.084			-659
9.3	CHACALTAYA	BO5180	1998	FXD	5275	5360	0.017			-698
					5250	5275	0.008			-348
					5225	5250	0.016			-818
					5200	5225	0.013			-678
					5175	5200	0.011			-642
					5150	5175	0.008			-345
					5140	5150	0.002			-81
					5140	5360	0.075			-3716
9.4	CHACALTAYA	BO5180	1999	FXD	5325	5360	0.004			-92
					5300	5325	0.005			-105

NR	GLACIER NAME	PSFG NR	YEAR	SYS	ALTITUDE FROM	ALTITUDE TO	AREA KM²	BW MM	BS MM	BN/BA MM
					5275	5300	0.003			-74
					5250	5275	0.005			-177
					5225	5250	0.014			-407
					5200	5225	0.011			-379
					5175	5200	0.010			-399
					5150	5175	0.007			-296
					5145	5150	0.001			-48
					5145	5360	0.060			-1827
9.5	CHACALTAYA	BO5180	2000	FXD	5325	5360	0.004			-46
					5300	5325	0.004			-34
					5275	5300	0.003			-26
					5250	5275	0.005			-41
					5225	5250	0.012			-166
					5200	5225	0.011			-203
					5175	5200	0.009			-179
					5150	5175	0.006			-145
					5145	5150	0.001			-26
					5145	5360	0.054			-852
10.1	ZONGO	BO5150	1996	FXD	5950	6050				965
					5850	5950				965
					5750	5850				965
					5650	5750				848
					5550	5650				788
					5450	5550				133
					5350	5450				-521
					5250	5350				-1175
					5150	5250				-1830
					5050	5150				-2416
					4950	5050				-6420
					4950	6050				-675
10.2	ZONGO	BO5150	1997	FXD	5950	6050				1371
					5850	5950				1371
					5750	5850				1371
					5650	5750				1371
					5550	5650				1371
					5450	5550				1218
					5350	5450				1068
					5250	5350				918
					5150	5250				768
					5050	5150				-231
					4950	5050				-3291
					4950	6050	2.1			797
10.3	ZONGO	BO5150	2000		5900	6000				1100
					5800	5900				1100
					5700	5800				1100
					5600	5700				1035
					5500	5600				970
					5400	5500				683
					5300	5400				395
					5200	5300				108
					5100	5200				-180
					5000	5100				-655

NR	GLACIER NAME	PSFG NR	YEAR	SYS	ALTITUDE FROM	TO	AREA KM²	BW MM	BS MM	BN/BA MM
					4900	5000				-6187
					4000	6000				116
	CANADA									
11.1	DEVON ICE CAP	CA0431	1996	STR	1700	1800	38	209	0	209
					1600	1700	65	181	26	207
					1500	1600	123	186	21	207
					1400	1500	115	186	21	207
					1300	1400	218	116	64	180
					1200	1300	180	148	-269	-121
					1100	1200	160	95	-259	-164
					1000	1100	235	131	-338	-207
					900	1000	193	103	-353	-250
					800	900	95	40	-129	169
					700	800	83	64	-253	-189
					600	700	75	51	-578	-527
					500	600	70	59	-586	-527
					400	500	10	51	-578	-527
					300	400	13	89	-616	-527
					200	300	13	121	-648	-527
					100	200	8	175	-702	-527
					0	100	5	175	-702	-527
					0	1800	1699	120	-201	-80
11.2	DEVON ICE CAP	CA0431	1997	STR	1700	1800	38	235	35	270
					1600	1700	65	235	32	267
					1500	1600	123	210	53	263
					1400	1500	115	170	90	260
					1300	1400	218	217	40	257
					1200	1300	180	108	-18	89
					1100	1200	160	113	-81	32
					1000	1100	235	165	-190	-25
					900	1000	193	75	-156	-81
					800	900	95	70	-208	-138
					700	800	83	70	-264	-194
					600	700	75	30	-715	-685
					500	600	70	30	-740	-710
					400	500	10	40	-775	-735
					300	400	13	40	-800	-760
					200	300	13	90	-870	-784
					100	200	8	100	-909	-809
					0	100	5	100	-934	-834
					0	1800	1699	134	-147	-13
11.3	DEVON ICE CAP	CA0431	1998	STR	1700	1800	38		14	204
					1600	1700	65	175	14	189
					1500	1600	123	160	14	174
					1400	1500	115	145	14	159
					1300	1400	218	190	-107	83
					1200	1300	180	174	-232	-58
					1100	1200	160	158	-357	-199
					1000	1100	235	141	-482	-341
					900	1000	193	125	-607	-482
					800	900	95	109	-732	-623
					700	800	83	93	-857	-764

NR	GLACIER NAME	PSFG NR	YEAR	SYS	ALTITUDE FROM	TO	AREA KM²	BW MM	BS MM	BN/BA MM
					600	700	75	78	-983	-905
					500	600	70	62	-1108	-1046
					400	500	10	45	-1233	-1188
					300	400	13	29	-1358	-1329
					200	300	13	13	-1483	-1470
					100	200	8	0	-1611	-1611
					0	100	5	2	-1752	-1750
					0	1800	1699	141	-417	-276
11.4	DEVON ICE CAP	CA0431	1999	STR	1700	1800	37.5			171
					1600	1700	6.0			151
					1500	1600	122.6			159
					1400	1500	115			110
					1300	1400	217.5			79
					1200	1300	180.0			-21
					1100	1200	160.0			-141
					1000	1100	235.0			-261
					900	1000	192.5			-381
					800	900	96.0			-501
					700	800	82.5			-621
					600	700	75.0			-741
					500	600	70.0			-862
					400	500	10.0			-982
					300	400	12.5			-1102
					200	300	12.5			-1222
					100	200	7.0			-1342
					0	100	5.0			-1462
					0	1800	1667.6	84	-301	-217
11.5	DEVON ICE CAP	CA0431	2000	STR	1700	1800	37.5			152
					1600	1700	6.0			167
					1500	1600	122.6			156
					1400	1500	115.0			96
					1300	1400	217.5			-55
					1200	1300	180.0			-128
					1100	1200	160.0			-359
					1000	1100	235.0			-403
					900	1000	192.5			-509
					800	900	96.0			-614
					700	800	82.5			-720
					600	700	75.0			-825
					500	600	70.0			-931
					400	500	10.0			-1036
					300	400	12.5			-1142
					200	300	12.5			-1247
					100	200	7.0			-1353
					0	100	5.0			-1458
					0	1800	1667.6	99	-418	-320
12.1	PEYTO	CA1640	1996	STR	3100	3200				1995
					3000	3100				1860
					2900	3000				1725
					2800	2900				1590
					2700	2800				1141
					2600	2700				357
					2500	2600				-155

NR	GLACIER NAME	PSFG NR	YEAR	SYS	ALTITUDE FROM	TO	AREA KM²	BW MM	BS MM	BN/BA MM
					2400	2500				-982
					2300	2400				-2280
					2200	2300				-3121
					2100	2200				-2920
					2100	3200				129
12.2	PEYTO	CA1640	1997	STR	3100	3200				1537
					3000	3100				1437
					2900	3000				1337
					2800	2900				1213
					2700	2800				323
					2600	2700				-731
					2500	2600				-1302
					2400	2500				-2038
					2300	2400				-3300
					2200	2300				-4738
					2100	2200				-4650
					2100	3200				-818
12.3	PEYTO	CA1640	1998		3100	3200				220
					3000	3100				-50
					2900	3000				-300
					2800	2900				-560
					2700	2800				-950
					2600	2700				-1500
					2500	2600				-2200
					2400	2500				-4750
					2300	2400				-5500
					2200	2300				-6000
					2100	2200				-5240
12.4	PEYTO	CA1640	1999		3100	3200				400
					3000	3100				360
					2900	3000				300
					2800	2900				280
					2700	2800				220
					2600	2700				130
					2500	2600				-160
					2400	2500				-680
					2300	2400				-2200
					2200	2300				-3280
					2100	2200				-2700
12.5	PEYTO	CA1640	2000		3100	3200				2940
					3000	3100				2635
					2900	3000				2350
					2800	2900				2210
					2700	2800				1750
					2600	2700				1200
					2500	2600				565
					2400	2500				-605
					2300	2400				-1650
					2200	2300				-2510
					2100	2200				-2260

NR	GLACIER NAME	PSFG NR	YEAR	SYS	ALTITUDE FROM	TO	AREA KM²	BW MM	BS MM	BN/BA MM
13.1	WHITE	CA2340	1996	COM	1700	1800				230
					1600	1700				230
					1500	1600				230
					1400	1500				207
					1300	1400				155
					1200	1300				121
					1100	1200				99
					1000	1100				82
					900	1000				63
					800	900				36
					700	800				-5
					600	700				-69
					500	600				-160
					400	500				-287
					300	400				-455
					200	300				-671
					100	200				-935
					0	100				-1027
					0	1800				38
13.2	WHITE	CA2340	1997	COM	1700	1800				415
					1600	1700				415
					1500	1600				415
					1400	1500				403
					1300	1400				348
					1200	1300				258
					1100	1200				137
					1000	1100				-9
					900	1000				-175
					800	900				-356
					700	800				-546
					600	700				-740
					500	600				-933
					400	500				-1121
					300	400				-1297
					200	300				-1456
					100	200				-1591
					0	100				-1630
					0	1800				-56
13.3	WHITE	CA2340	1998		1700	1800				125
					1600	1700				125
					1500	1600				128
					1400	1500				187
					1300	1400				219
					1200	1300				193
					1100	1200				112
					1000	1100				-18
					900	1000				-194
					800	900				-411
					700	800				-665
					600	700				-951
					500	600				-1266
					400	500				-1604
					300	400				-1961
					200	300				-2334

NR	GLACIER NAME	PSFG NR	YEAR	SYS	ALTITUDE FROM	ALTITUDE TO	AREA KM²	BW MM	BS MM	BN/BA MM
					100	200				-2709
					0	100				-2829
					0	1800				-229
13.4	WHITE	CA2340	1999		1700	1800				257
					1600	1700				257
					1500	1600				257
					1400	1500				250
					1300	1400				165
					1200	1300				1
					1100	1200				-226
					1000	1100				-498
					900	1000				-799
					800	900				-1111
					700	800				-1419
					600	700				-1704
					500	600				-1951
					400	500				-2142
					300	400				-2261
					200	300				-2291
					100	200				-2218
					0	100				-2175
					0	1800				-494
13.5	WHITE	CA2340	2000		1700	1800				124
					1600	1700				124
					1500	1600				125
					1400	1500				126
					1300	1400				81
					1200	1300				-18
					1100	1200				-162
					1000	1100				-342
					900	1000				-548
					800	900				-773
					700	800				-1007
					600	700				-1242
					500	600				-1468
					400	500				-1678
					300	400				-1861
					200	300				-2010
					100	200				-2114
					0	100				-2138
					0	1800				-401
	CHINA									
14.1	URUMQIHE E-BR.	CN1001	1996	FXD	4150	4269	0.146	76	80	156
					4100	4150	0.112	164	164	328
					4050	4100	0.115	146	114	260
					4000	4050	0.147	99	231	300
					3950	4000	0.138	108	207	315
					3900	3950	0.194	115	33	149
					3850	3900	0.155	67	-384	-318
					3800	3850	0.097	97	-1260	-1163
					3750	3800	0.055	-81	-1684	-1764

NR	GLACIER NAME	PSFG NR	YEAR	SYS	ALTITUDE FROM	TO	AREA KM²	BW MM	BS MM	BN/BA MM
					3740	3750	0.004	-103	-1745	-1849
					3740	4269	1.163	108	-62	46
14.2	URUMQIHE E-BR.	CN1001	1997	FXD	4200	4250	0.024	180	180	360
					4150	4200	0.115	180	184	364
					4100	4150	0.103	158	-238	-80
					4050	4100	0.105	120	-640	-520
					4000	4050	0.140	72	-811	-740
					3950	4000	0.151	103	-750	-647
					3900	3950	0.199	47	-1122	-1075
					3850	3900	0.129	-71	-1595	-1666
					3800	3850	0.082	-120	-1985	-2104
					3750	3800	0.055	-225	-2196	-2421
					3700	3750	0.012	-348	-2973	-3321
					3700	4250	1.115	29	-802	-773
14.3	URUMQIHE E-BR.	CN1001	1998	FXD	4200	4250	0.024	180	72	252
					4200	4267				252
					4150	4200	0.115	244	85	328
					4100	4150	0.103	172	75	248
					4050	4100	0.105	128	-458	-330
					4000	4050	0.140	88	-774	-686
					3950	4000	0.151	47	-730	-684
					3900	3950	0.199	16	-894	-878
					3850	3900	0.129	-167	-1399	-1566
					3800	3850	0.082	-29	-1964	-1994
					3750	3800	0.055	-222	-2768	-2990
					3700	3750	0.012	-434	-3109	-3543
					3700	4250	1.115	62	-888	-826
14.4	URUMQIHE E-BR.	CN1001	1999	FXD	4200	4267	0.040	312	-100	213
					4150	4200	0.101	420	-170	250
					4100	4150	0.104	286	-121	165
					4050	4100	0.106	175	-312	-137
					4000	4050	0.137	75	-547	-472
					3950	4000	0.153	15	-703	-688
					3900	3950	0.198	-35	-902	-937
					3850	3900	0.127	-110	-1350	-1460
					3800	3850	0.082	-280	-1932	-2212
					3750	3800	0.055	-373	-3010	-3383
					3700	3750	0.012	-820	-3212	-4032
					3700	4267	1.115	38	-863	-825
14.5	URUMQIHE E-BR.	CN1001	2000	FXD	4200	4267	0.040	162	10	172
					4150	4200	0.101	195	93	288
					4100	4150	0.104	230	7	237
					4050	4100	0.106	206	-296	-90
					4000	4050	0.137	180	-280	-100
					3950	4000	0.153	165	-385	-220
					3900	3950	0.198	130	-510	-380
					3850	3900	0.127	61	-881	-820
					3800	3850	0.082	46	-1296	-1250
					3750	3800	0.055	70	-2700	-2630
					3700	3750	0.012	60	-3194	-3134
					3700	4267	1.115	147	-526	-379

NR	GLACIER NAME	PSFG NR	YEAR	SYS	ALTITUDE FROM	TO	AREA KM²	BW MM	BS MM	BN/BA MM
15.1	URUMQIHE W-BR.	CN1002	1996	FXD	4400	4479	0.038	51	57	108
					4350	4400	0.040	51	57	108
					4300	4350	0.041	76	73	149
					4250	4300	0.037	168	132	300
					4200	4250	0.037	115	215	330
					4150	4200	0.044	126	378	504
					4100	4150	0.055	163	284	447
					4050	4100	0.116	145	153	299
					4000	4050	0.107	106	68	174
					3950	4000	0.073	98	-439	-341
					3900	3950	0.047	74	-731	-657
					3850	3900	0.024	-30	-1306	-1336
					3810	3850	0.018	-132	-1329	-1461
					3810	4479	0.677	66	30	37
15.2	URUMQIHE W-BR.	CN1002	1997	FXD	4425	4475	0.018	84	108	192
					4375	4425	0.033	168	102	270
					4325	4375	0.040	196	74	270
					4275	4325	0.038	168	179	346
					4225	4275	0.035	154	-128	27
					4175	4225	0.039	142	-615	-473
					4125	4175	0.045	147	-602	-456
					4075	4125	0.075	11	-760	-749
					4025	4075	0.104	25	-987	-962
					3975	4025	0.094	-86	-1488	-1574
					3925	3975	0.051	-263	-1894	-2158
					3875	3925	0.031	-442	-2328	-2770
					3825	3875	0.024	-705	-3105	-3810
					3825	4475	0.627	21	-1016	-995
15.3	URUMQIHE W-BR.	CN1002	1998	FXD	4475	4486				176
					4425	4475	0.018	102	74	176
					4375	4425	0.033	171	97	268
					4325	4375	0.040	210	40	250
					4275	4325	0.038	213	32	245
					4225	4275	0.035	218	-8	210
					4175	4225	0.039	218	-42	-175
					4125	4175	0.045	249	-86	-162
					4075	4125	0.075	44	-437	-393
					4025	4075	0.104	15	-607	-592
					3975	4025	0.094	-163	-1098	-1261
					3925	3975	0.051	-268	-1528	-1797
					3875	3925	0.031	-376	-2329	-2704
					3825	3875	0.024	-555	-3066	-3622
					3825	4486	0.627	-29	-697	-726
15.4	URUMQIHE W-BR.	CN1002	1999	FXD	4450	4486	0.007	112	-62	50
					4400	4450	0.028	138	-63	75
					4350	4400	0.039	201	-88	113
					4300	4350	0.039	288	-148	140
					4250	4300	0.036	312	-162	150
					4200	4250	0.035	248	-173	75
					4150	4200	0.039	235	-249	-14
					4100	4150	0.052	250	-325	-75
					4050	4100	0.109	110	-810	-700
					4000	4050	0.095	45	-1045	-1000

NR	GLACIER NAME	PSFG NR	YEAR SYS	ALTITUDE		AREA	BW	BS	BN/BA
				FROM	TO	KM^2	MM	MM	MM
				3950	4000	0.067	-75	-1525	-1600
				3900	3950	0.045	-336	-1764	-2100
				3850	3900	0.024	-500	-2260	-2760
				3825	3850	0.012	-639	-2611	-3250
				3825	4486	0.627	67	-804	-737
15.5	URUMQIHE W-BR.	CN1002	2000 FXD	4450	4486	0.007	123	77	200
				4400	4450	0.028	140	70	210
				4350	4400	0.039	230	60	290
				4300	4350	0.039	280	40	320
				4250	4300	0.036	340	0	340
				4200	4250	0.035	320	-20	300
				4150	4200	0.039	240	-180	60
				4100	4150	0.052	410	-210	200
				4050	4100	0.109	240	-340	-100
				4000	4050	0.095	230	-510	-280
				3950	4000	0.067	80	-830	-750
				3900	3950	0.045	20	-1230	-1210
				3850	3900	0.024	-138	-2112	-2250
				3825	3850	0.012	166	-1993	-1827
				3825	4486	0.627	210	-452	-242
	C.I.S.								
16.1	ABRAMOV	SU4101	1996 COM	4600	4960	0.84	680	100	780
				4500	4600	0.91	1400	-540	860
				4400	4500	1.55	1770	-890	880
				4300	4400	4.89	1850	-940	910
				4200	4300	4.72	1640	-1200	440
				4100	4200	5.13	1350	-2040	-690
				4000	4100	4.01	1210	-2440	-1230
				3900	4000	1.97	870	-2980	-2110
				3800	3900	1.27	770	-3520	-2750
				3700	3800	0.50	530	-4800	-4270
				3600	3700	0.05	510	-5200	-4690
				3600	4960	25.84	1410	-1764	-354
16.2	ABRAMOV	SU4101	1997 COM	4600	4960	0.84	790	-730	60
				4500	4600	0.91	1530	-1050	480
				4400	4500	1.55	1400	-1190	210
				4300	4400	4.89	1250	-1530	-280
				4200	4300	4.72	1110	-2190	-1080
				4100	4200	5.13	930	-3040	-2110
				4000	4100	4.01	760	-3680	-2920
				3900	4000	1.97	490	-4270	-3780
				3800	3900	1.27	390	-5090	-4700
				3700	3800	0.50	330	-6270	-5940
				3600	3700	0.05	130	-7090	-6960
				3600	4690	25.83	970	-2710	-1737
16.3	ABRAMOV	SU4101	1998 COM	4600	4960	0.84	1310	270	1580
				4500	4600	0.91	1910	-90	1820
				4400	4500	1.55	2300	-550	1750
				4300	4400	4.89	2450	-900	1550
				4200	4300	4.72	2100	-1110	990
				4100	4200	5.13	1870	-1710	160

NR	GLACIER NAME	PSFG NR	YEAR	SYS	ALTITUDE FROM	TO	AREA KM²	BW MM	BS MM	BN/BA MM
					4000	4100	4.01	1690	-2500	-810
					3900	4000	1.97	1310	-3240	-1930
					3800	3900	1.27	980	-4290	-3310
					3700	3800	0.50	870	-5060	-4190
					3600	3700	0.04	1050	-5000	-3950
					3600	4960	25.83	1900	-1700	204
17.1	DJANKUAT	SU3010	1996	STR	3600	3990	0.187	1480	-1460	20
					3500	3600	0.572	3020	-1510	1510
					3400	3500	0.343	2390	-1750	640
					3300	3400	0.365	2520	-2050	470
					3200	3300	0.419	2670	-2430	240
					3100	3200	0.360	2170	-2390	-220
					3000	3100	0.288	1970	-2950	-980
					2900	3000	0.286	1580	-3830	-2250
					2800	2900	0.180	1240	-4290	-3050
					2700	2800	0.100	1260	-4640	-3380
					2698	3700	3.100	2270	-2420	-150
17.2	DJANKUAT	SU3010	1997	STR	3600	3990	0.187	2060	-1530	530
					3500	3600	0.572	4240	-1500	2740
					3400	3500	0.343	2830	-1680	1150
					3300	3400	0.365	2740	-2080	660
					3200	3300	0.419	3000	-2450	550
					3100	3200	0.360	2600	-2620	-20
					3000	3100	0.288	2370	-3140	-770
					2900	3000	0.286	2020	-4310	-2290
					2800	2900	0.180	1610	-4810	-3200
					2700	2800	0.100	1460	-4750	-3290
					2698	3990	3.100	2810	-2540	270
17.3	DJANKUAT	SU3010	1998	STR	3600	3800	0.149	2710	-2520	190
					3500	3600	0.384	3830	-2540	1290
					3400	3500	0.348	2990	-2500	490
					3300	3400	0.351	2740	-2910	-170
					3200	3300	0.431	2830	-3230	-400
					3100	3200	0.358	2320	-3540	-1220
					3000	3100	0.285	1930	-4150	-2220
					2900	3000	0.271	1550	-5380	-3830
					2800	2900	0.185	1250	-5830	-4580
					2700	2800	0.095	980	-5350	-4370
					2700	3800	2.857	2540	-3540	-1000
17.4	DJANKUAT	SU3010	1999	STR	3600	3800	0.149	1930	-1320	610
					3500	3600	0.384	3260	-1790	1470
					3400	3500	0.348	2340	-1860	480
					3300	3400	0.351	2720	-2430	290
					3200	3300	0.431	2830	-2880	-50
					3100	3200	0.358	2510	-3120	-610
					3000	3100	0.285	2240	-3900	-1660
					2900	3000	0.271	1760	-4880	-3120
					2800	2900	0.185	1440	-5130	-3690
					2700	2800	0.095	1260	-4640	-3380
					2700	3800	2.857	2430	-2990	-560

NR	GLACIER NAME	PSFG NR	YEAR	SYS	ALTITUDE FROM	TO	AREA KM²	BW MM	BS MM	BN/BA MM
17.5	DJANKUAT	SU3010	2000	STR	3600	3750	0.047	1830	-1630	200
					3500	3600	0.359	2810	-2180	630
					3400	3500	0.346	2700	-2460	240
					3300	3400	0.355	2590	-2860	-270
					3200	3300	0.439	2690	-3430	-740
					3100	3200	0.359	2360	-3820	-1460
					3000	3100	0.282	2300	-4370	-2070
					2900	3000	0.277	2280	-5450	-3170
					2800	2900	0.187	2070	-5990	-3920
					2707	2800	0.086	2060	-5770	-3710
					2707	3750	2.737	2490	-3630	-1140
18.1	GARABASHI	SU3031	1996	STR	4600	5000	0.228	245	25	270
					4500	4600	0.130	270	0	270
					4400	4500	0.156	300	-60	240
					4300	4400	0.152	320	-110	210
					4200	4300	0.221	390	-120	270
					4100	4200	0.263	515	-125	390
					4000	4100	0.422	1230	-170	1060
					3900	4000	0.628	1320	-250	1070
					3800	3900	0.635	1070	-880	190
					3700	3800	0.489	770	-1350	-580
					3600	3700	0.322	870	-1750	-880
					3500	3600	0.269	940	-2020	-1080
					3400	3500	0.302	920	-2280	-1360
					3300	3400	0.255	860	-2510	-1650
					3300	5000	4.470	860	-890	-30
18.2	GARABASHI	SU3031	1997	STR	4600	5000	0.228	255	15	270
					4500	4600	0.130	285	-45	240
					4400	4500	0.156	320	-150	170
					4300	4400	0.152	410	-190	220
					4200	4300	0.221	605	-215	390
					4100	4200	0.263	920	-200	720
					4000	4100	0.422	1380	-70	1310
					3900	4000	0.628	1630	-290	1340
					3800	3900	0.635	1310	-770	540
					3700	3800	0.489	1130	-1430	-300
					3600	3700	0.322	1140	-1900	-760
					3500	3600	0.269	1450	-2190	-740
					3400	3500	0.302	1390	-2470	-1080
					3300	3400	0.255	1180	-2760	-1580
					3300	5000	4.470	1130	-940	190
18.3	GARABASHI	SU3031	1998	STR	4600	5000	0.228	197	-97	100
					4500	4600	0.130	227	-387	-160
					4400	4500	0.156	245	-515	-270
					4300	4400	0.152	240	-590	-350
					4200	4300	0.221	355	-605	-250
					4100	4200	0.263	610	-690	-80
					4000	4100	0.422	1320	-800	520
					3900	4000	0.628	1580	-1590	-10
					3800	3900	0.635	1250	-2930	-1680
					3700	3800	0.489	1090	-3780	-2690
					3600	3700	0.322	1140	-4260	-3120
					3500	3600	0.269	1310	-4740	-3430

NR	GLACIER NAME	PSFG NR	YEAR	SYS	ALTITUDE FROM	TO	AREA KM²	BW MM	BS MM	BN/BA MM
					3400	3500	0.302	1190	-5350	-4160
					3300	3400	0.255	910	-5760	-4850
					3300	5000	4.470	1020	-2530	-1510
18.4	GARABASHI	SU3031	1999	STR	4600	5000	0.228	127	3	130
					4500	4600	0.130	227	-187	40
					4400	4500	0.156	265	-295	-30
					4300	4400	0.152	290	-370	-80
					4200	4300	0.221	425	-375	50
					4100	4200	0.263	670	-460	210
					4000	4100	0.422	1180	-570	610
					3900	4000	0.628	1660	-1140	520
					3800	3900	0.635	1380	-2220	-840
					3700	3800	0.489	1280	-2760	-1480
					3600	3700	0.322	1270	-3310	-2040
					3500	3600	0.269	1470	-3760	-2290
					3400	3500	0.302	1370	-4300	-2930
					3300	3400	0.255	1120	-4750	-3630
					3300	5000	4.470	1110	-1930	-820
18.5	GARABASHI	SU3031	2000	STR	4600	5000	0.228	167	3	170
					4500	4600	0.130	197	-287	-90
					4400	4500	0.156	195	-405	-210
					4300	4400	0.152	210	-470	-260
					4200	4300	0.221	335	-475	-140
					4100	4200	0.263	490	-540	-50
					4000	4100	0.422	930	-650	280
					3900	4000	0.628	1330	-1200	130
					3800	3900	0.635	1140	-2200	-1060
					3700	3800	0.489	1100	-2680	-1580
					3600	3700	0.322	1120	-3290	-2170
					3500	3600	0.269	1240	-3760	-2520
					3400	3500	0.302	1100	-4320	-3220
					3300	3400	0.255	800	-4850	-4050
					3300	5000	4.470	900	-1960	-1060
19.1	KORYTO	SU8003	1996	STR	1100	1200	0.042	7600	-3600	4000
					1050	1100	0.128	7700	-3700	4000
					1000	1050	0.306	7300	-3800	3500
					950	1000	1.139	7140	-3900	3240
					900	950	0.939	6600	-4000	2600
					850	900	0.728	6350	-4100	2250
					800	850	0.600	6200	-4200	2000
					750	800	0.720	6050	-4300	1750
					700	750	0.728	5900	-4400	1500
					650	700	0.504	5700	-4500	1200
					600	650	0.435	5200	-4600	600
					550	600	0.344	4200	-5000	-500
					500	550	0.320	3800	-6300	-2500
					450	500	0.230	3400	-8000	-4600
					400	450	0.144	305	-9850	-6800
					350	400	0.154	2700	-11600	-8900
					320	350	0.082	2500	-12500	-10000
					320	1200	7.543	5890	-4750	1140

NR	GLACIER NAME	PSFG NR	YEAR	SYS	ALTITUDE FROM	ALTITUDE TO	AREA KM²	BW MM	BS MM	BN/BA MM
19.2	KORYTO	SU8003	1997	STR	1100	1200	0.042	7320	-2900	4420
					1050	1100	0.128	7360	-3000	4360
					1000	1050	0.306	7420	-3110	4310
					950	1000	1.139	7450	-3200	4250
					900	950	0.939	6480	-3300	3180
					850	900	0.728	6790	-3400	3390
					800	850	0.600	7060	-3500	3560
					750	800	0.720	6450	-3600	2850
					700	750	0.728	6650	-3700	2950
					650	700	0.504	6240	-3800	2440
					600	650	0.435	5380	-3900	1480
					550	600	0.344	5050	-4000	1050
					500	550	0.320	4100	-4100	0
					450	500	0.230	3000	-5500	-2500
					400	450	0.144	2500	-7500	-5000
					350	400	0.154	2250	-9750	-7500
					320	350	0.082	2000	-10500	-8500
					320	1200	7.543	6200	-3850	2350
19.3	KORYTO	SU8003	2000	STR	1100	1200				900
					1050	1100				1150
					1000	1050				1000
					950	1000				850
					900	950				520
					850	900				440
					800	850				250
					750	800				-750
					700	750				-1200
					650	700				-1600
					600	650				-1800
					550	600				-2500
					500	550				-2950
					450	500				-3350
					400	450				-4750
					350	400				-5100
					320	350				-5450
					320	1200	7.542	3430	-3870	-440
20.1	KOZELSKIY	SU8005	1996	STR	1900	2050				1900
					1800	1900				780
					1700	1800				1440
					1600	1700				750
					1500	1600				580
					1400	1500				430
					1300	1400				260
					1200	1300				60
					1100	1200				-80
					1000	1100				-220
					870	1000				-350
					870	2050	1.8	4100	-3500	600
20.2	KOZELSKIY	SU8005	1997	STR	1900	2050				2380
					1800	1900				1100
					1700	1800				1800
					1600	1700				1250
					1500	1600				1150

NR	GLACIER NAME	PSFG NR	YEAR	SYS	ALTITUDE FROM	TO	AREA KM²	BW MM	BS MM	BN/BA MM
					1400	1500				900
					1300	1400				680
					1200	1300				450
					1100	1200				0
					1000	1100				-100
					870	1000				-120
					870	2050	1.8	4640	-3700	940
21.1	MALIY AKTRU	SU7100	1996	STR	3600	3700	0.13	500	70	570
					3500	3600	0.26	640	20	660
					3400	3500	0.30	740	10	750
					3300	3400	0.61	790	-90	700
					3200	3300	0.73	440	-300	140
					3100	3200	0.16	320	-740	-420
					3000	3100	0.12	320	-1230	-910
					2900	3000	0.08	300	-1770	-1470
					2800	2900	0.03	280	-2260	-1980
					2700	2800	0.06	310	-2680	-2370
					2600	2700	0.04	270	-3000	-2730
					2500	2600	0.06	320	-3400	-3080
					2400	2500	0.05	220	-3830	-3610
					2300	2400	0.06	210	-4290	-4080
					2200	2300	0.04	190	-4850	-4660
					2200	3700	2.73	530	-660	-130
21.2	MALIY AKTRU	SU7100	1997	STR	3600	3700	0.13	610	120	730
					3500	3600	0.26	780	140	920
					3400	3500	0.30	800	120	920
					3300	3400	0.61	940	20	960
					3200	3300	0.73	590	-420	170
					3100	3200	0.16	460	-1150	-690
					3000	3100	0.12	450	-1510	-1060
					2900	3000	0.08	400	-2020	-1620
					2800	2900	0.03	360	-2590	-2230
					2700	2800	0.06	340	-3070	-2730
					2600	2700	0.04	310	-3320	-3010
					2500	2600	0.06	380	-3510	-3130
					2400	2500	0.05	280	-3720	-3440
					2300	2400	0.06	300	-4100	-3800
					2200	2300	0.04	250	-4730	-4480
					2200	3700	2.73	660	-710	-50
21.3	MALIY AKTRU	SU7100	1998	STR	3600	3700	0.13	500	-300	200
					3500	3600	0.26	640	-370	270
					3400	3500	0.30	740	-400	340
					3300	3400	0.61	780	-1380	-600
					3200	3300	0.73	450	-1650	-1200
					3100	3200	0.16	320	-2230	-1910
					3000	3100	0.12	320	-2500	-2180
					2900	3000	0.08	300	-3030	-2730
					2800	2900	0.03	290	-3590	-3300
					2700	2800	0.06	310	-4030	-3720
					2600	2700	0.04	290	-4300	-4010
					2500	2600	0.06	320	-4600	-4280
					2400	2500	0.05	220	-5030	-4810
					2300	2400	0.06	210	-5400	-5190

NR	GLACIER NAME	PSFG NR	YEAR	SYS	ALTITUDE FROM	ALTITUDE TO	AREA KM²	BW MM	BS MM	BN/BA MM
					2200	2300	0.04	180	-5880	-5700
					2200	3700	2.73	540	-1770	-1230
21.4	MALIY AKTRU	SU7100	1999	STR	3600	3700	0.13	510	30	540
					3500	3600	0.26	700	10	710
					3400	3500	0.30	820	-50	770
					3300	3400	0.61	860	-110	750
					3200	3300	0.73	620	-470	150
					3100	3200	0.16	460	-710	-250
					3000	3100	0.12	410	-1310	-900
					2900	3000	0.08	360	-1680	-1320
					2800	2900	0.03	320	-2170	-1850
					2700	2800	0.06	340	-2600	-2260
					2600	2700	0.04	280	-2990	-2710
					2500	2600	0.06	350	-3560	-3210
					2400	2500	0.05	280	-3980	-3700
					2300	2400	0.06	220	-4250	-4030
					2200	2300	0.04	260	-4610	-4350
					2200	3700	2.73	630	-740	-110
21.5	MALIY AKTRU	SU7100	2000	STR	3600	3700	0.13	490	20	510
					3500	3600	0.26	680	-30	650
					3400	3500	0.30	820	-60	760
					3300	3400	0.61	960	-210	750
					3200	3300	0.73	720	-690	30
					3100	3200	0.16	550	-1220	-670
					3000	3100	0.12	460	-1610	-1150
					2900	3000	0.08	420	-2030	-1610
					2800	2900	0.03	380	-2530	-2150
					2700	2800	0.06	420	-2960	-2540
					2600	2700	0.04	490	-3260	-2770
					2500	2600	0.06	530	-3690	-3160
					2400	2500	0.05	340	-4010	-3670
					2300	2400	0.06	380	-4390	-4010
					2200	2300	0.04	270	-4770	-4500
					2200	3700	2.73	720	-930	-210
22.1	NO. 125 (VODOPAD.)	SU7105	1996	STR	3500	3552	0.04	80	50	130
					3400	3500	0.17	140	10	150
					3300	3400	0.23	420	-240	180
					3200	3300	0.11	470	-390	80
					3100	3200	0.14	250	-900	-650
					3000	3100	0.06	140	-1290	-1150
					3000	3552	0.75	290	-410	-120
22.2	NO. 125 (VODOPAD.)	SU7105	1997	STR	3500	3552	0.04	70	60	130
					3400	3500	0.17	110	40	150
					3300	3400	0.23	320	-40	280
					3200	3300	0.11	340	-280	60
					3100	3200	0.14	200	-1190	-990
					3000	3100	0.06	80	-1590	-1510
					3000	3552	0.75	220	-390	-170
22.3	NO. 125 (VODOPAD.)	SU7105	1998	STR	3500	3552	0.04	80	-280	-200
					3400	3500	0.17	120	-470	-350
					3300	3400	0.23	340	-1140	-800

NR	GLACIER NAME	PSFG NR	YEAR	SYS	ALTITUDE FROM	TO	AREA KM²	BW MM	BS MM	BN/BA MM
					3200	3300	0.11	390	-1140	-750
					3100	3200	0.14	220	-2080	-1860
					3000	3100	0.06	90	-2430	-2340
					3000	3552	0.75	240	-1220	-980
22.4	NO. 125 (VODOPAD.)	SU7105	1999	STR	3500	3552	0.04	90	60	150
					3400	3500	0.17	150	30	-2236
					3300	3400	0.23	360	-140	-1314
					3200	3300	0.11	420	-290	45
					3100	3200	0.14	220	-910	41
					3000	3100	0.06	100	-1300	48
					3000	3552	0.75	260	-350	-90
22.5	NO. 125 (VODOPAD.)	SU7105	2000	STR	3500	3552	0.04	110	-60	50
					3400	3500	0.17	150	0	150
					3300	3400	0.23	410	-140	270
					3200	3300	0.11	510	-390	120
					3100	3200	0.14	240	-1290	-1050
					3000	3100	0.06	110	-1620	-1510
					3000	3552	0.75	290	-480	-190
23.1	SHUMSKIY	SU6001	1990	FXD	4380	4442	0.013	217	-66	151
					4300	4380	0.053	234	-112	122
					4220	4300	0.072	254	-123	131
					4140	4220	0.094	280	-70	210
					4060	4140	0.115	312	-58	254
					3980	4060	0.133	353	-154	199
					3900	3980	0.121	405	-94	311
					3820	3900	0.177	473	-187	286
					3740	3820	0.255	560	-329	231
					3720	3740	0.096	693	-722	-29
					3700	3720	0.114	653	-1059	-406
					3680	3700	0.145	746	-1083	-337
					3660	3680	0.111	662	-1253	-591
					3640	3660	0.077	509	-1296	-787
					3620	3640	0.089	521	-1454	-933
					3600	3620	0.076	627	-1497	-870
					3580	3600	0.076	630	-1532	-902
					3560	3580	0.092	555	-1567	-1012
					3540	3560	0.104	526	-1813	-1287
					3520	3540	0.113	579	-1939	-1360
					3500	3520	0.042	590	-1673	-1083
					3480	3500	0.035	624	-1531	-907
					3460	3480	0.043	624	-1626	-1002
					3440	3460	0.058	648	-1857	-1209
					3420	3440	0.092	583	-2002	-1419
					3400	3420	0.052	553	-2115	-1562
					3380	3400	0.038	529	-2006	-1477
					3360	3380	0.031	523	-1963	-1440
					3340	3360	0.034	567	-2125	-1558
					3320	3340	0.053	550	-2240	-1690
					3300	3320	0.046	570	-2453	-1883
					3280	3300	0.026	614	-2367	-1753
					3260	3280	0.020	656	-2303	-1647
					3240	3260	0.023	656	-2409	-1753
					3220	3240	0.026	586	-2490	-1904

NR	GLACIER NAME	PSFG NR	YEAR	SYS	ALTITUDE FROM	ALTITUDE TO	AREA KM²	BW MM	BS MM	BN/BA MM
					3200	3220	0.027	617	-2763	-2146
					3180	3200	0.023	649	-2848	-2199
					3160	3180	0.013	647	-3063	-2416
					3140	3160	0.004	659	-3129	-2470
					3140	4442	2.820	533	-1114	-581
23.2	SHUMSKIY	SU6001	1991	FXD	4380	4442	0.013	147	-302	-155
					4300	4380	0.053	158	-348	-190
					4220	4300	0.072	172	-351	-179
					4140	4220	0.094	190	-292	-102
					4060	4140	0.115	211	-283	-72
					3980	4060	0.133	239	-394	-155
					3900	3980	0.121	275	-347	-72
					3820	3900	0.177	321	-498	-177
					3740	3820	0.255	379	-785	-406
					3720	3740	0.096	373	-1095	-722
					3700	3720	0.114	383	-1275	-892
					3680	3700	0.145	421	-1286	-865
					3660	3680	0.111	339	-1421	-1082
					3640	3660	0.077	330	-1449	-1119
					3620	3640	0.089	347	-1516	-1169
					3600	3620	0.076	374	-1617	-1243
					3580	3600	0.076	368	-1676	-1308
					3560	3580	0.092	359	-1800	-1441
					3540	3560	0.104	351	-2141	-1790
					3520	3540	0.113	353	-2461	-2108
					3500	3520	0.042	341	-2129	-1788
					3480	3500	0.035	352	-1882	-1530
					3460	3480	0.043	327	-1907	-1580
					3440	3460	0.058	292	-2109	-1817
					3420	3440	0.092	284	-2366	-2082
					3400	3420	0.052	329	-2578	-2249
					3380	3400	0.038	352	-2562	-2210
					3360	3380	0.031	374	-2456	-2082
					3340	3360	0.034	334	-2613	-2279
					3320	3340	0.053	276	-2886	-2610
					3300	3320	0.046	271	-3106	-2835
					3280	3300	0.026	290	-2869	-2579
					3260	3280	0.020	304	-2649	-2345
					3240	3260	0.023	287	-2679	-2392
					3220	3240	0.026	271	-2763	-2492
					3200	3220	0.027	287	-3092	-2805
					3180	3200	0.022	305	-3233	-2928
					3160	3180	0.012	313	-3282	-2969
					3140	3160	0.004	308	-3279	-2971
					3140	4442	2.810	318	-1419	-1101
24.1	TS.TUYUKSUYSKIY	SU5075	1996	STR	4120	4200	0.106	351	-208	143
					4040	4120	0.254	395	-180	215
					3960	4040	0.256	455	-169	286
					3880	3960	0.206	532	-228	304
					3860	3880	0.072	593	-415	178
					3840	3860	0.092	619	-657	-38
					3820	3840	0.066	642	-699	-57
					3800	3820	0.116	630	-705	-75
					3780	3800	0.149	591	-844	-253

NR	GLACIER NAME	PSFG NR	YEAR	SYS	ALTITUDE FROM	ALTITUDE TO	AREA KM²	BW MM	BS MM	BN/BA MM
					3760	3780	0.183	542	-993	-451
					3740	3760	0.198	493	-1072	-579
					3720	3740	0.164	454	-1249	-795
					3700	3720	0.136	462	-1315	-853
					3680	3700	0.071	425	-1280	-855
					3660	3680	0.049	419	-1349	-930
					3640	3660	0.052	343	-1409	-1066
					3620	3640	0.046	493	-1701	-1208
					3600	3620	0.068	426	-1785	-1359
					3580	3600	0.053	414	-1932	-1518
					3560	3580	0.097	393	-2008	-1615
					3540	3560	0.053	367	-2120	-1753
					3520	3540	0.051	367	-2095	-1728
					3500	3520	0.044	320	-2222	-1902
					3480	3500	0.037	377	-2538	-2161
					3480	4200	2.620	476	-932	-456
24.2	TS.TUYUKSUYSKIY	SU5075	1997	STR	4120	4200	0.105	281	-380	-99
					4040	4120	0.253	316	-432	-116
					3960	4040	0.255	363	-528	-165
					3880	3960	0.205	424	-721	-297
					3860	3880	0.071	473	-1003	-530
					3840	3860	0.091	509	-1273	-764
					3820	3840	0.065	527	-1317	-790
					3800	3820	0.115	557	-1568	-1011
					3780	3800	0.148	542	-1683	-1141
					3760	3780	0.182	472	-2012	-1540
					3740	3760	0.197	428	-2336	-1908
					3720	3740	0.163	405	-2667	-2262
					3700	3720	0.135	385	-2808	-2423
					3680	3700	0.070	336	-2824	-2488
					3660	3680	0.048	434	-3011	-2577
					3640	3660	0.050	392	-3046	-2654
					3620	3640	0.044	407	-3090	-2683
					3600	3620	0.066	321	-3261	-2940
					3580	3600	0.051	285	-3368	-3083
					3560	3580	0.095	239	-3429	-3190
					3540	3560	0.051	229	-3434	-3205
					3520	3540	0.049	228	-3592	-3364
					3500	3520	0.041	170	-3704	-3534
					3480	3500	0.035	228	-3862	-3634
					3480	4200	2.585	391	-1858	-1467
24.3	TS.TUYUKSUYSKIY	SU5075	1998	STR	4120	4200	0.105	430	-1	429
					4040	4120	0.253	484	44	528
					3960	4040	0.255	557	59	616
					3880	3960	0.205	650	10	660
					3860	3880	0.071	725	-131	594
					3840	3860	0.091	778	-318	460
					3820	3840	0.065	803	-370	433
					3800	3820	0.115	838	-701	137
					3780	3800	0.148	816	-961	-145
					3760	3780	0.181	710	-1106	-396
					3740	3760	0.196	656	-1192	-536
					3720	3740	0.162	619	-1332	-713
					3700	3720	0.134	585	-1516	-931

NR	GLACIER NAME	PSFG NR	YEAR	SYS	ALTITUDE		AREA	BW	BS	BN/BA
					FROM	TO	KM²	MM	MM	MM
					3680	3700	0.069	558	-1658	-1100
					3660	3680	0.047	521	-1795	-1274
					3640	3660	0.049	495	-1989	-1494
					3620	3640	0.043	556	-2074	-1518
					3600	3620	0.065	562	-2245	-1683
					3580	3600	0.050	619	-2445	-1826
					3560	3580	0.094	567	-2422	-1855
					3540	3560	0.050	518	-2330	-1812
					3520	3540	0.048	507	-2399	-1892
					3500	3520	0.039	483	-2565	-2082
					3480	3500	0.033	566	-2832	-2266
					3480	4200	2.568	618	-961	-359
24.4	TS.TUYUKSUYSKIY	SU5075	1999	STR	4120	4200	0.105	332	17	349
					4040	4120	0.253	374	61	435
					3960	4040	0.255	430	86	516
					3880	3960	0.205	502	41	543
					3860	3880	0.071	560	-113	447
					3840	3860	0.091	599	-326	273
					3820	3840	0.065	615	-390	225
					3800	3820	0.115	631	-699	-68
					3780	3800	0.148	594	-837	-243
					3760	3780	0.181	520	-747	-227
					3740	3760	0.196	482	-781	-299
					3720	3740	0.162	448	-870	-422
					3700	3720	0.134	438	-995	-557
					3680	3700	0.069	459	-1114	-655
					3660	3680	0.047	380	-1191	-811
					3640	3660	0.049	378	-1428	-1050
					3620	3640	0.043	402	-1435	-1033
					3600	3620	0.065	431	-1612	-1181
					3580	3600	0.049	430	-1771	-1341
					3560	3580	0.093	407	-1810	-1403
					3540	3560	0.049	403	-1760	-1357
					3520	3540	0.047	452	-1856	-1404
					3500	3520	0.038	476	-1964	-1488
					3480	3500	0.031	594	-2254	-1660
					3480	4200	2.561	469	-687	-230
24.5	TS.TUYUKSUYSKIY	SU5075	2000	STR	4120	4200	0.105	545	-237	308
					4040	4120	0.253	613	-159	454
					3960	4040	0.255	706	-104	602
					3880	3960	0.206	825	-136	689
					3860	3880	0.072	919	-294	625
					3840	3860	0.092	970	-486	484
					3820	3840	0.066	994	-501	493
					3800	3820	0.116	998	-664	334
					3780	3800	0.149	931	-932	-1
					3760	3780	0.182	837	-899	-62
					3740	3760	0.197	806	-971	-165
					3720	3740	0.163	733	-1025	-292
					3700	3720	0.134	719	-1106	-387
					3680	3700	0.068	751	-1287	-536
					3660	3680	0.046	767	-1538	-771
					3640	3660	0.048	781	-1709	-928
					3620	3640	0.033	870	-1758	-888

NR	GLACIER NAME	PSFG NR	YEAR	SYS	ALTITUDE FROM	ALTITUDE TO	AREA KM²	BW MM	BS MM	BN/BA MM
					3600	3620	0.064	890	-1893	-1003
					3580	3600	0.048	848	-2080	-1232
					3560	3580	0.092	774	-2269	-1495
					3540	3560	0.048	731	-2239	-1508
					3520	3540	0.046	740	-2295	-1555
					3500	3520	0.037	749	-2406	-1657
					3480	3500	0.029	734	-2489	-1755
					3480	4200	2.549	787	-885	-113
	ECUADOR									
25.1	ANTIZANA15ALPHA	EC0001	1995	FXD	5400	5760	0.10			181
					5050	5400	0.14			-333
					4980	5050	0.03			-315
					4960	4980	0.01			-131
					4940	4960	0.01			-188
					4904	4940	0.02			-377
					4876	4904	0.02			-269
					4848	4876	0.01			-242
					4800	4848	0.01			-156
					4800	5760	0.35			-1830
25.2	ANTIZANA15ALPHA	EC0001	1996	FXD	5400	5760	0.10			231
					5300	5400	0.04			48
					5150	5300	0.05			42
					5050	5150	0.05			-25
					5032	5050	0.01			-9
					5000	5032	0.01			-61
					4924	5000	0.04			-184
					4896	4924	0.02			-125
					4876	4896	0.01			-57
					4816	4876	0.02			-288
					4816	5760	0.35			-488
25.3	ANTIZANA15ALPHA	EC0001	1997	FXD	5400	5760	0.10			256
					5300	5400	0.04			116
					5150	5300	0.05			125
					5050	5150	0.04			-137
					5020	5050	0.01			-64
					5000	5020	0.01			-98
					4940	5000	0.03			-230
					4890	4940	0.03			-310
					4850	4890	0.02			-212
					4830	4850	0.01			-58
					4830	5760	0.34			-612
25.4	ANTIZANA15ALPHA	EC0001	1998	FXD	5700	5760	0.01			33
					5600	5700	0.03			61
					5500	5600	0.03			67
					5350	5500	0.05			91
					5250	5350	0.04			58
					5150	5250	0.03			20
					5055	5150	0.04			12
					5005	5055	0.02			-130
					4955	5005	0.02			-289
					4925	4955	0.02			-270

NR	GLACIER NAME	PSFG NR	YEAR	SYS	ALTITUDE FROM	TO	AREA KM²	BW MM	BS MM	BN/BA MM
					4910	4925	0.01			-101
					4890	4910	0.01			-147
					4865	4890	0.01			-153
					4838	4865	0.01			-97
					4838	5760	0.33			-816
25.5	ANTIZANA15ALPHA	EC0001	1999	FXD	5650	5760	0.02			64
					5450	5650	0.05			197
					5200	5450	0.08			173
					5055	5200	0.08			137
					4990	5055	0.02			37
					4960	4990	0.02			17
					4910	4960	0.03			-17
					4880	4910	0.02			-44
					4860	4880	0.01			-24
					4830	4860	0.01			-25
					4830	5760	0.34			526
25.6	ANTIZANA15ALPHA	EC0001	2000	FXD	5450	5760	0.07			186
					5200	5450	0.09			185
					5055	5200	0.08			203
					4990	5055	0.02			27
					4960	4990	0.02			-8
					4910	4960	0.03			-66
					4880	4910	0.02			-59
					4860	4880	0.01			-39
					4830	4860	0.01			-36
					4830	5760	0.35			393
	ITALY									
26.1	CARESER	IT0701	1996	FXD	3200	3330	0.224			-650
					3150	3200	0.30			-990
					3100	3150	1.044			-1160
					3050	3100	0.965			-1330
					3000	3050	0.656			-1500
					2950	3000	0.371			-1670
					2900	2950	0.198			-1840
					2860	2900	0.099			-2010
					2860	3330	3.860			-1320
26.2	CARESER	IT0701	1997	FXD	3200	3330	0.224			-50
					3150	3200	0.300			-440
					3100	3150	1.044			-690
					3050	3100	0.965			-940
					3000	3050	0.656			-1190
					2950	3000	0.371			-1430
					2900	2950	0.198			-1680
					2860	2900	0.099			-1930
					2860	3330	3.860			-930
26.3	CARESER	IT0701	1998	FXD	3200	3313	0.150			-1450
					3150	3200	0.240			-1840
					3100	3150	0.870			-2030
					3050	3100	0.853			-2220

NR	GLACIER NAME	PSFG NR	YEAR	SYS	ALTITUDE FROM	TO	AREA KM²	BW MM	BS MM	BN/BA MM
					3000	3050	0.605			-2420
					2950	3000	0.357			-2610
					2900	2950	0.222			-2800
					2857	2900	0.065			-2990
					2857	3313	3.360			-2240
26.4	CARESER	IT0701	1999	FXD	3200	3313	0.150			-810
					3150	3200	0.240			-1220
					3100	3150	0.870			-1500
					3050	3100	0.853			-1770
					3000	3050	0.605			-2050
					2950	3000	0.357			-2320
					2900	2950	0.222			-2600
					2857	2900	0.065			-2870
					2857	3313	3.360			-1800
26.5	CARESER	IT0701	2000	FXD	3200	3313	0.150			-1270
					3150	3200	0.240			-1460
					3100	3150	0.870			-1590
					3050	3100	0.853			-1720
					3000	3050	0.605			-1850
					2950	3000	0.357			-1980
					2900	2950	0.222			-2100
					2857	2900	0.065			-2230
					2857	3313	3.360			-1610
27.1	FONTANA BIANCA	IT0713	1996	FXD	3350	3400	0	350	-1052	-702
					3300	3350	0.055	450	-887	-437
					3250	3300	0.068	516	-692	-176
					3200	3250	0.133	553	-649	-95
					3150	3200	0.131	539	-711	-172
					3100	3150	0.110	518	-1029	-511
					3050	3100	0.073	637	-1218	-581
					3000	3050	0.047	564	-1516	-952
					2950	3000	0.016	466	-2136	-1670
					2900	2950	0.020	422	-2448	-2027
					2850	2900	0.007	472	-2457	-1985
					2850	3400	0.659	540	-980	-440
27.2	FONTANA BIANCA	IT0713	1997	FXD	3350	3400	0	270	-1270	-1000
					3300	3350	0.055	270	-809	-539
					3250	3300	0.068	358	-585	-227
					3200	3250	0.133	771	-887	-116
					3150	3200	0.131	1033	-1495	-461
					3100	3150	0.110	980	-1763	-783
					3050	3100	0.073	996	-1723	-727
					3000	3050	0.047	999	-2264	-1265
					2950	3000	0.016	913	-3122	-2208
					2900	2950	0.020	995	-3105	-2110
					2850	2900	0.007	1100	-2951	-1851
					2850	3400	0.659	830	-1450	-620
27.3	FONTANA BIANCA	IT0713	1998	FXD	3350	3400	0	551	-1950	-1398
					3300	3350	0.055	630	-1966	-1336
					3250	3300	0.068	763	-2060	-1297
					3200	3250	0.133	891	-2153	-1262

NR	GLACIER NAME	PSFG NR	YEAR	SYS	ALTITUDE FROM	ALTITUDE TO	AREA KM²	BW MM	BS MM	BN/BA MM
					3150	3200	0.131	942	-2312	-1370
					3100	3150	0.110	887	-2801	-1914
					3050	3100	0.073	909	-2674	-1766
					3000	3050	0.047	819	-3022	-2202
					2950	3000	0.016	725	-3442	-2717
					2900	2950	0.020	938	-3373	-2436
					2850	2900	0.007	1145	-3345	-2200
					2850	3400	0.659	860	-2470	-1620
27.4	FONTANA BIANCA	IT0713	1999	FXD	3350	3400	0.003	800	-1680	-880
					3300	3350	0.053	828	-1381	-553
					3250	3300	0.072	991	-1560	-569
					3200	3250	0.123	1000	-1690	-690
					3150	3200	0.128	1000	-1742	-742
					3100	3150	0.104	1043	-2212	-1168
					3050	3100	0.070	1033	-2443	-1410
					3000	3050	0.047	1000	-2596	-1596
					2950	3000	0.015	1000	-2849	-1849
					2900	2950	0.015	1000	-2850	-1850
					2850	2900	0.007	1000	-2850	-1850
					2850	3400	0.636	990	-1960	-970
27.5	FONTANA BIANCA	IT0713	2000	FXD	3350	3400	0.003	1000	-1000	0
					3300	3350	0.052	1150	-1152	-1
					3250	3300	0.069	1396	-1492	-93
					3200	3250	0.121	1273	-1679	-403
					3150	3200	0.128	1064	-1715	-651
					3100	3150	0.100	1038	-2137	-1100
					3050	3100	0.067	1147	-2476	-1329
					3000	3050	0.046	983	-2451	-1455
					2950	3000	0.014	743	-2620	-1884
					2900	2950	0.011	785	-2539	-1754
					2850	2900	0.002	1095	-2523	-1428
					2850	3400	0.626	1130	-1870	-740
28.1	PENDENTE	IT0876	1996	FXD	3100	3150	0.008			12
					3050	3100	0.014			12
					3000	3050	0.030			12
					2950	3000	0.033			12
					2900	2950	0.099			-32
					2850	2900	0.161			-126
					2800	2850	0.236			-323
					2750	2800	0.295			-632
					2700	2750	0.180			-992
					2650	2700	0.069			-1492
					2615	2650	0.015			-1949
					2615	3150	1.143			-534
28.2	PENDENTE	IT0876	1997	FXD	3100	3150	0.008			524
					3050	3100	0.014			524
					3000	3050	0.024			484
					2950	3000	0.021			255
					2900	2950	0.093			290
					2850	2900	0.161			491
					2800	2850	0.236			314
					2750	2800	0.295			-30

NR	GLACIER NAME	PSFG NR	YEAR	SYS	ALTITUDE FROM	ALTITUDE TO	AREA KM²	BW MM	BS MM	BN/BA MM
					2700	2750	0.180			-589
					2650	2700	0.069			-1171
					2615	2650	0.015			-1708
					2615	3150	1.119			-11
28.3	PENDENTE	IT0876	1998	FXD	3100	3150	0.001			0
					3050	3100	0.011			0
					3000	3050	0.016			0
					2950	3000	0.035			-21
					2900	2950	0.106			-293
					2850	2900	0.187			-701
					2800	2850	0.148			-730
					2750	2800	0.230			-1362
					2700	2750	0.224			-1825
					2650	2700	0.100			-2386
					2620	2650	0.010			-2995
					2620	3150	1.067			-1210
28.4	PENDENTE	IT0876	1999	FXD	3100	3150	0.001			275
					3050	3100	0.011			275
					3000	3050	0.016			275
					2950	3000	0.035			234
					2900	2950	0.106			85
					2850	2900	0.187			-297
					2800	2850	0.148			-399
					2750	2800	0.230			-662
					2700	2750	0.224			-893
					2650	2700	0.100			-1193
					2620	2650	0.010			-1557
					2620	3150	1.067	1823	-2364	-541
28.5	PENDENTE	IT0876	2000	FXD	3100	3150	0.001			-100
					3050	3100	0.011			-100
					3000	3050	0.016			-205
					2950	3000	0.035			-340
					2900	2950	0.106			-365
					2850	2900	0.187			-1056
					2800	2850	0.148			-1160
					2750	2800	0.230			-1527
					2700	2750	0.224			-1928
					2650	2700	0.100			-2238
					2620	2650	0.010			-2333
					2620	3150	1.067	1745	-3124	-1379
	KENYA									
29.1	LEWIS	KE0008	1996	FXD	4900	4950	0.010			220
					4850	4900	0.046			80
					4800	4850	0.044			-340
					4750	4800	0.044			-590
					4700	4750	0.038			-860
					4650	4700	0.018			-1340
					4600	4650	0.006			-1460
					4600	4950	0.210			-490

NR	GLACIER NAME	PSFG NR	YEAR	SYS	ALTITUDE FROM	TO	AREA KM²	BW MM	BS MM	BN/BA MM
	NEPAL									
30.1	AX010	NP0005	1996	FXD	5250	5360	0.093			650
					5200	5250	0.187			0
					5150	5200	0.080			-325
					5100	5150	0.035			-830
					5050	5100	0.033			-1320
					5000	5050	0.039			-1880
					4949	5000	0.013			-1720
					4949	5360	0.480			-281
30.2	AX010	NP0005	1997	FXD	5250	5360				20
					5200	5250				30
					5150	5200				-380
					5100	5150				-890
					5050	5100				-1240
					5000	5050				-1560
					4951	5000				-2580
					4951	5360	0.46			-391
30.3	AX010	NP0005	1998	FXD	5250	5360				-460
					5200	5250				-460
					5150	5200				-1730
					5100	5150				-1730
					5050	5100				-3530
					5000	5050				-3540
					4952	5000				-3600
					4952	5360	0.448			-1328
30.4	AX010	NP0005	1999	FXD	5250	5360	0.081			350
					5200	5250	0.160			10
					5150	5200	0.073			-150
					5100	5150	0.033			-1280
					5050	5100	0.030			-2370
					5000	5050	0.036			-2670
					4961	5000	0.007			-2910
					4961	5360	0.420			-502
31.1	RIKKA SAMBA	NP	1999	FXD	5900	5990	0.22			300
					5800	5900	1.09			80
					5700	5800	1.37			-330
					5600	5700	0.93			-750
					5500	5600	0.60			-1180
					5400	5500	0.51			-3000
					5295	5400	0.08			-3450
					5295	5990	4.80			-731
	NORWAY									
32.1	AALFOTBREEN	NO36204	1996	OTH	1350	1370	0.274	2020	-2950	-930
					1300	1350	1.015	2090	-2980	-890
					1250	1300	0.811	1950	-3150	-1200
					1200	1250	0.765	1840	-3420	-1580
					1150	1200	0.649	1750	-3800	-2050
					1100	1150	0.553	1690	-4380	-2690
					1050	1100	0.356	1550	-5030	-3480
					1000	1050	0.216	1340	-5400	-4060

NR	GLACIER NAME	PSFG NR	YEAR	SYS	ALTITUDE FROM	TO	AREA KM²	BW MM	BS MM	BN/BA MM
					950	1000	0.125	1400	-5650	-4250
					900	950	0.047	1320	-5820	-4500
					870	900	0.040	1450	-5950	-4500
					870	1370	4.815	1830	-3710	-1880
32.2	AALFOTBREEN	NO36204	1997	OTH	1350	1370	0.270	4470	-3800	670
					1300	1350	0.993	4480	-3750	730
					1250	1300	0.769	4460	-3900	560
					1200	1250	0.701	4230	-4050	180
					1150	1200	0.583	4030	-4200	-170
					1100	1150	0.472	3840	-4600	-760
					1050	1100	0.286	3670	-4850	-1180
					1000	1050	0.178	3900	-5050	-1150
					950	1000	0.087	4060	-5250	-1190
					900	950	0.019	4200	-5400	-1200
					900	1370	4.360	4220	-4140	80
32.3	AALFOTBREEN	NO36204	1998	OTH	1350	1380	0.27	4290	-3000	1290
					1300	1350	0.99	4380	-3060	1320
					1250	1300	0.77	4190	-3220	970
					1200	1250	0.70	3320	-3500	-180
					1150	1200	0.58	3180	-3700	-520
					1100	1150	0.47	3020	-4020	-1000
					1050	1100	0.29	3040	-4340	-1300
					1000	1050	0.18	2800	-4820	-2020
					950	1000	0.09	2520	-5250	-2730
					890	950	0.02	2300	-5450	-3150
					890	1380	4.36	3660	-3550	110
32.4	AALFOTBREEN	NO36204	1999	OTH	1350	1380	0.27	5110	-3950	1160
					1300	1350	0.99	4950	-4040	910
					1250	1300	0.77	4770	-4260	510
					1200	1250	0.70	4250	-4580	-330
					1150	1200	0.58	4490	-4800	-310
					1100	1150	0.47	4400	-4990	-590
					1050	1100	0.29	4200	-5300	-1100
					1000	1050	0.18	4310	-5500	-1190
					950	1000	0.09	4450	-5850	-1400
					890	950	0.02	4700	-6300	-1600
					890	1380	4.36	4610	-4550	60
32.5	AALFOTBREEN	NO36204	2000	OTH	1350	1380	0.27	6100	-3150	2950
					1300	1350	0.99	6200	-3250	2950
					1250	1300	0.77	6100	-3350	2750
					1200	1250	0.70	5550	-3500	2050
					1150	1200	0.58	5150	-3700	1450
					1100	1150	0.47	4900	-3900	1000
					1050	1100	0.29	4800	-4150	650
					1000	1050	0.18	4400	-4400	0
					950	1000	0.09	3900	-4700	-800
					890	950	0.02	3600	-5100	-1500
					890	1380	4.36	5570	-3580	1990
33.1	AUSTDALSBREEN	NO37323	1998		1700	1757	0.16	2090	-1100	990
					1650	1700	0.13	2260	-1150	1110
					1600	1650	0.38	2420	-1200	1220

NR	GLACIER NAME	PSFG NR	YEAR	SYS	ALTITUDE FROM	TO	AREA KM²	BW MM	BS MM	BN/BA MM
					1550	1600	2.45	2590	-1300	1290
					1500	1550	2.54	2550	-1450	1100
					1450	1500	1.92	2550	-1600	950
					1400	1450	1.36	2050	-1800	250
					1350	1400	1.01	1700	-2150	-450
					1300	1350	0.79	1440	-2400	-960
					1250	1300	0.69	1240	-2850	-1610
					1200	1250	0.44	840	-3600	-2760
					1200	1757	11.8	2200	-2030	190
34.1	AUSTR. BROEGGERB.	NO15504	1996		550	600				630
					500	550				608
					450	500				176
					400	450				125
					350	400				201
					300	350				16
					250	300				-229
					200	250				-495
					150	200				-713
					100	150				-1201
					50	100				-1747
					50	600				-170
34.2	AUSTR. BROEGGERB.	NO15504	1997		550	600				240
					500	550				170
					450	500				-100
					400	450				-270
					350	400				-320
					300	350				-540
					250	300				-730
					200	250				-870
					150	200				-1190
					100	150				-1570
					50	100				-2420
					50	600				-710
34.3	AUSTR. BROEGGERB.	NO15504	1999		600	650				810
					550	600				580
					500	550				360
					450	500				110
					400	450				-160
					350	400				-340
					300	350				-340
					250	300				-650
					200	250				-1040
					150	200				-1420
					100	150				-1800
					100	650				-360
35.1	ENGABREEN	NO67011	1996	OTH	1500	1594	0.12	4000	-1500	2500
					1400	1500	2.51	3750	-1650	2100
					1300	1400	9.35	3450	-1750	1700
					1200	1300	8.55	3200	-1900	1300
					1100	1200	7.60	2900	-2050	850
					1000	1100	4.66	2800	-2150	650
					900	1000	2.46	2400	-2500	-100

NR	GLACIER NAME	PSFG NR	YEAR	SYS	ALTITUDE FROM	TO	AREA KM²	BW MM	BS MM	BN/BA MM
					800	900	0.94	1950	-3000	-1050
					700	800	0.50	1400	-3700	-2300
					600	700	0.37	800	-4350	-3550
					500	600	0.27	250	-5050	-4800
					400	500	0.21	-250	-5900	-6150
					300	400	0.17	-900	-6800	-7700
					200	300	0.22	-1200	-7700	-8900
					40	200	0.10	-1600	-8500	-10100
					40	1594	38.00	2970	-2140	830
35.2	ENGABREEN	NO67011	1997	OTH	1500	1596	0.12	5050	-2180	2870
					1400	1500	2.51	5320	-2300	3020
					1300	1400	9.35	5260	-2560	2700
					1200	1300	8.55	4820	-2840	1980
					1100	1200	7.60	4200	-3140	1060
					1000	1100	4.66	3920	-3580	340
					900	1000	2.46	3480	-4150	-670
					800	900	0.94	3050	-4700	-1650
					700	800	0.50	2550	-5300	-2750
					600	700	0.37	2100	-6050	-3950
					500	600	0.27	1600	-6850	-5250
					400	500	0.21	1150	-7700	-6550
					300	400	0.17	650	-8650	-8000
					200	300	0.22	200	-9600	-9400
					40	200	0.10	-200	-10700	-10900
					40	1596	38.00	4440	-3220	1220
35.3	ENGABREEN	NO67011	1998	OTH	1500	1594	0.12	3550	-1800	1750
					1400	1500	2.51	3750	-1950	1800
					1300	1400	9.35	3600	-2120	1480
					1200	1300	8.55	3350	-2320	1030
					1100	1200	7.60	3000	-2650	350
					1000	1100	4.66	2720	-3150	-430
					900	1000	2.46	1710	-3900	-2190
					800	900	0.94	1200	-4700	-3500
					700	800	0.50	750	-5500	-4750
					600	700	0.37	350	-6350	-6000
					500	600	0.27	100	-7300	-7200
					400	500	0.21	-100	-8150	-8250
					300	400	0.17	-250	-9100	-9350
					200	300	0.22	-350	-10300	-10650
					40	200	0.10	-450	-11650	-12100
					40	1594	38.00	2980	-2820	210
35.4	ENGABREEN	NO67011	1999	OTH	1500	1594	0.12	2500	-1200	1300
					1400	1500	2.51	2800	-1150	1650
					1300	1400	9.35	2700	-1400	1300
					1200	1300	8.55	2130	-2000	130
					1100	1200	7.60	2000	-2250	-250
					1000	1100	4.66	1850	-2500	-650
					900	1000	2.46	1750	-2850	-1100
					800	900	0.94	1400	-3400	-2000
					700	800	0.50	1000	-4000	-3000
					600	700	0.37	600	-4600	-4000
					500	600	0.27	200	-5200	-5000
					400	500	0.21	-110	-5800	-5910

NR	GLACIER NAME	PSFG NR	YEAR	SYS	ALTITUDE FROM	ALTITUDE TO	AREA KM²	BW MM	BS MM	BN/BA MM
					300	400	0.17	-340	-6400	-6740
					200	300	0.22	-550	-7000	-7550
					40	200	0.10	-800	-8000	-8800
					40	1594	38.03	2120	-2150	-30
35.5	ENGABREEN	NO67011	2000	OTH	1500	1594	0.12	3000	-500	2500
					1400	1500	2.51	3200	-500	2700
					1300	1400	9.35	3470	-700	2770
					1200	1300	8.55	3070	-900	2170
					1100	1200	7.60	2820	-1200	1620
					1000	1100	4.66	2330	-1600	730
					900	1000	2.46	1900	-2100	-200
					800	900	0.94	1400	-2600	-1200
					700	800	0.50	900	-3200	-2300
					600	700	0.37	400	-3800	-3400
					500	600	0.27	-100	-4400	-4500
					400	500	0.21	-550	-5000	-5550
					300	400	0.17	-1050	-5600	-6650
					200	300	0.22	-1500	-6400	-7900
					40	200	0.10	-2100	-7700	-9800
					40	1594	38.00	2760	-1270	1490
36.1	GRAASUBREEN	NO0547	1996	OTH	2250	2290	0.04	650	-440	210
					2200	2250	0.16	620	-480	140
					2150	2200	0.26	440	-670	-230
					2100	2150	0.34	370	-980	-610
					2050	2100	0.38	530	-1080	-550
					2000	2050	0.41	510	-1070	-560
					1950	2000	0.37	650	-1050	-400
					1900	1950	0.15	620	-1200	-580
					1860	1900	0.09	630	-1420	-790
					1860	2290	2.20	530	-980	-450
36.2	GRAASUBREEN	NO0547	1997	OTH	2250	2290	0.04	270	-1380	-1110
					2200	2250	0.16	530	-1520	-990
					2150	2200	0.26	600	-1900	-1300
					2100	2150	0.34	510	-2480	-1970
					2050	2100	0.38	600	-2600	-2000
					2000	2050	0.41	700	-2520	-1820
					1950	2000	0.37	890	-2500	-1610
					1900	1950	0.15	1060	-2670	-1610
					1860	1900	0.09	1160	-2900	-1740
					1860	2290	2.20	700	-2390	-1690
36.3	GRAASUBREEN	NO0547	1998	OTH	2250	2290	0.04	760	-180	580
					2200	2250	0.16	810	-220	590
					2150	2200	0.26	730	-380	350
					2100	2150	0.34	700	-480	220
					2050	2100	0.38	700	-660	40
					2000	2050	0.41	730	-900	-170
					1950	2000	0.37	840	-820	20
					1900	1950	0.15	1060	-920	140
					1860	1900	0.09	1080	-1100	-20
					1860	2290	2.20	780	-670	110

NR	GLACIER NAME	PSFG NR	YEAR	SYS	ALTITUDE FROM	TO	AREA KM²	BW MM	BS MM	BN/BA MM
36.4	GRAASUBREEN	NO0547	1999	OTH	2250	2290	0.04	1350	-550	800
					2200	2250	0.16	1020	-720	300
					2150	2200	0.26	710	-1120	-410
					2100	2150	0.34	760	-1400	-640
					2050	2100	0.38	820	-1360	-540
					2000	2050	0.41	950	-1430	-480
					1950	2000	0.37	1050	-1320	-270
					1900	1950	0.15	1070	-1440	-370
					1850	1900	0.09	930	-1600	-670
					1850	2290	2.20	910	-1300	-390
36.5	GRAASUBREEN	NO0547	2000	OTH	2250	2290	0.04	840	-500	340
					2200	2250	0.17	660	-710	-50
					2150	2200	0.26	860	-800	60
					2100	2150	0.34	830	-920	-90
					2050	2100	0.37	720	-950	-230
					2000	2050	0.42	750	-950	-200
					1950	2000	0.36	1050	-980	70
					1900	1950	0.14	1200	-950	250
					1830	1900	0.15	1200	-1200	0
					1830	2290	2.25	870	-920	-50
37.1	HANSBREEN	NO12419	1998	FXD	450	600	6.71	1380	-865	515
					400	450	7.39	1560	-1005	555
					350	400	8.10	1080	-1750	-670
					300	350	8.56	940	-2000	-1060
					250	300	8.25	1060	-2120	-1060
					200	250	6.58	1210	-1640	-430
					150	200	5.13	820	-2100	-1280
					100	150	3.82	970	-1970	-1000
					0	100	2.22	520	-2710	-2190
					0	600	56.76	1110	-1710	-600
37.2	HANSBREEN	NO12419	1999	FXD	450	600	6.71	1200	460	740
					400	450	7.39	1450	-615	835
					350	400	8.10	1130	-1010	120
					300	350	8.56	860	-1400	-540
					250	300	8.25	800	-1760	-960
					200	250	6.58	910	-1780	-870
					150	200	5.13	770	-1820	-1050
					100	150	3.82	1120	-1930	-810
					0	100	2.22	440	-3040	-2600
					0	600	56.76	1010	-1370	-350
37.3	HANSBREEN	NO12419	2000	FXD	450	600	6.71	1135	-1150	-15
					400	450	7.39	1225	-1270	-45
					350	400	8.10	930	-1050	-120
					300	350	8.56	660	-1140	-480
					250	300	8.25	820	-1340	-520
					200	250	6.58	1150	-1300	-150
					150	200	5.13	560	-2200	-1640
					100	150	3.82	1170	-1850	-680
					0	100	2.22	450	-2880	-2430
					0	600	56.76	930	-1410	-480

NR	GLACIER NAME	PSFG NR	YEAR	SYS	ALTITUDE FROM	ALTITUDE TO	AREA KM²	BW MM	BS MM	BN/BA MM
38.1	HANSEBREEN	NO36206	1996		1300	1320	0.122	1750	-2920	-1170
					1250	1300	0.504	2010	-2920	-910
					1200	1250	0.550	2110	-3000	-890
					1150	1200	0.541	1940	-3250	-1310
					1100	1150	0.722	1460	-3800	-2340
					1050	1100	0.427	1320	-4800	-3480
					1000	1050	0.259	1420	-5250	-3830
					950	1000	0.158	1750	-5540	-3790
					900	950	0.040	1850	-5600	-3750
					900	1320	3.323	1737	-3758	-2020
38.2	HANSEBREEN	NO36206	1997		1300	1320	0.112	4480	-3700	780
					1250	1300	0.427	4390	-3650	740
					1200	1250	0.451	4540	-3780	760
					1150	1200	0.491	4160	-3900	260
					1100	1150	0.626	3190	-3920	-730
					1050	1100	0.429	3260	-4050	-790
					1000	1050	0.221	2840	-4200	-1360
					950	1000	0.125	3080	-4550	-1470
					900	950	0.024	3900	-4900	-1000
					900	1320	2.906	3774	-3922	-150
39.1	HARDANGERJOEK.	NO22303	1996	OTH	1850	1860	0.07	950	-1300	-350
					1800	1850	3.38	1250	-1370	-120
					1750	1800	3.87	1240	-1590	-350
					1700	1750	3.91	1100	-1810	-710
					1650	1700	2.08	940	-2040	-1100
					1600	1650	0.94	800	-2330	-1530
					1550	1600	0.64	660	-2680	-2020
					1500	1550	0.54	500	-3050	-2550
					1450	1500	0.32	400	-3390	-2990
					1400	1450	0.20	320	-3760	-3440
					1350	1400	0.11	220	-4200	-3980
					1300	1350	0.08	150	-4620	-4470
					1250	1300	0.27	100	-5000	-4900
					1200	1250	0.32	80	-5300	-5220
					1150	1200	0.32	50	-5620	-5570
					1100	1150	0.12	40	-5930	-5890
					1050	1100	0.02	30	-6250	-6220
					1050	1860	17.20	990	-2100	-1070
39.2	HARDANGERJOEK.	NO22303	1997	OTH	1850	1865	0.09	2100	-2650	-550
					1800	1850	3.93	3000	-2750	250
					1750	1800	4.03	3300	-2970	330
					1700	1750	3.46	3300	-3100	200
					1650	1700	1.94	3100	-3300	-200
					1600	1650	0.75	2850	-3500	-650
					1550	1600	0.59	2550	-3800	-1250
					1500	1550	0.57	2250	-4200	-1950
					1450	1500	0.29	2000	-4650	-2650
					1400	1450	0.19	1750	-5100	-3350
					1350	1400	0.10	1650	-5500	-3850
					1300	1350	0.10	1550	-6000	-4450
					1250	1300	0.27	1450	-6400	-4950
					1200	1250	0.36	1400	-6850	-5450
					1150	1200	0.28	1350	-7300	-5950

NR	GLACIER NAME	PSFG NR	YEAR	SYS	ALTITUDE FROM	ALTITUDE TO	AREA KM²	BW MM	BS MM	BN/BA MM
					1100	1150	0.11	1300	-7750	-6450
					1020	1100	0.05	1250	-8200	-6950
					1020	1865	17.10	2940	-3410	-530
39.3	HARDANGERJOEK.	NO22303	1998	OTH	1850	1865	0.09	2780	-1200	1580
					1800	1850	3.93	2900	-1250	1650
					1750	1800	4.03	2840	-1450	1390
					1700	1750	3.46	2600	-1550	1050
					1650	1700	1.94	2500	-1700	800
					1600	1650	0.75	2200	-1850	350
					1550	1600	0.59	1900	-2000	-100
					1500	1550	0.57	1650	-2200	-550
					1450	1500	0.29	1350	-2500	-1150
					1400	1450	0.19	1100	-2850	-1750
					1350	1400	0.10	950	-3300	-2350
					1300	1350	0.10	900	-4000	-3100
					1250	1300	0.27	860	-4400	-3540
					1200	1250	0.36	800	-4750	-3950
					1150	1200	0.28	800	-5050	-4250
					1100	1150	0.11	800	-5300	-4500
					1020	1100	0.05	800	-5500	-4700
					1020	1865	17.10	2470	-1780	690
39.4	HARDANGERJOEK.	NO22303	1999	OTH	1850	1865	0.09	1790	-1350	440
					1800	1850	3.93	2160	-1450	710
					1750	1800	4.03	2490	-1650	840
					1700	1750	3.46	2140	-1900	240
					1650	1700	1.94	2040	-2100	-60
					1600	1650	0.75	1820	-2350	-530
					1550	1600	0.59	1500	-2550	-1050
					1500	1550	0.57	1330	-2750	-1420
					1450	1500	0.29	1200	-2950	-1750
					1400	1450	0.19	1100	-3100	-2000
					1350	1400	0.10	1000	-3200	-2200
					1300	1350	0.10	1100	-3350	-2250
					1250	1300	0.27	1200	-3500	-2300
					1200	1250	0.36	1100	-3650	-2550
					1150	1200	0.28	1000	-3800	-2800
					1100	1150	0.11	900	-4000	-3100
					1020	1100	0.05	800	-4250	-3450
					1020	1865	17.12	2040	-1990	50
39.5	HARDANGERJOEK.	NO22303	2000	OTH	1850	1865	0.09	1870	-1150	720
					1800	1850	3.93	2790	-1150	1640
					1750	1800	4.03	3130	-1200	1930
					1700	1750	3.46	3250	-1250	2000
					1650	1700	1.94	3150	-1350	1800
					1600	1650	0.75	2950	-1500	1450
					1550	1600	0.59	2750	-1650	1100
					1500	1550	0.57	2600	-1800	800
					1450	1500	0.29	2450	-2000	450
					1400	1450	0.19	2350	-2350	0
					1350	1400	0.10	2250	-2700	-450
					1300	1350	0.10	2150	-3100	-950
					1250	1300	0.27	2050	-3550	-1500
					1200	1250	0.36	1950	-4000	-2050

NR	GLACIER NAME	PSFG NR	YEAR	SYS	ALTITUDE FROM	TO	AREA KM²	BW MM	BS MM	BN/BA MM
					1150	1200	0.28	1860	-4500	-2640
					1100	1150	0.11	1780	-5000	-3220
					1020	1100	0.05	1700	-5800	-4100
					1020	1865	17.10	2930	-1500	1430
40.1	HELLSTUGUBREEN	NO0511	1996	OTH	2150	2200	0.02	1010	-330	680
					2100	2150	0.08	920	-380	540
					2050	2100	0.25	880	-490	390
					2000	2050	0.17	860	-580	280
					1950	2000	0.35	880	-750	130
					1900	1950	0.60	810	-970	-160
					1850	1900	0.35	730	-1170	-440
					1800	1850	0.33	550	-1520	-970
					1750	1800	0.14	420	-2040	-1620
					1700	1750	0.10	370	-2270	-1900
					1650	1700	0.16	350	-2370	-2020
					1600	1650	0.13	270	-2550	-2280
					1550	1600	0.17	220	-2900	-2680
					1500	1550	0.09	140	-3200	-3060
					1465	1500	0.03	120	-3400	-3280
					1465	2200	2.98	650	-1390	-740
40.2	HELLSTUGUBREEN	NO0511	1997	OTH	2150	2200	0.02	1200	-1400	-200
					2100	2150	0.08	1170	-1650	-480
					2050	2100	0.25	1320	-1840	-520
					2000	2050	0.17	1600	-1900	-300
					1950	2000	0.35	1380	-1930	-550
					1900	1950	0.60	1180	-2220	-1040
					1850	1900	0.35	1110	-2650	-1540
					1800	1850	0.33	1050	-2920	-1870
					1750	1800	0.14	910	-3350	-2440
					1700	1750	0.10	1100	-3920	-2820
					1650	1700	0.16	1080	-4050	-2970
					1600	1650	0.13	870	-4200	-3330
					1550	1600	0.17	700	-4380	-3680
					1500	1550	0.09	370	-4900	-4530
					1465	1500	0.03	320	-5350	-5030
					1465	2200	2.98	1120	-2770	-1650
40.3	HELLSTUGUBREEN	NO0511	1998	OTH	2150	2200	0.02	1230	-180	1050
					2100	2150	0.08	1100	-230	870
					2050	2100	0.25	1120	-290	830
					2000	2050	0.17	1450	-380	1070
					1950	2000	0.35	1250	-480	770
					1900	1950	0.60	1030	-700	330
					1850	1900	0.35	980	-950	30
					1800	1850	0.33	920	-1120	-200
					1750	1800	0.14	740	-1380	-640
					1700	1750	0.10	870	-1500	-630
					1650	1700	0.16	1000	-1700	-700
					1600	1650	0.13	870	-2000	-1130
					1550	1600	0.17	690	-2350	-1660
					1500	1550	0.09	500	-2560	-2060
					1465	1500	0.03	400	-2700	-2300
					1465	2200	2.98	1000	-1020	-20

NR	GLACIER NAME	PSFG NR	YEAR	SYS	ALTITUDE FROM	TO	AREA KM²	BW MM	BS MM	BN/BA MM
40.4	HELLSTUGUBREEN	NO0511	1999	OTH	2100	2200	0.10	1650	-740	910
					2050	2100	0.25	1450	-830	620
					2000	2050	0.17	1500	-940	560
					1950	2000	0.35	1390	-1070	320
					1900	1950	0.60	1270	-1300	-30
					1850	1900	0.35	1290	-1530	-240
					1800	1850	0.33	1120	-1700	-580
					1750	1800	0.14	1060	-1900	-840
					1700	1750	0.10	1100	-2100	-1000
					1650	1700	0.16	1060	-2380	-1320
					1600	1650	0.13	1000	-2770	-1770
					1550	1600	0.17	840	-3240	-2400
					1500	1550	0.09	670	-3500	-2830
					1465	1500	0.03	600	-3700	-3100
					1465	2200	2.98	1220	-1640	-420
40.5	HELLSTUGUBREEN	NO0511	2000	OTH	2100	2210	0.11	1660	-180	1480
					2050	2100	0.28	1510	-270	1240
					2000	2050	0.18	1250	-400	850
					1950	2000	0.38	1490	-610	880
					1900	1950	0.61	1330	-890	440
					1850	1900	0.35	1330	-1130	200
					1800	1850	0.33	1210	-1320	-110
					1750	1800	0.13	1100	-1520	-420
					1700	1750	0.10	1170	-1670	-500
					1650	1700	0.17	1370	-1790	-420
					1600	1650	0.13	1160	-1940	-780
					1550	1600	0.16	820	-2250	-1430
					1500	1550	0.08	500	-2720	-2220
					1480	1500	0.02	470	-3010	-2540
					1480	2210	3.03	1290	-1100	190
41.1	JOSTEFONN	NO	1996		1600	1616	0.18	1090	-2950	-1860
					1500	1600	0.72	1090	-2800	-1710
					1400	1500	1.07	1200	-2500	-1300
					1300	1400	0.78	1400	-2500	-1100
					1200	1300	0.25	1410	-2850	-1440
					1100	1200	0.18	1200	-3200	-2000
					1000	1100	0.54	990	-3550	-2560
					960	1000	0.09	700	-3750	-3050
					960	1616	3.80	1190	-2810	-1620
41.2	JOSTEFONN	NO	1997		1600	1616	0.18	3500	-3300	200
					1500	1600	0.72	3550	-3350	200
					1400	1500	1.07	3500	-3450	50
					1300	1400	0.78	3600	-3700	-100
					1200	1300	0.25	3500	-4100	-600
					1100	1200	0.18	3400	-4600	-1200
					1000	1100	0.54	3100	-5200	-2100
					960	1000	0.09	2700	-5600	-2900
					960	1616	3.80	3450	-3870	-420
41.3	JOSTEFONN	NO	1998		1600	1616	0.18	3050	-1800	1250
					1500	1600	0.72	3200	-1900	1300
					1400	1500	1.07	3200	-2100	1100
					1300	1400	0.78	3100	-2350	750

NR	GLACIER NAME	PSFG NR	YEAR	SYS	ALTITUDE FROM	ALTITUDE TO	AREA KM²	BW MM	BS MM	BN/BA MM
					1200	1300	0.25	2800	-2750	50
					1100	1200	0.18	2500	-3350	-850
					1000	1100	0.54	1600	-4100	-2500
					960	1000	0.09	1400	-4600	-3200
					960	1616	3.80	2840	-2540	300
42.1	LANGFJORDJOEKUL	NO85008	1996	OTH	1000	1065	0.55	2800	-1450	1350
					900	1000	0.81	2700	-1550	1150
					800	900	0.61	2300	-1700	600
					700	800	0.56	2100	-1900	200
					600	700	0.39	1900	-2200	-300
					500	600	0.35	1700	-3400	-1700
					400	500	0.25	1600	-4700	-3100
					300	400	0.14	1400	-5700	-4300
					300	1065	3.65	2250	-2230	20
42.2	LANGFJORDJOEKUL	NO85008	1997	OTH	1000	1065	0.55	2850	-2600	250
					900	1000	0.81	2900	-2700	200
					800	900	0.61	3100	-2900	200
					700	800	0.56	2800	-3400	-600
					600	700	0.39	2450	-3900	-1450
					500	600	0.35	2050	-4300	-2250
					400	500	0.25	1700	-4700	-3000
					300	400	0.14	1600	-5100	-3500
					300	1065	3.65	2650	-3340	-690
43.1	MIDTDALSBREEN	NO04302	2000	OTH	1800	1862	2.17	3000	-1080	1920
					1750	1800	0.89	3260	-1540	1720
					1700	1750	1.18	3150	-1480	1670
					1650	1700	0.71	3240	-1600	1640
					1600	1650	0.44	3090	-1750	1340
					1550	1600	0.38	3180	-1940	1240
					1500	1550	0.54	2520	-2050	470
					1380	1500	0.76	1460	-2500	-1040
					1380	1862	7.07	2890	-1570	1320
44.1	MIDRE LOVENBR.	NO15506	1996		550	600				987
					500	550				937
					450	500				733
					400	450				405
					350	400				205
					300	350				-9
					250	300				-130
					200	250				-329
					150	200				-691
					100	150				-993
					50	100				-1582
					50	600				20
44.2	MIDRE LOVENBR.	NO15506	1997		550	600				460
					500	550				430
					450	500				354
					400	450				230
					350	400				-85
					300	350				-20
					250	300				-00

NR	GLACIER NAME	PSFG NR	YEAR	SYS	ALTITUDE FROM	TO	AREA KM²	BW MM	BS MM	BN/BA MM
					200	250				-1030
					150	200				-1240
					100	150				-1430
					50	100				-1790
					50	600				-430
44.3	MIDRE LOVENBR.	NO15506	1999		550	600				1150
					500	550				710
					450	500				340
					400	450				0
					350	400				-330
					300	350				-430
					250	300				-400
					200	250				-510
					150	200				-890
					100	150				-1430
					50	100				-2040
					50	600	5.45			-340
45.1	NIGARDSBREEN	NO31014	1996	OTH	1900	1960	0.38	1900	-700	1200
					1800	1900	3.92	1950	-800	1150
					1700	1800	9.39	1750	-1000	750
					1600	1700	12.88	1450	-1500	-50
					1500	1600	9.18	1300	-1950	-650
					1400	1500	5.82	1200	-2100	-900
					1300	1400	2.28	1050	-2350	-1300
					1200	1300	0.90	900	-2600	-1700
					1100	1200	0.45	750	-2950	-2200
					1000	1100	0.58	600	-3400	-2800
					900	1000	0.47	450	-4200	-3750
					800	900	0.44	350	-5350	-5000
					700	800	0.33	300	-6600	-6300
					600	700	0.39	200	-7700	-7500
					500	600	0.24	150	-8650	-8500
					400	500	0.12	120	-9250	-9130
					320	400	0.05	100	-9800	-9700
					320	1960	47.82	1400	-1810	-410
45.2	NIGARDSBREEN	NO31014	1997	OTH	1900	1960	0.38	3000	-1500	1500
					1800	1900	3.92	3400	-1900	1500
					1700	1800	9.39	3050	-2200	850
					1600	1700	12.88	2800	-2300	500
					1500	1600	9.18	2500	-2420	80
					1400	1500	5.82	2450	-2600	-150
					1300	1400	2.28	2350	-2800	-450
					1200	1300	0.90	2100	-3300	-1200
					1100	1200	0.45	1800	-4000	-2200
					1000	1100	0.58	1500	-4700	-3200
					900	1000	0.47	1250	-5700	-4450
					800	900	0.44	1000	-6700	-5700
					700	800	0.33	800	-7600	-6800
					600	700	0.39	600	-8700	-8100
					500	600	0.24	500	-9700	-9200
					400	500	0.12	450	-10700	-10250
					320	400	0.05	400	-11600	-11200
					320	1960	47.82	2660	-2620	470

NR	GLACIER NAME	PSFG NR YEAR SYS	ALTITUDE FROM	TO	AREA KM²	BW MM	BS MM	BN/BA MM
45.3	NIGARDSBREEN	NO31014 1998 OTH	1900	1960	0.38	3250	-400	2850
			1800	1900	3.92	3250	-600	2650
			1700	1800	9.39	2950	-900	2050
			1600	1700	12.88	2700	-1150	1550
			1500	1600	9.18	2400	-1400	1000
			1400	1500	5.82	2250	-1650	600
			1300	1400	2.28	2050	-2050	0
			1200	1300	0.90	1800	-2700	-900
			1100	1200	0.45	1550	-3550	-2000
			1000	1100	0.58	1250	-4400	-3150
			900	1000	0.47	900	-5200	-4300
			800	900	0.44	600	-6000	-5400
			700	800	0.33	250	-6750	-6500
			600	700	0.39	-100	-7500	-7600
			500	600	0.24	-450	-8250	-8700
			400	500	0.12	-800	-9050	-9850
			320	400	0.05	-1100	-9750	-10850
			320	1960	47.82	2500	-1530	970
45.4	NIGARDSBREEN	NO31014 1999 OTH	1900	1960	0.38	2800	-1100	1700
			1800	1900	3.92	2750	-1300	1450
			1700	1800	9.39	2550	-1550	1000
			1600	1700	12.88	2450	-1800	650
			1500	1600	9.18	2350	-2100	250
			1400	1500	5.82	2350	-2450	-100
			1300	1400	2.28	2300	-2850	-550
			1200	1300	0.90	2150	-3400	-1250
			1100	1200	0.45	1950	-4100	-2150
			1000	1100	0.58	1700	-4850	-3150
			900	1000	0.47	1450	-5600	-4150
			800	900	0.44	1250	-6350	-5100
			700	800	0.33	1000	-7100	-6100
			600	700	0.39	800	-7850	-7050
			500	600	0.24	550	-8600	-8050
			400	500	0.12	350	-9350	-9000
			320	400	0.05	200	-10000	-9800
			320	1960	47.82	2380	-2210	170
45.5	NIGARDSBREEN	NO31014 2000 OTH	1900	1960	0.38	3550	-600	2950
			1800	1900	3.92	3800	-800	3000
			1700	1800	9.39	3750	-1050	2700
			1600	1700	12.88	3600	-1300	2300
			1500	1600	9.18	3400	-1550	1850
			1400	1500	5.82	3180	-1850	1330
			1300	1400	2.28	2950	-2200	750
			1200	1300	0.90	2700	-2700	0
			1100	1200	0.45	2450	-3350	-900
			1000	1100	0.58	2200	-4050	-1850
			900	1000	0.47	1930	-4850	-2930
			800	900	0.44	1650	-5600	-3950
			700	800	0.33	1350	-6400	-5050
			600	700	0.39	1050	-7200	-6150
			500	600	0.24	750	-7950	-7200
			400	500	0.12	450	-8750	-8300
			320	400	0.05	200	-9450	-9250
			320	1960	47.82	3380	-1660	1720

NR	GLACIER NAME	PSFG NR	YEAR	SYS	ALTITUDE FROM	TO	AREA KM²	BW MM	BS MM	BN/BA MM
46.1	OKSTINDBREEN	NO64902	1996	OTH	1600	1750	0.21	1600	-630	970
					1500	1600	1.91	1900	-800	1100
					1400	1500	4.14	2050	-1030	1020
					1300	1400	2.56	1800	-1400	400
					1200	1300	2.56	1100	-2500	-1400
					1100	1200	0.64	1100	-3250	-2150
					1000	1100	0.61	1150	-3800	-2650
					900	1000	0.59	1100	-4300	-3200
					800	900	0.61	1050	-5000	-3950
					730	800	0.18	800	-5750	-4950
					730	1750	14.01	1620	-1920	-300
47.1	STORBREEN	NO0541	1996	OTH	2050	2100	0.04	1500	-520	980
					2000	2050	0.12	1420	-650	770
					1950	2000	0.22	1340	-780	560
					1900	1950	0.33	1200	-900	300
					1850	1900	0.51	1020	-1170	-150
					1800	1850	0.84	800	-1450	-650
					1750	1800	0.79	780	-1700	-920
					1700	1750	0.65	640	-1960	-1320
					1650	1700	0.40	740	-2200	-1460
					1600	1650	0.50	800	-2450	-1650
					1550	1600	0.36	650	-2700	-2050
					1500	1550	0.22	520	-3000	-2480
					1450	1500	0.19	350	-3280	-2930
					1400	1450	0.08	280	-3620	-3340
					1350	1400	0.01	200	-3900	-3700
					1350	2100	5.26	810	-1840	-1030
47.2	STORBREEN	NO0541	1997	OTH	2050	2100	0.04	2630	-1280	1350
					2000	2050	0.12	2580	-1350	1230
					1950	2000	0.22	2480	-1460	1020
					1900	1950	0.33	2270	-1680	590
					1850	1900	0.51	2030	-2020	10
					1800	1850	0.84	1750	-2450	-700
					1750	1800	0.79	1630	-2800	-1170
					1700	1750	0.65	1490	-3140	-1650
					1650	1700	0.40	1910	-3350	-1440
					1600	1650	0.50	1680	-3460	-1780
					1550	1600	0.36	1530	-3520	-1990
					1500	1550	0.22	1400	-3580	-2180
					1450	1500	0.19	1060	-3760	-2700
					1400	1450	0.08	880	-3950	-3070
					1350	1400	0.01	750	-4100	-3350
					1350	2100	5.26	1750	-2780	-1030
47.3	STORBREEN	NO0541	1998	OTH	2050	2100	0.04	2380	-250	2130
					2000	2050	0.15	2300	-320	1980
					1950	2000	0.23	2200	-400	1800
					1900	1950	0.36	2060	-500	1560
					1850	1900	0.57	1870	-680	1190
					1800	1850	0.92	1500	-980	520
					1750	1800	0.75	1450	-1150	300
					1700	1750	0.64	1370	-1300	70
					1650	1700	0.40	1520	-1550	-30
					1600	1650	0.49	1510	-2150	-640

NR	GLACIER NAME	PSFG NR	YEAR	SYS	ALTITUDE FROM	TO	AREA KM²	BW MM	BS MM	BN/BA MM
					1550	1600	0.35	1270	-2500	-1230
					1500	1550	0.21	980	-2680	-1700
					1450	1500	0.18	870	-2850	-1980
					1390	1450	0.06	790	-3050	-2260
					1390	2100	5.35	1550	-1330	220
47.4	STORBREEN	NO0541	1999	OTH	2050	2100	0.04	2500	-600	1900
					2000	2050	0.15	2350	-750	1600
					1950	2000	0.23	2230	-930	1300
					1900	1950	0.36	2200	-1180	1020
					1850	1900	0.57	1830	-1400	430
					1800	1850	0.92	1590	-1640	-50
					1750	1800	0.75	1710	-1850	-140
					1700	1750	0.64	1430	-2030	-600
					1650	1700	0.40	1690	-2200	-510
					1600	1650	0.49	1560	-2400	-840
					1550	1600	0.35	1330	-2750	-1420
					1500	1550	0.22	1300	-3000	-1700
					1450	1500	0.18	1130	-3180	-2050
					1390	1450	0.07	1200	-3320	-2120
					1390	2100	5.36	1670	-1910	-240
47.5	STORBREEN	NO0541	2000	OTH	2050	2100	0.04	3130	-300	2830
					2000	2050	0.15	3130	-380	2750
					1950	2000	0.23	3460	-480	2980
					1900	1950	0.36	2720	-600	2120
					1850	1900	0.57	2190	-740	1450
					1800	1850	0.92	1850	-1010	840
					1750	1800	0.75	2070	-1310	760
					1700	1750	0.64	1790	-1540	250
					1650	1700	0.40	1940	-1790	150
					1600	1650	0.49	1870	-2150	-280
					1550	1600	0.35	1660	-2670	-1010
					1500	1550	0.21	1510	-3200	-1690
					1450	1500	0.18	1230	-3600	-2370
					1390	1450	0.06	1270	-3900	-2630
					1390	2100	5.35	2040	-1490	550
48.1	WALDEMARBREEN	NO	2000	FXD	425	475				206
					375	425				-5
					325	375				-73
					275	325				-346
					225	275				-600
					175	225				-778
					125	175				-1000
					125	475	2.68	316	-635	-319
	SWEDEN									
49.1	MARMAGLACIAER.	SE0799	1996	FXD	1780	1800	0.0015	2710	-130	2580
					1760	1780	0.0050	2780	-130	2650
					1740	1760	0.0180	2670	-130	2540
					1720	1740	0.0330	2610	-320	2290
					1700	1720	0.0420	2560	-380	2180
					1680	1700	0.1045	2420	-380	2040

NR	GLACIER NAME	PSFG NR	YEAR SYS	ALTITUDE FROM	ALTITUDE TO	AREA KM²	BW MM	BS MM	BN/BA MM
				1660	1680	0.2050	2040	-580	1460
				1640	1660	0.2010	1710	-630	1080
				1620	1640	0.3300	710	-790	-80
				1600	1620	0.3115	420	-880	-460
				1580	1600	0.1955	620	-880	-260
				1560	1580	0.2300	610	-1090	-480
				1540	1560	0.3530	590	-1130	-540
				1520	1540	0.3655	540	-1160	-620
				1500	1520	0.1925	690	-1380	-690
				1480	1500	0.1980	660	-1380	-720
				1460	1480	0.2520	470	-1510	-1040
				1440	1460	0.2165	420	-1630	-1210
				1420	1440	0.1585	520	-1630	-1110
				1400	1420	0.1520	580	-1820	-1240
				1380	1400	0.1490	640	-2130	-1490
				1360	1380	0.1470	790	-2130	-1340
				1340	1360	0.0960	900	-2130	-1230
				1320	1340	0.0535	1060	-2130	-1070
				1320	1800	4.0105	820	-1210	-380
49.2	MARMAGLACIAER.	SE0799	1997	1780	1800	0.0004	4200	-1000	3200
				1760	1780	0.0046	4100	-1000	3100
				1740	1760	0.0175	4100	-1100	3000
				1720	1740	0.0304	4100	-1200	2900
				1700	1720	0.0399	4000	-1300	2700
				1680	1700	0.1052	3900	-1300	2600
				1660	1680	0.2046	3500	-1400	2100
				1640	1660	0.2009	2600	-1500	1100
				1620	1640	0.3257	1300	-1600	-300
				1600	1620	0.3054	1200	-1600	-400
				1580	1600	0.1908	1600	-1700	-100
				1560	1580	0.2263	1500	-1800	-300
				1540	1560	0.3599	1300	-1900	-600
				1520	1540	0.3546	1300	-1900	-600
				1500	1520	0.1862	1500	-2000	-500
				1480	1500	0.1944	1400	-2100	-700
				1460	1480	0.2552	1300	-2200	-900
				1440	1460	0.2180	1500	-2200	-700
				1420	1440	0.1683	1500	-2300	-800
				1400	1420	0.1681	1600	-2400	-800
				1380	1400	0.1612	1700	-2500	-800
				1360	1380	0.1646	1900	-2500	-600
				1340	1360	0.1145	2200	-2600	-400
				1320	1340	0.0417	2300	-2700	-400
				1320	1800	4.0384	1700	-1900	-200
49.3	MARMAGLACIAER.	SE0799	1998	1760	1780	0.007	1370	-130	1240
				1740	1760	0.027	1370	-130	1250
				1720	1740	0.030	1370	-120	1250
				1700	1720	0.048	1370	-120	1250
				1680	1700	0.113	1320	-370	950
				1660	1680	0.200	1260	-370	890
				1640	1660	0.183	1050	-560	480
				1620	1640	0.338	750	-620	140
				1600	1620	0.334	680	-690	-10
				1580	1600	0.188	750	-870	-130

NR	GLACIER NAME	PSFG NR	YEAR	SYS	ALTITUDE FROM	TO	AREA KM²	BW MM	BS MM	BN/BA MM
					1560	1580	0.294	780	-870	-90
					1540	1560	0.359	910	-1120	-210
					1520	1540	0.362	890	-1120	-230
					1500	1520	0.195	890	-1250	-350
					1480	1500	0.194	830	-1370	-550
					1460	1480	0.238	680	-1440	-750
					1440	1460	0.211	620	-1620	-1000
					1420	1440	0.161	670	-1620	-950
					1400	1420	0.151	670	-1810	-1140
					1380	1400	0.150	690	-1870	-1180
					1360	1380	0.151	720	-1990	-1280
					1340	1360	0.093	660	-2120	-1470
					1320	1340	0.051	630	-2120	-1500
					1320	1780	4.074	830	-1110	-280
49.4	MARMAGLACIAER.	SE0799	1999		1780	1800	0	2300	-500	1800
					1760	1780	0.005	2000	-600	1400
					1740	1760	0.018	2000	-700	1300
					1720	1740	0.029	1900	-700	1100
					1700	1720	0.042	1900	-800	1100
					1680	1700	0.104	2000	-900	1100
					1660	1680	0.204	1800	-900	800
					1640	1660	0.192	1400	-1000	400
					1620	1640	0.326	1000	-1100	-100
					1600	1620	0.312	900	-1100	-200
					1580	1600	0.190	900	-1200	-300
					1560	1580	0.229	1000	-1300	-300
					1540	1560	0.346	1000	-1400	-400
					1520	1540	0.364	1000	-1400	-400
					1500	1520	0.186	1100	-1500	-400
					1480	1500	0.197	1100	-1600	-500
					1460	1480	0.251	900	-1600	-700
					1440	1460	0.217	900	-1700	-800
					1420	1440	0.159	1000	-1800	-800
					1400	1420	0.150	1000	-1800	-800
					1380	1400	0.146	1100	-1900	-900
					1360	1380	0.144	1100	-2000	-900
					1340	1360	0.098	1000	-2000	-1100
					1320	1340	0.051	800	-2100	-1300
					1320	1800	3.957	1100	-1400	-300
49.5	MARMAGLACIAER.	SE0799	2000		1780	1800	0	3100	-100	3000
					1760	1780	0.005	2700	-200	2600
					1740	1760	0.018	2600	-200	2400
					1720	1740	0.029	2500	-300	2200
					1700	1720	0.042	2500	-400	2200
					1680	1700	0.104	2500	-500	2100
					1660	1680	0.204	2200	-500	1700
					1640	1660	0.192	1800	-600	1100
					1620	1640	0.326	1200	-700	500
					1600	1620	0.312	900	-800	100
					1580	1600	0.190	900	-800	100
					1560	1580	0.229	900	-900	0
					1540	1560	0.346	900	-1000	-100
					1520	1540	0.364	1000	-1000	-100
					1500	1520	0.186	1100	-1100	0

NR	GLACIER NAME	PSFG NR	YEAR SYS	ALTITUDE FROM	ALTITUDE TO	AREA KM^2	BW MM	BS MM	BN/BA MM
				1480	1500	0.197	1100	-1200	-100
				1460	1480	0.251	1000	-1300	-300
				1440	1460	0.217	900	-1300	-400
				1420	1440	0.159	900	-1400	-600
				1400	1420	0.150	900	-1500	-600
				1380	1400	0.146	1000	-1600	-600
				1360	1380	0.144	1100	-1700	-500
				1340	1360	0.098	1100	-1700	-600
				1320	1340	0.051	1200	-1800	-600
				1320	1800	3.957	1160	-1030	130
50.1	PARTEJEKNA	SE0763	1997	1800	1850	0.005	3250	-2164	1086
				1750	1800	0.054	2667	-2218	448
				1700	1750	0.146	2479	-2273	206
				1650	1700	0.420	2073	-2328	-256
				1600	1650	0.707	1930	-2383	-453
				1550	1600	0.931	1794	-2438	-644
				1500	1550	1.357	1614	-2493	-879
				1450	1500	1.096	1714	-2547	-834
				1400	1450	1.256	1676	-2602	-927
				1350	1400	1.348	1596	-2657	-1061
				1300	1350	0.945	1599	-2712	-1113
				1250	1300	0.701	1632	-2767	-1135
				1200	1250	0.499	1696	-2822	-1126
				1150	1200	0.307	1734	-2877	-1143
				1100	1150	0.128	1750	-2931	-1181
				1050	1100	0.013	1750	-2986	-1236
				1050	1850	9.913	1718	-2585	-867
50.2	PARTEJEKNA	SE0763	1998	1800	1850	0.005	1750	-451	1299
				1750	1800	0.054	1565	-611	954
				1700	1750	0.146	1435	-772	663
				1650	1700	0.420	1208	-932	276
				1600	1650	0.707	1283	-1092	191
				1550	1600	0.931	1245	-1253	-8
				1500	1550	1.357	1223	-1413	-190
				1450	1500	1.096	1147	-1574	-427
				1400	1450	1.256	1156	-1734	-578
				1350	1400	1.348	1241	-1894	-653
				1300	1350	0.945	1235	-2055	-820
				1250	1300	0.701	1178	-2215	-1037
				1200	1250	0.499	1107	-2376	-1269
				1150	1200	0.307	1089	-2536	-1447
				1100	1150	0.128	891	-2696	-1806
				1050	1100	0.013	750	-2857	-2107
				1050	1850	9.913	1203	-1684	-481
50.3	PARTEJEKNA	SE0763	1999	1800	1850	0.005	1750	-85	1665
				1750	1800	0.054	1519	-277	1242
				1700	1750	0.146	1517	-469	1048
				1650	1700	0.420	1333	-662	672
				1600	1650	0.707	1415	-854	562
				1550	1600	0.931	1244	-1046	197
				1500	1550	1.357	1296	-1238	57
				1450	1500	1.096	1303	-1431	-128
				1400	1450	1.256	1145	-1623	-478

NR	GLACIER NAME	PSFG NR	YEAR	SYS	ALTITUDE FROM	ALTITUDE TO	AREA KM²	BW MM	BS MM	BN/BA MM
					1350	1400	1.348	1084	-1815	-731
					1300	1350	0.945	996	-2008	-1012
					1250	1300	0.701	893	-2200	-1307
					1200	1250	0.499	894	-2392	-1498
					1150	1200	0.307	952	-2585	-1633
					1100	1150	0.128	1141	-2777	-1636
					1050	1100	0.013	1250	-2969	-1719
					1050	1850	9.913	1168	-1563	-395
50.4	PARTEJEKNA	SE0763	2000		1800	1850	0.005	1750	-235	1515
					1750	1800	0.054	1667	-368	1299
					1700	1750	0.146	1620	-501	1119
					1650	1700	0.420	1031	-634	397
					1600	1650	0.707	1182	-767	415
					1550	1600	0.931	1042	-901	141
					1500	1550	1.357	1095	-1034	62
					1450	1500	1.096	1038	-1167	-129
					1400	1450	1.256	1164	-1300	-136
					1350	1400	1.348	1213	-1433	-221
					1300	1350	0.945	1250	-1566	-316
					1250	1300	0.701	1250	-1699	-449
					1200	1250	0.499	1250	-1833	-583
					1150	1200	0.307	1250	-1966	-716
					1100	1150	0.128	781	-2099	-1318
					1050	1100	0.013	750	-2232	-1482
					1050	1850	9.913	1157	-1258	-101
51.1	RIUKOJIETNA	SE0790	1996	FXD	1440	1460	0.516	1200	-1130	70
					1420	1440	0.676	1210	-1130	80
					1400	1420	0.387	1380	-1300	80
					1380	1400	0.420	1450	-1380	70
					1360	1380	0.444	1490	-1380	110
					1340	1360	0.428	1500	-1480	20
					1320	1340	0.512	1540	-1630	-90
					1300	1320	0.391	1450	-1630	-180
					1280	1300	0.259	1440	-1630	-190
					1260	1280	0.189	1430	-1880	-450
					1240	1260	0.133	1440	-1880	-440
					1220	1240	0.094	1460	-1880	-420
					1200	1220	0.065	1380	-2060	-680
					1180	1200	0.060	1380	-2130	-750
					1160	1180	0.045	1380	-2130	-750
					1140	1160	0.029	1380	-2130	-750
					1140	1460	4.648	1400	-1450	-60
51.2	RIUKOJIETNA	SE0790	1997	FXD	1440	1460	0.516	1650	-2380	-730
					1420	1440	0.676	1740	-2380	-640
					1400	1420	0.387	1830	-2570	-740
					1380	1400	0.420	1850	-2630	-780
					1360	1380	0.444	1820	-2630	-810
					1340	1360	0.428	1710	-2630	-920
					1320	1340	0.512	1620	-2880	-1260
					1300	1320	0.391	1590	-2880	-1290
					1280	1300	0.259	1460	-2880	-1420
					1260	1280	0.189	1530	-2930	-1400
					1240	1260	0.133	1660	-3130	-1470

NR	GLACIER NAME	PSFG NR	YEAR SYS	ALTITUDE FROM	TO	AREA KM²	BW MM	BS MM	BN/BA MM
				1220	1240	0.094	1670	-3130	-1460
				1200	1220	0.065	1900	-3130	-1230
				1180	1200	0.060	1910	-3270	-1360
				1160	1180	0.045	1750	-3380	-1630
				1140	1160	0.029	1750	-3380	-1630
				1140	1460	4.648	1700	-2680	-980
51.3	RIUKOJIETNA	SE0790	1999	1440	1460	0.516	875	-975	-100
				1420	1440	0.676	903	-1138	-235
				1400	1420	0.387	967	-1301	-334
				1380	1400	0.420	978	-1464	-486
				1360	1380	0.444	959	-1627	-667
				1340	1360	0.428	931	-1789	-858
				1320	1340	0.512	884	-1952	-1069
				1300	1320	0.391	894	-2115	-1221
				1280	1300	0.259	922	-2278	-1356
				1260	1280	0.189	916	-2441	-1525
				1240	1260	0.133	888	-2604	-1715
				1220	1240	0.094	875	-2766	-1891
				1200	1220	0.065	875	-2929	-2054
				1180	1200	0.060	875	-3092	-2217
				1160	1180	0.045	875	-3255	-2380
				1140	1160	0.029	875	-3418	-2543
				1140	1460	4.648	917	-1718	-801
51.4	RIUKOJIETNA	SE0790	2000	1440	1460	0.516	1406	-1130	276
				1420	1440	0.676	1406	-1260	147
				1400	1420	0.387	1496	-1390	107
				1380	1400	0.420	1496	-1520	-24
				1360	1380	0.444	1446	-1650	-204
				1340	1360	0.428	1387	-1780	-394
				1320	1340	0.512	1375	-1910	-535
				1300	1320	0.391	1359	-2040	-681
				1280	1300	0.259	1375	-2171	-796
				1260	1280	0.189	1375	-2301	-926
				1240	1260	0.133	1375	-2431	-1056
				1220	1240	0.094	1375	-2561	-1186
				1200	1220	0.065	1375	-2691	-1316
				1180	1200	0.060	1375	-2821	-1446
				1160	1180	0.045	1375	-2951	-1576
				1140	1160	0.029	1375	-3081	-1706
				1140	1460	4.648	1411	-1723	-312
52.1	STORGLACIAEREN	SE0788	1996 COM	1720	1740	0.0068	880	2670	3550
				1700	1720	0.0412	810	1920	2730
				1680	1700	0.0688	790	1550	2340
				1660	1680	0.1032	820	1410	2230
				1640	1660	0.1484	810	1330	2140
				1620	1640	0.1508	790	830	1620
				1600	1620	0.1220	810	310	1120
				1580	1600	0.1296	870	-70	800
				1560	1580	0.0836	870	-170	700
				1540	1560	0.0936	800	-170	630
				1520	1540	0.1060	800	-60	740
				1500	1520	0.2252	950	-150	800
				1480	1500	0.1520	1140	-1240	-100

NR	GLACIER NAME	PSFG NR	YEAR SYS	ALTITUDE FROM	ALTITUDE TO	AREA KM²	BW MM	BS MM	BN/BA MM
				1460	1480	0.0856	1400	-1960	-560
				1440	1460	0.0684	1330	-1570	-240
				1420	1440	0.0724	1280	-1240	40
				1400	1420	0.1184	1650	-2260	-610
				1380	1400	0.2520	2160	-3670	-1510
				1360	1380	0.3252	2170	-3830	-1660
				1340	1360	0.2648	2360	-4360	-2000
				1320	1340	0.1524	2560	-4790	-2230
				1300	1320	0.0948	2740	-4950	-2210
				1280	1300	0.0828	2840	-5150	-2310
				1260	1280	0.0844	2930	-5470	-2540
				1240	1260	0.0632	2970	-5280	-2310
				1220	1240	0.0516	2990	-5180	-2190
				1200	1220	0.0368	3020	-5240	-2220
				1180	1200	0.0180	3030	-5010	-1980
				1160	1180	0.0072	3030	-4570	-1540
				1140	1160	0.0032	3040	-4420	-1380
				1140	1740	3.2124	1260	-1650	-390
52.2	STORGLACIAEREN	SE0788	1997 COM	1700	1720	0.053	2900	-2260	640
				1680	1700	0.062	2840	-2270	570
				1660	1680	0.088	2830	-2230	600
				1640	1660	0.129	2800	-2170	630
				1620	1640	0.162	2860	-2060	800
				1600	1620	0.134	2710	-2090	620
				1580	1600	0.142	2640	-2100	540
				1560	1580	0.101	2380	-2140	240
				1540	1560	0.103	2350	-2200	150
				1520	1540	0.108	2420	-2310	110
				1500	1520	0.228	2700	-2360	340
				1480	1500	0.149	1970	-2270	-300
				1460	1480	0.082	1430	-2350	-910
				1440	1460	0.066	1470	-2430	-960
				1420	1440	0.079	1720	-2480	-760
				1400	1420	0.118	1770	-2480	-710
				1380	1400	0.254	1560	-2420	-860
				1360	1380	0.320	1280	-2570	-1280
				1340	1360	0.271	990	-2710	-1720
				1320	1340	0.150	980	-2900	-1920
				1300	1320	0.095	1200	-3090	-1890
				1280	1300	0.081	1030	-3220	-2190
				1260	1280	0.084	900	-3460	-2560
				1240	1260	0.064	1180	-3450	-2280
				1220	1240	0.053	1040	-3280	-2240
				1200	1220	0.036	1150	-3260	-2110
				1180	1200	0.017	1560	-3250	-1690
				1160	1180	0.008	2030	-3220	-1190
				1140	1160	0.003	2510	-3200	-690
				1140	1720	3.240	1870	-2500	-630
52.3	STORGLACIAEREN	SE0788	1998	1700	1720	0.053	2740	-1530	1210
				1680	1700	0.062	2650	-1550	1090
				1660	1680	0.088	2710	-1530	1180
				1640	1660	0.129	2670	-1500	1180
				1620	1640	0.162	2480	-1430	1050
				1600	1620	0.134	2180	-1440	730

NR	GLACIER NAME	PSFG NR	YEAR	SYS	ALTITUDE FROM	ALTITUDE TO	AREA KM²	BW MM	BS MM	BN/BA MM
					1580	1600	0.142	1930	-1460	470
					1560	1580	0.101	1710	-1520	190
					1540	1560	0.103	1740	-1580	170
					1520	1540	0.108	1830	-1620	210
					1500	1520	0.228	1740	-1560	180
					1480	1500	0.149	1060	-1520	-460
					1460	1480	0.082	900	-1630	-730
					1440	1460	0.066	1070	-1720	-650
					1420	1440	0.079	1210	-1820	-610
					1400	1420	0.118	1070	-1870	-800
					1380	1400	0.254	800	-1970	-1170
					1360	1380	0.320	730	-2020	-1280
					1340	1360	0.271	640	-2100	-1460
					1320	1340	0.150	620	-2220	-1610
					1300	1320	0.095	820	-2450	-1630
					1280	1300	0.081	700	-2490	-1790
					1260	1280	0.084	510	-2510	-2000
					1240	1260	0.064	720	-2580	-1860
					1220	1240	0.053	800	-2860	-2060
					1200	1220	0.036	860	-3230	-2370
					1180	1200	0.017	1040	-3600	-2570
					1160	1180	0.008	1230	-3820	-2580
					1140	1160	0.003	1370	-3820	-2450
					1140	1720	3.240	1350	-1870	-520
52.4	STORGLACIAEREN	SE0788	1999		1700	1720	0.053	2820	-1020	1800
					1680	1700	0.062	2680	-570	2110
					1660	1680	0.088	2660	-520	2140
					1640	1660	0.129	2530	-470	2060
					1620	1640	0.162	2260	-460	1790
					1600	1620	0.134	1890	-610	1280
					1580	1600	0.142	1680	-770	910
					1560	1580	0.101	1380	-920	470
					1540	1560	0.103	1370	-1010	360
					1520	1540	0.108	1530	-1020	510
					1500	1520	0.228	1710	-1010	690
					1480	1500	0.149	1090	-1180	-90
					1460	1480	0.082	930	-1220	-280
					1440	1460	0.066	1000	-1260	-270
					1420	1440	0.079	1250	-1440	-190
					1400	1420	0.118	1150	-1640	-480
					1380	1400	0.254	880	-1830	-950
					1360	1380	0.320	850	-1870	-1020
					1340	1360	0.271	720	-1960	-1240
					1320	1340	0.150	750	-2140	-1380
					1300	1320	0.095	1100	-2450	-1350
					1280	1300	0.081	980	-2650	-1670
					1260	1280	0.084	670	-2880	-2210
					1240	1260	0.064	930	-3180	-2250
					1220	1240	0.053	890	-3380	-2490
					1200	1220	0.036	910	-3490	-2580
					1180	1200	0.017	1050	-3610	-2560
					1160	1180	0.008	1100	-3650	-2560
					1140	1160	0.003	1150	-3640	-2480
					1140	1700	3.240	1330	-1510	-180

NR	GLACIER NAME	PSFG NR	YEAR	SYS	ALTITUDE FROM	TO	AREA KM²	BW MM	BS MM	BN/BA MM
52.5	STORGLACIAEREN	SE0788	2000		1700	1720	0.026	2954	-322	2632
					1680	1700	0.055	2968	-355	2613
					1660	1680	0.094	3168	-392	2776
					1640	1660	0.149	3264	-434	2830
					1620	1640	0.151	2990	-493	2497
					1600	1620	0.118	2695	-551	2144
					1580	1600	0.125	2578	-609	1969
					1560	1580	0.079	2294	-651	1644
					1540	1560	0.094	2229	-695	1534
					1520	1540	0.104	2224	-728	1496
					1500	1520	0.227	2224	-793	1431
					1480	1500	0.149	1514	-842	672
					1460	1480	0.085	1527	-882	645
					1440	1460	0.069	1508	-916	592
					1420	1440	0.071	1318	-929	389
					1400	1420	0.120	1049	-1052	-3
					1380	1400	0.249	968	-1125	-158
					1360	1380	0.321	865	-1360	-495
					1340	1360	0.266	642	-1764	-1122
					1320	1340	0.150	585	-1526	-941
					1300	1320	0.093	1103	-1404	-301
					1280	1300	0.080	1021	-1392	-371
					1260	1280	0.084	447	-1597	-1150
					1240	1260	0.062	733	-1714	-982
					1220	1240	0.049	811	-1775	-963
					1200	1220	0.034	746	-1791	-1045
					1180	1200	0.016	937	-1767	-830
					1160	1180	0.007	1374	-1752	-378
					1140	1160	0	1595	-1670	-75
					1140	1720	3.128	1620	-1040	576
	SWITZERLAND									
53.1	BASODINO	CH0104	1993	FXD	3000	3100	0.48			1280
					2900	3000	0.56			900
					2800	2900	0.55			150
					2700	2800	0.47			-1450
					2600	2700	0.31			-2300
					2600	3100	2.37			-80
53.2	BASODINO	CH0104	1994	FXD	3000	3100	0.48			1540
					2900	3000	0.56			1250
					2800	2900	0.55			400
					2700	2800	0.47			-400
					2600	2700	0.31			-1350
					2600	3100	2.37			440
53.3	BASODINO	CH0104	1995	FXD	3000	3100	0.48			1500
					2900	3000	0.56			1500
					2800	2900	0.55			1000
					2700	2800	0.47			-600
					2600	2700	0.31			-1200
					2600	3100	2.37			610
53.4	BASODINO	CH0104	1996	FXD	3000	3100	0.48			1050
					2900	3000	0.56			900

NR	GLACIER NAME	PSFG NR	YEAR	SYS	ALTITUDE FROM	ALTITUDE TO	AREA KM²	BW MM	BS MM	BN/BA MM
					2800	2900	0.55			200
					2700	2800	0.47			-550
					2600	2700	0.31			-1500
					2600	3100	2.37			170
53.5	BASODINO	CH0104	1997	FXD	3000	3100	0.48			750
					2900	3000	0.56			600
					2800	2900	0.55			-100
					2700	2800	0.47			-1100
					2600	2700	0.31			-2000
					2600	3100	2.37			-210
53.6	BASODINO	CH0104	1998	FXD	3000	3100	0.48			-550
					2900	3000	0.56			-650
					2800	2900	0.55			-1050
					2700	2800	0.47			-1400
					2600	2700	0.31			-2200
					2600	3100	2.37			-1070
53.7	BASODINO	CH0104	1999	FXD	3000	3100	0.48			0
					2900	3000	0.56			-100
					2800	2900	0.55			-180
					2700	2800	0.47			-720
					2600	2700	0.31			-1800
					2600	3100	2.37			-440
53.8	BASODINO	CH0104	2000	FXD	3000	3100	0.48			500
					2900	3000	0.56			-100
					2800	2900	0.55			-700
					2700	2800	0.47			-1800
					2600	2700	0.31			-2600
					2600	3100	2.37			-780
54.1	GRIES	CH0003	1996	FXD	3300	3400	0.010			890
					3200	3300	0.206			780
					3100	3200	0.692			670
					3000	3100	1.600			510
					2900	3000	0.994			240
					2800	2900	0.658			-140
					2700	2800	0.457			-630
					2600	2700	0.619			-1220
					2500	2600	0.805			-1920
					2400	2500	0.153			-2740
					2400	3400	6.194			-230
54.2	GRIES	CH0003	1997	FXD	3300	3400	0.010			860
					3200	3300	0.206			750
					3100	3200	0.692			630
					3000	3100	1.600			470
					2900	3000	0.994			200
					2800	2900	0.658			-180
					2700	2800	0.457			-670
					2600	2700	0.619			-1260
					2500	2600	0.805			-1970
					2400	2500	0.153			-2790
					2400	3400	6.194			-270

NR	GLACIER NAME	PSFG NR	YEAR	SYS	ALTITUDE FROM	TO	AREA KM²	BW MM	BS MM	BN/BA MM
54.3	GRIES	CH0003	1998	FXD	3300	3400	0.010			-380
					3200	3300	0.206			-530
					3100	3200	0.692			-680
					3000	3100	1.600			-840
					2900	3000	0.994			-1100
					2800	2900	0.658			-1500
					2700	2800	0.457			-2060
					2600	2700	0.619			-2770
					2500	2600	0.805			-3630
					2400	2500	0.153			-4640
					2400	3400	6.194			-1660
54.4	GRIES	CH0003	1999	FXD	3300	3400	0.010			570
					3200	3300	0.206			450
					3100	3200	0.692			330
					3000	3100	1.600			170
					2900	3000	0.994			-90
					2800	2900	0.658			-480
					2700	2800	0.457			-980
					2600	2700	0.619			-1610
					2500	2600	0.805			-2350
					2400	2500	0.153			-3210
					2400	3400	6.194			-580
54.5	GRIES	CH0003	2000	FXD	3300	3400	0.010			2416
					3200	3300	0.206			1708
					3100	3200	0.692			1000
					3000	3100	1.600			292
					2900	3000	0.994			-416
					2800	2900	0.658			-1124
					2700	2800	0.457			-1832
					2600	2700	0.619			-2540
					2500	2600	0.805			-3248
					2400	2500	0.153			-3956
					2400	3400	6.194			-847
55.1	SILVRETTA	CH0090	1996	FXD	3000	3100	0.178			890
					2900	3000	0.596			640
					2800	2900	0.623			380
					2700	2800	0.770			-20
					2600	2700	0.451			-660
					2500	2600	0.370			-1550
					2400	2500	0.021			-2690
					2400	3100	3.009			-70
55.2	SILVRETTA	CH0090	1997	FXD	3000	3100	0.178			1410
					2900	3000	0.596			1180
					2800	2900	0.623			940
					2700	2800	0.770			580
					2600	2700	0.451			-10
					2500	2600	0.370			-820
					2400	2500	0.021			-1870
					2400	3100	3.009			540
55.3	SILVRETTA	CH0090	1998	FXD	3000	3100	0.178			-390
					2900	3000	0.596			-670

NR	GLACIER NAME	PSFG NR	YEAR	SYS	ALTITUDE FROM	TO	AREA KM²	BW MM	BS MM	BN/BA MM
					2800	2900	0.623			-990
					2700	2800	0.770			-1490
					2600	2700	0.451			-2280
					2500	2600	0.370			-3360
					2400	2500	0.021			-4720
					2400	3100	3.009			-1530
55.4	SILVRETTA	CH0090	1999	FXD	3000	3100	0.178			1390
					2900	3000	0.596			1160
					2800	2900	0.623			920
					2700	2800	0.770			560
					2600	2700	0.451			-30
					2500	2600	0.370			-850
					2400	2500	0.021			-1900
					2400	3100	3.009			520
55.5	SILVRETTA	CH0090	2000	FXD	3000	3100	0.178			1852
					2900	3000	0.596			1232
					2800	2900	0.623			613
					2700	2800	0.770			-7
					2600	2700	0.451			-626
					2500	2600	0.370			-1246
					2400	2500	0.021			-1865
					2400	3100	3.009			218

Notes

Notes

Notes

WORLD GLACIER MONITORING SERVICE

CHANGES IN AREA, VOLUME AND THICKNESS

TABLE D

NR	Record number
GLACIER NAME	15 alphabetic or numeric digits
PERIOD FROM TO	Period in which the changes take place
ALTITUDE	Altitude interval in metres above sea level
AREA MEAN	Mean area of altitude interval for period of change (thousand square metres)
AREA CHANGE	Change in area of altitude interval for period of change (thousand square metres)
VOLUME CHANGE	Change in volume of altitude interval for period of change (thousand cubic metres)
THICK CHANGE	Change in thickness of altitude interval for period of change (millimetres)

NR	GLACIER NAME	PERIOD FROM	PERIOD TO	ALTITUDE FROM	ALTITUDE TO	AREA MEAN	AREA CHANGE	VOLUME CHANGE	THICKNESS CHANGE
	<u>ARGENTINA</u>								
1.1	MARTIAL	1943	1970	1100	1170	140	-44		
	AR0131			1000	1100	263	-28		
				900	1000	230	-41		
				800	900	168	-120		
				780	800	23	-33		
				780	1170	825	-267		
2.1	MARTIAL ESTE	1943	1970	1100	1170	19	-1		
	AR			1000	1100	69	0		
				900	1000	42	-13		
				850	900	4	-6		
				850	1170	134	-19		
2.2	MARTIAL ESTE	1970	1984	1100	1170	19	-1		
	AR			1000	1100	67	-3		
				900	1000	26	-20		
				870	900	1	-1		
				870	1170	112	-25		
2.3	MARTIAL ESTE	1984	1998	1100	1170	18	0		
	AR			1000	1100	65	-1		
				950	1000	14	-4		
				950	1170	97	-5		
	<u>AUSTRIA</u>								
3.1	GEPATSCH F.	1990	1997	3500	3600	7	8	25	4123
	AT0202			3400	3500	356	-7	191	287
				3300	3400	1658	-17	727	339
				3200	3300	2769	-116	-5185	-1830
				3100	3200	3701	10	-8497	-2282
				3000	3100	3211	-107	-7898	-2435
				2900	3000	2861	-17	-13578	-4700
				2800	2900	1267	-18	-8339	-6560
				2700	2800	456	-33	-4721	-10215
				2600	2700	193	-41	-3338	-17113
				2500	2600	276	-1	-3612	-12637
				2400	2500	223	-14	-2783	-11906
				2300	2400	208	-47	-3448	-16175
				2200	2300	245	-17	-2740	-10716
				2100	2200	126	-17	-3051	-24243
				2000	2100	5	-2	-157	-25490
				2000	3600	17563	-435	-66404	-3668
4.1	GRUENAU F.	1989	1997	3400	3500	1	0		
	AT0315			3300	3400	88	-1		
				3200	3300	113	-4		
				3100	3200	166	-30	288	1834
				3000	3100	429	-14	-221	-460
				2900	3000	325	-12	-661	-1984
				2800	2900	189	-19	-960	-4962
				2700	2800	149	-31	-905	-5799
				2600	2700	212	-44	-1972	-9130
				2500	2600	110	-1	-1599	-14577

NR	GLACIER NAME	PERIOD FROM TO	ALTITUDE FROM	TO	AREA MEAN	AREA CHANGE	VOLUME CHANGE	THICKNESS CHANGE
			2400	2500	19	-5	-343	-17311
			2300	2400	3	-3	-39	-15977
			2300	3500	1804	-161	-6413	-3555
5.1	HINTEREIS FERNER	1991 1997	3700	3800	1	2	0	0
	AT0209		3600	3700	54	-3	0	0
			3500	3600	46	13	0	0
			3400	3500	213	-1	-1157	-6039
			3300	3400	674	29	-762	-1327
			3200	3300	925	13	901	1049
			3100	3200	1406	-12	-2177	-1428
			3000	3100	1351	2	-636	-384
			2900	3000	1137	-60	-1195	-897
			2800	2900	850	-51	-3348	-3788
			2700	2800	898	-55	-5916	-6479
			2600	2700	631	-37	-8819	-14221
			2500	2600	298	-5	-4683	-15528
			2400	2500	130	-1	-2433	-17775
			2300	2400	0	0	-10	-12774
			2300	3800	8616	-167	-30234	-3509
6.1	HORN K.(ZILLER)	1989 1996	3200	3250	1	-1	4	2848
	AT0402		3150	3200	13	-2	-53	-9927
			3100	3150	91	-18	535	3348
			3050	3100	171	-23	-805	-5642
			3000	3050	228	-27	-1354	-6434
			2950	3000	298	-26	-2149	-6384
			2900	2950	349	-50	-2349	-6169
			2850	2900	355	-16	-3147	-8595
			2800	2850	345	-14	-2765	-7876
			2750	2800	343	-8	-3043	-8701
			2700	2750	294	-44	-2759	-9122
			2650	2700	279	-72	-3448	-12048
			2600	2650	212	-30	-2784	-12395
			2550	2600	91	-29	-1402	-14407
			2500	2550	106	-30	-1719	-16086
			2450	2500	129	1	-1709	-13080
			2400	2450	101	3	-1454	-14323
			2350	2400	42	-9	-964	-23490
			2300	2350	38	-9	-988	-24193
			2250	2300	52	-13	-1153	-21427
			2200	2250	43	1	-968	-21046
			2150	2200	24	0	-567	-23429
			2100	2150	20	-3	-288	-13039
			2050	2100	2	-1	-49	-13144
			2050	3250	3626	-418	-35378	-9459
7.1	SCHLEGEIS K.	1989 1999	3400	3500	12	-2	-117	-8585
	AT0405		3300	3400	40	-8	-247	-6217
			3200	3300	113	-19	-871	-7411
			3100	3200	205	-38	-1508	-6582
			3000	3100	565	-119	-3466	-5543
			2900	3000	976	-89	-5836	-5909
			2800	2900	1114	-86	-9337	-8242
			2700	2800	858	-125	-11041	-12084

NR	GLACIER NAME	PERIOD FROM	TO	ALTITUDE FROM	TO	AREA MEAN	AREA CHANGE	VOLUME CHANGE	THICKNESS CHANGE
				2600	2700	665	-128	-9443	-13524
				2500	2600	355	-131	-6387	-15767
				2400	2500	84	-145	-1947	-20915
				2300	2400	13	-26	-153	0
				2300	3500	5000	-915	-50352	-9163
8.1	SCHWARZENSTEIN	1989	1999	3300	3400	20	-2	139	4904
	AT0403			3200	3300	84	-2	30	81
				3100	3200	460	-40	-1133	-2376
				3000	3100	670	-52	-3671	-5404
				2900	3000	935	-35	-5200	-5493
				2800	2900	885	-42	-7057	-7847
				2700	2800	686	-89	-6230	-8927
				2600	2700	353	-115	-5553	-15018
				2500	2600	157	-102	-3937	-18930
				2400	2500	97	-46	-2452	-23604
				2300	2400	41	-18	-1560	-34663
				2200	2300	10	-19	-396	0
				2200	3400	4399	-562	-37019	-7489
9.1	SULZENAU F.	1989	1997	3500	3600	0	0		
	AT0314A			3400	3500	69	-7		
				3300	3400	352	-27		
				3200	3300	699	-32		
				3100	3200	839	-17	-3236	-3856
				3000	3100	654	26	-2894	-4442
				2900	3000	524	-11	-1673	-3211
				2800	2900	392	-30	-1873	-4660
				2700	2800	395	-27	-2579	-6462
				2600	2700	295	-44	-3426	-11716
				2500	2600	345	-24	-6434	-18369
				2400	2500	22	-35	-578	-25250
				2300	2400	1	-1	-23	0
				2300	3600	4587	-229	-22713	-4951
10.1	VERNAGT FERNER	1990	1999	3600	3650	2	0	-1	-545
	AT0211			3550	3600	7	0	-4	-509
				3500	3550	15	-1	-30	-2163
				3450	3500	151	-23	-388	-2703
				3400	3450	205	-4	-548	-2922
				3350	3400	247	7	-395	-1744
				3300	3350	423	-38	-1102	-2583
				3250	3300	907	-69	-3091	-3403
				3200	3250	994	-36	-4788	-4827
				3150	3200	1216	-83	-7173	-5921
				3100	3150	1276	-2	-8803	-6917
				3050	3100	1140	-34	-8482	-7441
				3000	3050	971	-2	-8979	-9309
				2950	3000	626	-64	-7607	-12188
				2900	2950	414	18	-6923	-16382
				2850	2900	200	-45	-4273	-20922
				2800	2850	89	-2	-2341	-25770
				2750	2800	20	-8	-681	-28870
				2700	2750	0	0	-1	0
				2700	3650	8903	-385	-65611	-7217

NR	GLACIER NAME	PERIOD FROM	PERIOD TO	ALTITUDE FROM	ALTITUDE TO	AREA MEAN	AREA CHANGE	VOLUME CHANGE	THICKNESS CHANGE
11.1	WAXEGG K.	1989	2000	3300	3400	1	-1	0	0
	AT0401			3200	3300	131	-29	-350	-2670
				3100	3200	278	-26	-845	-3035
				3000	3100	416	-30	-1415	-3404
				2900	3000	553	-54	-2460	-4447
				2800	2900	643	-60	-3715	-5779
				2700	2800	580	-98	-5245	-9049
				2600	2700	520	-136	-6310	-12128
				2500	2600	297	-103	-5820	-19586
				2400	2500	128	-141	-4305	-33765
				2300	2400	60	-118	-2520	-42070
				2200	2300	16	-32	-684	-42466
				2200	3400	3623	-828	-33669	-9293
	BOLIVIA								
12.1	CHACALTAYA	1995	1996	5275	5360	20		-39.145	-2007
	BO5180			5250	5275	9		-17.394	-2007
				5225	5250	16		-21.721	-1341
				5200	5225	13		-23.17	-1760
				5175	5200	12		-26.121	-2205
				5150	5175	9		-19.6	-2268
				5125	5150	4		-8.406	-2025
				5125	5360	83		-155.557	-1898
12.2	CHACALTAYA	1996	1997	5275	5360	20	1	-8.502	-420
	BO5180			5250	5275	10	2	-5.584	-577
				5225	5250	17	1	-8.643	-519
				5200	5225	14	1	-11.534	-852
				5175	5200	12	0	-12.641	-1047
				5150	5175	9	0	-6.034	-699
				5125	5150	3	-2	-2.366	-699
				5125	5360	85	3	-55.304	-657
12.3	CHACALTAYA	1997	1998	5275	5360	17	-8	-52.524	-3051
	BO5180			5250	5275	8	-5	-26.163	-3285
				5225	5250	16	-2	-61.514	-3802
				5200	5225	13	-2	-50.983	-3939
				5175	5200	11	-2	-48.314	-4295
				5150	5175	8	-2	-25.952	-3312
				5130	5150	2	-2	-6.075	-3312
				5130	5360	75	-23	-271.525	-3607
12.4	CHACALTAYA	1998	1999	5350	5360	1	0	-0.95	-1341
	BO5180			5325	5350	3	-1	-4.634	-1341
				5300	5325	5	-1	-6.37	-1341
				5275	5300	3	-1	-4.447	-1341
				5250	5275	5	0	-10.709	-2088
				5225	5250	14	-2	-24.592	-1733
				5200	5225	11	-1	-22.886	-2031
				5175	5200	10	-1	-24.094	-2471
				5150	5175	7	-1	-17.848	-2646
				5140	5150	1	0	-2.869	-2646
				5140	5360	60	-8	-119.399	-1984
12.5	CHACALTAYA	1999	2000	5350	5360	0	0	-0.326	-693
	BO5180			5325	5350	3	0	-2.193	-693

NR	GLACIER NAME	PERIOD FROM	PERIOD TO	ALTITUDE FROM	ALTITUDE TO	AREA MEAN	AREA CHANGE	VOLUME CHANGE	THICKNESS CHANGE
				5300	5325	4	-1	-1.873	-482
				5275	5300	2	0	-1.426	-482
				5250	5275	5	-1	-2.22	-482
				5225	5250	12	-2	-8.988	-750
				5200	5225	11	0	-10.964	-1019
				5175	5200	9	-1	-9.25	-1029
				5150	5175	6	0	-7.831	-1253
				5140	5150	1	0	-1.419	-1325
				5140	5360	53	-5	-46.49	-862
	C.I.S.								
13.1	DJANKUAT	1992	1996	3600	3990	169	-36	-167	-990
	SU3010			3500	3600	477	-190	-286	-600
				3400	3500	346	5	-436	-1260
				3300	3400	358	-14	-648	-1810
				3200	3300	425	12	-378	-889
				3100	3200	359	-2	-635	-1769
				3000	3100	287	-3	-524	-1826
				2900	3000	279	-15	-287	-1030
				2800	2900	183	5	-280	-1528
				2700	2800	97	-5	-152	-1570
				2700	3990	2980	-243	-3793	-1273
13.2	DJANKUAT	1996	1998	3600	3990	151		-264	-1750
	SU3010			3500	3600	382		-257	-672
				3400	3500	348		-727	-2090
				3300	3400	351		-807	-2300
				3200	3300	431		-688	-1596
				3100	3200	358		-505	-1411
				3000	3100	285		-508	-1782
				2900	3000	271		-401	-1480
				2800	2900	185		-562	-3037
				2700	2800	95		-288	-3030
				2700	3990	2857		-5007	-1753
13.3	DJANKUAT	1998	1999	3600	3800	99	-104	-124	-1260
	SU3010			3500	3600	370	-23	-218	-590
				3400	3500	347	-2	-45	-130
				3300	3400	353	4	-71	-200
				3200	3300	435	8	-157	-361
				3100	3200	358	1	-127	-355
				3000	3100	283	-3	-228	-804
				2900	3000	274	6	-400	-1461
				2800	2900	186	2	-352	-1890
				2700	2800	89	-9	-141	-1580
				2700	3800	2794	-120	-1863	-667
14.1	FEDTSCHENKO	1928	1958	4600	4700			-52200	-6150
	SU			4500	4600			-3900	-330
				4400	4500			-15300	-1650
				4300	4400			40800	3870
				4200	4300			20100	2490
				4100	4200			42000	7380
				4000	4100			63900	9570
				3900	4000			-6600	-870

NR	GLACIER NAME	PERIOD FROM	PERIOD TO	ALTITUDE FROM	ALTITUDE TO	AREA MEAN	AREA CHANGE	VOLUME CHANGE	THICKNESS CHANGE
				3800	3900			-9100	-1140
				3700	3800			-36600	-4830
				3600	3700			-38700	-6450
				3500	3600			-33900	-7860
				3400	3500			-50100	-5850
				3300	3400			-48100	-7710
				3200	3300			-35400	-6450
				3100	3200			-29700	-8070
				3000	3100			-28200	-9420
				3000	4700			-221000	
14.2	FEDTSCHENKO SU	1958	1979	4600	4700			-10100	-13210
				4500	4600			-140100	-12520
				4400	4500			-115100	-10520
				4300	4400			-46600	-4240
				4200	4300			-52100	-6620
				4100	4200			-40500	-5990
				4000	4100			8200	1320
				3900	4000			22700	2860
				3800	3900			89700	11510
				3700	3800			-26000	-3800
				3600	3700			-50400	-8210
				3500	3600			-61500	-15120
				3400	3500			-124300	-18230
				3300	3400			-80400	-8570
				3200	3300			51700	10330
				3100	3200			36700	8820
				3000	3100			68700	23960
				3000	4700			-469400	
15.1	TS.TUYUKSUYSKIY SU5075	1995	1996	3800	3820	116	-1	-45	-390
				3780	3800	149	-1	-49	-330
				3760	3780	183	-1	-59	-320
				3740	3760	198	-2	-75	-380
				3720	3740	164	-2	-80	-490
				3700	3720	136	-2	-61	-450
				3680	3700	71	-2	-25	-350
				3660	3680	49	-2	-23	-480
				3640	3660	52	-2	-31	-590
				3620	3640	46	-2	-29	-630
				3600	3620	68	-2	-50	-730
				3580	3600	53	-2	-46	-870
				3560	3580	97	-2	-101	-1040
				3540	3560	53	-3	-70	-1320
				3520	3540	51	-3	-74	-1460
				3500	3520	44	-2	-75	-1700
				3480	3500	37	-1	-73	-1980
				3480	3820	1567	-32	-966	-700
15.2	TS.TUYUKSUYSKIY SU5075	1996	1997	3800	3820	115	-1	-153	-1330
				3780	3800	148	-1	-200	-1350
				3760	3780	182	-1	-264	-1450
				3740	3760	197	-1	-331	-1680
				3720	3740	163	-1	-298	-1830
				3700	3720	135	-1	-255	-1890
				3680	3700	70	-1	-130	-1850

NR	GLACIER NAME	PERIOD FROM	PERIOD TO	ALTITUDE FROM	ALTITUDE TO	AREA MEAN	AREA CHANGE	VOLUME CHANGE	THICKNESS CHANGE
				3660	3680	48	-1	-90	-1880
				3640	3660	50	-2	-98	-1960
				3620	3640	44	-2	-85	-1930
				3600	3620	66	-2	-141	-2130
				3580	3600	51	-2	-114	-2240
				3560	3580	95	-2	-226	-2380
				3540	3560	51	-2	-129	-2530
				3520	3540	49	-2	-137	-2790
				3500	3520	41	-3	-125	-3050
				3480	3500	35	-2	-117	-3340
				3480	3820	1540	-27	-2893	-2020
15.3	TS.TUYUKSUYSKIY	1997	1998	3800	3820	115		-42	-370
	SU5075			3780	3800	148		-43	-290
				3760	3780	181	-1	-60	-330
				3740	3760	196	-1	-71	-360
				3720	3740	162	-1	-66	-410
				3700	3720	134	-1	-74	-550
				3680	3700	69	-1	-44	-640
				3660	3680	47	-1	-38	-800
				3640	3660	49	-1	-50	-1030
				3620	3640	43	-1	-43	-990
				3600	3620	65	-1	-72	-1100
				3580	3600	50	-1	-61	-1220
				3560	3580	94	-1	-119	-1270
				3540	3560	50	-1	-68	-1360
				3520	3540	48	-1	-74	-1540
				3500	3520	39	-2	-72	-1840
				3480	3500	33	-2	-77	-2340
				3480	3820	1523	-17	-1074	-830
15.4	TS.TUYUKSUYSKIY	1998	1999	3800	3820	115		-1	-10
	SU5075			3780	3800	148		6	40
				3760	3780	181		0	0
				3740	3760	196		-10	-50
				3720	3740	162		-16	-100
				3700	3720	134		-24	-180
				3680	3700	69		-14	-200
				3660	3680	47		-17	-360
				3640	3660	49		-30	-620
				3620	3640	43		-24	-550
				3600	3620	65		-42	-640
				3580	3600	49	-1	-38	-770
				3560	3580	93	-1	-77	-830
				3540	3560	49	-1	-47	-970
				3520	3540	47	-1	-52	-1110
				3500	3520	38	-1	-49	-1280
				3480	3500	31	-2	-52	-1680
				3480	3820	1516	-7	-487	-390
15.5	TS.TUYUKSUYSKIY	1999	2000	3800	3820	116	1	-14	-120
	SU5075			3780	3800	149	1	7	50
				3760	3780	182	1	11	60
				3740	3760	197	1	0	0
				3720	3740	163	1	-7	-40
				3700	3720	134		-11	-80

NR	GLACIER NAME	PERIOD FROM	PERIOD TO	ALTITUDE FROM	ALTITUDE TO	AREA MEAN	AREA CHANGE	VOLUME CHANGE	THICKNESS CHANGE
				3680	3700	68	-1	-6	-130
				3660	3680	46	-1	-17	-360
				3640	3660	48	-1	-25	-520
				3620	3640	43		-18	-430
				3600	3620	64	-1	-33	-510
				3580	3600	48	-1	-38	-800
				3560	3580	92	-1	-103	-1120
				3540	3560	48	-1	-59	-1230
				3520	3540	46	-1	-62	-1350
				3500	3520	37	-1	-58	-1570
				3480	3500	29	-2	-50	-1730
				3480	3820	1490	-6	-483	-380
	GERMANY								
16.1	HOELLENTAL	1989	1997	2560	2580	0	0	-2	-5101
	DE0003			2540	2560	3	-1	-21	-7305
				2520	2540	3	0	-27	-7472
				2500	2520	4	0	-20	-5026
				2480	2500	7	-2	-33	-4446
				2460	2480	10	-1	-52	-5232
				2440	2460	13	-3	-69	-5564
				2420	2440	16	-2	-92	-5812
				2400	2420	22	-4	-135	-5993
				2380	2400	23	-1	-172	-7636
				2360	2380	26	-4	-216	-8450
				2340	2360	29	-6	-221	-7982
				2320	2340	28	-5	-223	-8718
				2300	2320	22	1	-174	-8025
				2280	2300	23	-4	-181	-7598
				2260	2280	22	-2	-178	-8875
				2240	2260	14	-2	-137	-9345
				2220	2240	7	-3	-81	-11396
				2200	2220	5	-2	-51	-10102
				2180	2200	0	0	-4	-4495
				2180	2580	278	-40	-2087	-7579
17.1	SCHNEEFERNER N	1990	1997	2800	2820	0	0	-1	-2441
	DE0001			2780	2800	3	0	-2	-996
				2760	2780	4	-1	-8	-1900
				2740	2760	8	-2	-25	-3053
				2720	2740	11	-1	-49	-4402
				2700	2720	16	-1	-74	-4712
				2680	2700	31	0	-85	-2827
				2660	2680	46	-8	-179	-3926
				2640	2660	56	-7	-302	-5315
				2620	2640	59	0	-406	-7232
				2600	2620	35	3	-336	-9768
				2580	2600	28	3	-257	-9521
				2560	2580	40	19	-141	-4149
				2540	2560	4	2	20	1369
				2540	2820	340	9	-1846	-5705
18.1	SCHNEEFERNER S	1990	1997	2680	2700	0	0	0	0
	DE0002			2660	2680	4	-2	-23	-5591
				2640	2660	10	-3	-36	-3752
				2620	2640	15	-3	-65	-4151

NR GLACIER NAME	PERIOD FROM TO	ALTITUDE FROM	TO	AREA MEAN	AREA CHANGE	VOLUME CHANGE	THICKNESS CHANGE
		2600	2620	19	-2	-66	-3267
		2580	2600	22	-6	-69	-3103
		2560	2580	24	2	-63	-2566
		2540	2560	12	0	-23	-1756
		2520	2540	9	1	9	952
		2500	2520	0	-1	-1	0
		2500	2700	115	-15	-339	-2864
ITALY							
19.1 CARESER	1990 1997	3200	3330	187		-941	-4200
		3150	3200	270		-1584	-5270
		3100	3150	957		-5398	-5170
		3050	3100	909		-6675	-6920
		3000	3050	631		-6442	-9820
		2950	3000	364		-4493	-12110
		2900	2950	211		-2851	-14360
		2860	2900	82		-1516	-15310
		2860	3330	3610		-29898	-7750
19.2 CARESER	1997 2000	3200	3330			-660	-4720
		3150	3200			-1210	-5260
		3100	3150			-4109	-5890
		3050	3100			-6578	-6760
		3000	3050			-4705	-7710
		2950	3000			-3341	-8350
		2900	2950			-2253	-9790
		2860	2900			-1021	-11040
		2860	3330			-23875	-7080
20.1 FONTANA BIANCA	1962 1997	3360	3380	0	0	-14.12	
IT0713		3340	3360	51	-3	-108.93	
		3320	3340	15	-13	-220.77	
		3280	3300	30	-7	-434.92	
		3260	3280	34	-5	-481.97	
		3240	3260	41	-8	-540.06	
		3220	3240	53	-2	-942.51	
		3200	3220	55	-6	-549.68	
		3180	3200	50	5	-566.90	
		3160	3180	53	-1	-570.91	
		3140	3160	48	4	-546.22	
		3120	3140	47	-6	-838.02	
		3100	3120	36	4	-404.49	
		3080	3100	37	-1	-774.71	
		3060	3080	28	-3	-280.64	
		3040	3060	22	3	-394.97	
		3020	3040	23	-6	-229.11	
		3000	3020	16	4	-292.26	
		2980	3000	9	-2	-202.08	
		2960	2980	7	-3	-109.89	
		2940	2960	7	-3	-367.83	
		2920	2940	10	-8	-236.80	
		2900	2920	6	1	-122.87	
		2880	2900	8	-3	-109.02	

NR	GLACIER NAME	PERIOD FROM	PERIOD TO	ALTITUDE FROM	ALTITUDE TO	AREA MEAN	AREA CHANGE	VOLUME CHANGE	THICKNESS CHANGE
				2860	2880	3	-1	-5.88	
				2860	3380	689	-60	-9345.56	
	NEPAL								
21.1	AX010	1996	1999	5250	5360	87	-12		
	NP0005			5200	5250	173	-27		
				5150	5200	76	-7		
				5100	5150	34	-2		
				5050	5100	32	-3		
				5000	5050	37	-3		
				4949	5000	10	-6		
				4949	5360	450	-60	-1110	-2470
22.1	YALA	1982	1996	5455	5550				-300
	NP0004			5380	5455				-3600
				5320	5380				-5800
				5270	5320				-8400
				5215	5270				-11300
				5165	5215				-13000
				5130	5165				-14200
				5090	5130				-20500
				5090	5550	2500			-5740

Notes

WORLD GLACIER MONITORING SERVICE

ALPHABETIC INDEX

GLACIER NAME	15 alphabetic or numeric digits, names arranged in alphabetic order
PSFG NUMBER	5 digits identifying glacier with alphabetic prefix denoting country
WGMS ID	5 digits, identifying glacier in the WGMS-data base
DATA TABLE AND RECORD NUMBER	Table and record number where data are located

A = General information on the observed glacier
B = Variations in the position of glacier fronts: 1995–2000
BB = Variations in the position of glacier fronts: addenda from earlier years
C = Mass balance summary data: 1995–2000
CC = Mass balance summary data: addenda from earlier years
CCC = Mass balance versus altitude for selected glaciers
D = Changes in area, volume and thickness
F = Index measurements or special events – see Chapter 7

GLACIER NAME	PSFG-NR	WGMS ID	DATA TABLE AND RECORD NUMBER	
1.14.03.17	SU	2184	A.152	BB.25
10.14.03.17	SU	2188	A.153	BB.26
100.14.03.14	SU	2223	A.154	BB.27
101.14.03.14	SU	2224	A.155	BB.28
12.14.03.17	SU	2189	A.156	BB.29
134.14.03.17	SU	2158	A.157	BB.30
136.14.03.17	SU	2159	A.158	BB.31
139.14.03.17	SU	2160	A.159	BB.32
15.14.03.17	SU	2190	A.160	BB.33
152.14.03.14	SU	2225	A.161	BB.34
155.14.03.14	SU	2226	A.162	BB.35
159.14.03.14	SU	2227	A.163	BB.36
16.14.03.17	SU	2191	A.164	BB.37
160.14.03.14	SU	2228	A.165	BB.38
161.14.03.14	SU	2229	A.166	BB.39
165.14.03.14	SU	2230	A.167	BB.40
168.14.03.14	SU	2231	A.168	BB.41
169.14.03.14	SU	2232	A.169	BB.42
170.14.03.14	SU	2233	A.170	BB.43
172.14.03.14	SU	2234	A.171	BB.44
173.14.03.14	SU	2235	A.172	BB.45
174.14.03.14	SU	2236	A.173	BB.46
208.14.03.14	SU	2237	A.174	BB.47
239.14.03.17	SU	2161	A.175	BB.48
240.14.03.17	SU	2162	A.176	BB.49
241.14.03.17	SU	2163	A.177	BB.50
242.14.03.14	SU	2238	A.178	BB.51
242.14.03.17	SU	2164	A.179	BB.52
243.14.03.14	SU	2239	A.180	BB.53
254.14.03.17	SU	2168	A.181	BB.54
257.14.03.17	SU	2169	A.182	BB.55
259.14.03.17	SU	2170	A.183	BB.56
26.14.03.17	SU	2193	A.184	BB.57
260.14.03.17	SU	2171	A.185	BB.58
261.14.03.17	SU	2172	A.186	BB.59
262.14.03.17	SU	2173	A.187	BB.60
263.14.03.17	SU	2174	A.188	BB.61
264.14.03.17	SU	2175	A.189	BB.62
268.14.03.17	SU	2176	A.190	BB.63
269.14.03.17	SU	2177	A.191	BB.64
270.14.03.17	SU	2178	A.192	BB.65
271.14.03.17	SU	2179	A.193	BB.66
273.14.03.14	SU	2240	A.194	BB.67
273.14.03.17	SU	2180	A.195	BB.68

GLACIER NAME	PSFG-NR	WGMS ID	DATA TABLE AND RECORD NUMBER	
279.14.03.14	SU	2241	A.196	BB.69
280.14.03.14	SU	2242	A.197	BB.70
281.14.03.14	SU	2244	A.198	BB.71
284.14.03.14	SU	2245	A.199	BB.72
3.14.03.17	SU	2185	A.200	BB.73
30.14.03.17	SU	2194	A.201	BB.74
306.14.03.14	SU	2246	A.202	BB.75
31.14.03.14	SU	2211	A.203	BB.76
31.14.03.17	SU	2195	A.204	BB.77
314.14.03.08	SU	2101	A.205	BB.78
315.14.03.08	SU	2102	A.206	BB.79
324.14.03.08	SU	2103	A.207	BB.80
329.14.03.14	SU	2247	A.208	BB.81
331.14.03.14	SU	2248	A.209	BB.82
336.14.03.14	SU	2249	A.210	BB.83
34.14.03.17	SU	2196	A.211	BB.84
36.14.03.17	SU	2197	A.212	BB.85
375.14.03.15	SU	2250	A.213	BB.86
38.14.03.14	SU	2212	A.214	BB.87
385.14.03.15	SU	2253	A.215	BB.88
388.14.03.15	SU	2254	A.216	BB.89
39.14.03.14	SU	2213	A.217	BB.90
390.14.03.15	SU	2255	A.218	BB.91
394.14.03.15	SU	2256	A.219	BB.92
40.14.03.17	SU	2198	A.220	BB.93
41.14.03.17	SU	2199	A.221	BB.94
42.14.03.17	SU	2182	A.222	BB.95
429.14.03.15	SU	2257	A.223	BB.96
434.14.03.15	SU	2258	A.224	BB.97
44.14.03.14	SU	2214	A.225	BB.98
446.14.03.13	SU	2203	A.226	BB.99
447.14.03.08	SU	2105	A.227	BB.100
448.14.03.08	SU	2106	A.228	BB.101
449.14.03.08	SU	2107	A.229	BB.102
449.14.03.13	SU	2204	A.230	BB.103
453.14.03.13	SU	2205	A.231	BB.104
46.14.03.14	SU	2215	A.232	BB.105
464.14.03.08	SU	2108	A.233	BB.106
469.14.03.08	SU	2109	A.234	BB.107
47.14.03.14	SU	2216	A.235	BB.108
471.14.03.08	SU	2110	A.236	BB.109
473.14.03.08	SU	2111	A.237	BB.110
474.14.03.08	SU	2112	A.238	BB.111
499.14.03.13	SU	2206	A.239	BB.112

GLACIER NAME	PSFG-NR	WGMS ID	DATA TABLE AND RECORD NUMBER	
5.14.03.17	SU	2186	A.240	BB.113
503.14.03.08	SU	2113	A.241	BB.114
506.14.03.08	SU	2114	A.242	BB.115
508.14.03.08	SU	2115	A.243	BB.116
509.14.03.08	SU	2116	A.244	BB.117
512.14.03.08	SU	2117	A.245	BB.118
514.14.03.08	SU	2118	A.246	BB.119
519.14.03.08	SU	2119	A.247	BB.120
52.14.03.14	SU	2217	A.248	BB.121
520.14.03.08	SU	2120	A.249	BB.122
531.14.03.08	SU	2121	A.250	BB.123
532.14.03.08	SU	2122	A.251	BB.124
538.14.03.08	SU	2123	A.252	BB.125
54.14.03.14	SU	2218	A.253	BB.126
541.14.03.08	SU	2124	A.254	BB.127
543.14.03.08	SU	2125	A.255	BB.128
544.14.03.08	SU	2126	A.256	BB.129
549.14.03.08	SU	2127	A.257	BB.130
551.14.03.08	SU	2128	A.258	BB.131
558.14.03.08	SU	2129	A.259	BB.132
560.14.03.08	SU	2130	A.260	BB.133
572.14.03.08	SU	2132	A.261	BB.134
573.14.03.08	SU	2133	A.262	BB.135
578.14.03.08	SU	2135	A.263	BB.136
579.14.03.08	SU	2136	A.264	BB.137
580.14.03.08	SU	2137	A.265	BB.138
582.14.03.08	SU	2138	A.266	BB.139
586.14.03.08	SU	2139	A.267	BB.140
591.14.03.08	SU	2141	A.268	BB.141
593.14.03.08	SU	2143	A.269	BB.142
597.14.03.14	SU	2243	A.270	BB.143
598.14.03.14	SU	2208	A.271	BB.144
599.14.03.08	SU	2145	A.272	BB.145
600.14.03.08	SU	2146	A.273	BB.146
605.14.03.08	SU	2148	A.274	BB.147
606.14.03.08	SU	2149	A.275	BB.148
608.14.03.08	SU	2151	A.276	BB.149
612.14.03.08	SU	2152	A.277	BB.150
614.14.03.08	SU	2153	A.278	BB.151
617.14.03.08	SU	2154	A.279	BB.152
622.14.03.08	SU	2156	A.280	BB.153
623.14.03.08	SU	2157	A.281	BB.154
72.14.03.17	SU	2201	A.282	BB.155
8.14.03.17	SU	2187	A.283	BB.156

GLACIER NAME	PSFG-NR	WGMS ID	DATA TABLE AND RECORD NUMBER							
83.14.03.14	SU	2219	A.284		BB.157					
87.14.03.14	SU	2220	A.285		BB.158					
89.14.03.14	SU	2221	A.286		BB.159					
93.14.03.14	SU	2222	A.287		BB.160					
93.14.03.17	SU	2209	A.288		BB.161					
96.14.03.17	SU	2210	A.289		BB.162					
AALFOTBREEN	NO36204	317	A.577			C.55		CCC.32		
ABRAMOV	SU4101	732	A.290	B.140		C.22		CCC.16		
ADAMS	NZ8974	1613	A.508	B.312						
AEU.PIRCHLKAR	AT0229	504	A.5	B.2						
AGNELLO	IT0029	684	A.425	B.235						
AKBAYTAL	SU4036	709	A.291		BB.163					
ALFOMBRALES	CO0013	1531	A.359	B.182						
ALLALIN	CH0011	394	A.640	B.431						F
ALMER	NZ888B1	1548	A.509	B.313						
ALPEINER F.	AT0307	497	A.6	B.3						
ALPETLI(KANDER)	CH0109	439	A.641	B.432						
ALTA (VEDRETTA)	IT0730	632	A.426	B.236						
AMALIA	CL0056	1653	A.118	B.108	BB.4					
AMMERTEN	CH0111	435	A.642	B.433						
AMOLA	IT0644	638	A.427	B.237						
ANDOLLA NORD	IT0336	617	A.428	B.238						
ANDY	NZ863C1	1590	A.510	B.314						
ANTELAO INF.	IT0967	642	A.429	B.239						
ANTELAO SUP.	IT0966	643	A.430	B.240						
ANTIZANA15ALPHA	EC0001	1624	A.369	B.192	BB.193	C.32	CC.4	CCC.25		
ARGENTIERE	FR0002	354	A.370	B.193						
AROLLA (BAS)	CH0027	377	A.643	B.434						
ASHBURTON	NZ688A1	1570	A.511	B.315						
AURONA	IT0338	616	A.431	B.241						
AUSTDALSBREEN	NO37323	321	A.578	B.381		C.56		CCC.33		
AUSTRE BROEGGERBR.		NO15504	292	A.579			C.57		CCC.34	
AX010	NP0005	906	A.505	B.309	BB.194	C.53		CCC.30	D.21	
AXIUS	NZ	2283	A.512	B.316						
BACHFALLEN F.	AT0304	500	A.7	B.4						
BAERENKOPF K.	AT0702	567	A.8	B.5						
BAKCHIGIR	SU4038	711	A.292		BB.164					
BALFOUR	NZ882B1	1604	A.513	B.317						
BARBADORSO D.	IT0778	658	A.432	B.242						
BARLOW	NZ893A2	1608	A.514	B.318						
BARRIER	NZ	2281	A.515	B.319						
BASEI	IT0064	611	A.433	B.243						
BASODINO	CH0104	463	A.644	B.435		C.80	CC.5	CCC.53		
BELEULI	SU	2104	A.293		BB.165					

GLACIER NAME	PSFG-NR	WGMS ID	DATA TABLE AND RECORD NUMBER				
BELLA TOLA	CH0021	383	A.645	B.436			
BELVEDERE	IT0325	618	A.434	B.244			
BERGLAS F.	AT0308	496	A.9	B.6			
BERGSETBREEN	NO31013	2290	A.580	B.382			
BESSANESE	IT0040	1297	A.435	B.245			
BEZENGI	SU3006	703	A.294	B.141			
BIDER	CH0177	2661	A.646				F
BIELTAL F W	AT0105B	1452	A.10	B.7			
BIELTAL F.	AT0105A	481	A.11	B.8			
BIFERTEN	CH0077	422	A.647	B.437			
BIRDZHALYCHIRAN	SU3026	756	A.295	B.142			
BIS	CH0107	388	A.648	B.438			F
BITYUKTYUBE	SU3034	764	A.296	B.143			
BLANC	FR0031	351	A.371	B.194			
BLANCO CHICO	CL0074	2011	A.119	B.109	BB.5		
BLOMSTERSKARDBR	NO1930	1321	A.581	B.383			
BLUE GLACIER	US2126	210	A.762			C.83	
BLUEMLISALP	CH0064	436	A.649	B.439			
BOEDALSBREEN	NO37219	2291	A.582	B.384			
BOEVERBREEN	NO0548	2298	A.583	B.385			
BOLSHOY AZAU	SU3004	701	A.297	B.144			
BONAR	NZ863A1	1587	A.516	B.320			
BONDHUSBREEN	NO20408	318	A.584	B.386			
BOSSONS	FR0004	355	A.372	B.195			
BOTNABREEN	NO20515	2292	A.585	B.387			
BOVEYRE	CH0041	459	A.650	B.440			
BREIDAMJOK.E.B	IS1126B	270	A.380	B.199		C.35	
BREIDAMJOK.W.A	IS1125A	258	A.381	B.200			
BREIDAMJOK.W.C	IS1125C	272	A.382	B.201			
BRENEY	CH0036	368	A.651	B.441			
BRENNDALSBREEN	NO37109	2293	A.586	B.388			
BRENNKOGL K.	AT0727	528	A.12	B.9			
BRENVA	IT0219	615	A.436	B.246			F
BRESCIANA	CH0103	465	A.652	B.442			
BREWSTER	NZ868C1	1597	A.517	B.321			
BRIGSDALSBREEN	NO37110	314	A.587	B.389			
BROGGI	PE0003	220	A.615	B.408			
BRUARJOKULL	IS2400	265	A.383			C.36	
BRUNEGG	CH0020	384	A.653	B.443			
BRUNNI	CH0072	427	A.654	B.444			
BUARBREEN	NO21307	315	A.588	B.390			
BURTON	NZ888A1	1606	A.518	B.322			
BUZ-CHUBEK	SU	2200	A.298		BB.166		
CALDERAS	CH0095	403	A.655	B.445			

GLACIER NAME	PSFG-NR	WGMS ID	DATA TABLE AND RECORD NUMBER							
CAMBRENA	CH0099	399	A.656	B.446						
CAMERON	NZ685B2	1565	A.519	B.323						
CARESER	IT0701	635	A.437			C.45		CCC.26	D.19	
CASA PANGUE	CL0073	2010	A.120	B.110	BB.6					
CASPOGGIO	IT0435	628	A.438	B.247						
CAVAGNOLI	CH0119	464	A.657	B.447						
CENTRAL	CO0032	2262	A.360	B.183						
CERRO BLANCO	CL0034	2013	A.121	B.111	BB.7					
CEVEDALE	IT0732	662	A.439	B.248						
CHACALTAYA	BO5180	1505	A.109	B.106	BB.3	C.10		CCC.9	D.12	
CHAKYDZHILGA	SU	2131	A.299		BB.167					
CHAVANNES	IT0204	1257	A.440	B.249						
CHEILLON	CH0029	375	A.658	B.448						
CHICO	CL0059	2015	A.122	B.112	BB.8					
CHUNGURCHATCHIR	SU3027	757	A.300	B.145						
CIARDONEY	IT0081	1264	A.441	B.250		C.46				
CIPRESES	CL0071	2008	A.123	B.113	BB.9					
CLARIDEN	CH0141	2660	A.659							F
CLASSEN	NZ711M1	1579	A.520	B.324						
COLIN CAMPBELL	NZ693C1	1571	A.521	B.325						
COLLALTO	IT0927	647	A.442	B.251						
COLUMBIA (2057)	US2057	76	A.763			C.84	CC.6			
CORBASSIERE	CH0038	366	A.660	B.449						
CORNISELLO MER.	IT0646	1151	A.443	B.252						
CORNO	CH0120	468	A.661	B.450						
CRODA ROSSA	IT0828	654	A.444	B.253						
CROSLINA	CH121	1681	A.662	B.451	BB.202					
CROW	NZ664C2	1564	A.522	B.326						
DAINTY	NZ	2287	A.523	B.327						
DAMMA	CH0070	429	A.663	B.452						
DANIELS	US2052	83	A.764			C.85	CC.7			
DART	NZ752C2	898	A.524	B.328						
DAUNKOGEL F.	AT0310A	604	A.13	B.10						
DE LOS TRES	AR	1675	A.1	B.1		C.1		CCC.1		
DEVON ICE CAP	CA0431	39	A.112			C.12		CCC.11		
DICKSON	CL0063	1660	A.124	B.114	BB.10					
DIEM F.	AT0220	513	A.14	B.11						
DISPUTE	NZ	2286	A.525	B.329						
DJANKUAT	SU3010	726	A.301	B.146		C.23		CCC.17	D.13	
DOLENT	CH	2673	A.664							F
DONALD	NZ	2284	A.526	B.330						
DONNE	NZ851B2	1585	A.527	B.331						
DORFER K.	AT0509	577	A.15	B.12						
DOSDE OR.	IT0473	625	A.445	B.254						

GLACIER NAME	PSFG-NR	WGMS ID	DATA TABLE AND RECORD NUMBER							
DOSEGU	IT0512	668	A.446	B.255						
DOUGLAS (KAR.)	NZ880B2	1601	A.528	B.332						
DUSAKASAY	SU	2147	A.302		BB.168					
DYNGJUJOKULL	IS2600	1619	A.384			C.37				
DZHAYLYAUKUMSAY	SU	2142	A.303		BB.169					
DZHELO	SU7106	1081	A.304	B.147						
EASTON	US2008	1367	A.765			C.86	CC.8			
ECHAURREN NORTE	CL0001B	1344	A.125			C.18	CC.2			
EIGER	CH0059	442	A.665	B.453						
EISKAR G.	AT1301	1632	A.16	B.13						
EL OSO	CO0010	2271	A.361	B.184						
EN DARREY	CH0030	374	A.666	B.454						
ENGABREEN	NO67011	298	A.589	B.391		C.58		CCC.35		
EVANS	NZ8972	1611	A.529	B.333						
EYJABAKKAJOKULL	IS2300	266	A.385			C.38				
FAABERGSTOELSB.	NO31015	289	A.590	B.392						
FALLJOKULL	IS1021	262	A.386	B.202						
FEDTSCHENKO	SU	2323	A.305						D.14	
FEE NORTH	CH0013	392	A.667	B.455						F
FELLARIA OCC.	IT0439	627	A.447	B.256						
FERNAU F.	AT0312	601	A.17	B.14						
FERPECLE	CH0025	379	A.668	B.456						
FIESCHER	CH0004	471	A.669	B.457						
FINDELEN	CH0016	389	A.670	B.458						
FIRNALPELI	CH0075	424	A.671	B.459	BB.203					
FITZGERALD	NZ	2278	A.530	B.334						
FJALLS.FITJAR	IS1024B	260	A.387	B.203						
FJALLSJ. BRMFJ	IS1024A	261	A.388	B.204						
FJALLSJ.G-SEL	IS1024C	259	A.389	B.205						
FLAAJ E148	IS1930C	1424	A.390	B.206						
FONTANA BIANCA	IT0713	1507	A.448			C.47		CCC.27	D.20	
FORCOLA	IT0731	663	A.449	B.257						
FORNI	IT0507	670	A.450	B.258						
FORNO	CH0102	396	A.672	B.460						
FOSS	US2053	84	A.766			C.87	CC.9			
FOX	NZ882A1	1536	A.531	B.335						
FRADUSTA	IT0950	2273	A.451	B.259						
FRANZ JOSEF	NZ888B2	899	A.532	B.336						
FREIGER F.	AT0320	595	A.18	B.15						
FREIWAND K.	AT0706	564	A.19	B.16						
FRESHFIELD	NZ	2277	A.533	B.337						
FROSNITZ K.	AT0507	579	A.20	B.17						
FURTSCHAGL K.	AT0406	585	A.21	B.18						
G30	CL0068	2005	A.126	B.115						

GLACIER NAME	PSFG-NR	WGMS ID	DATA TABLE AND RECORD NUMBER						
G32	CL0069	2006	A.127	B.116					
GAISKAR F.	AT0325	530	A.22	B.19					
GAISSBERG F.	AT0225	508	A.23	B.20					
GALERIA	CL1016	2031	A.128	B.117	BB.11				
GAMCHI	CH0061	440	A.673	B.461					
GARABASHI	SU3031	761	A.306	B.148		C.24	CCC.18		
GAULI	CH0052	449	A.674	B.462					
GCN09	CL1009	2024	A.129	B.118	BB.12				
GCN13	CL1013	2028	A.130	B.119	BB.13				
GCN22	CL1021	2036	A.131	B.120	BB.14				
GCN37	CL1036	2051	A.132	B.121	BB.15				
GCN38	CL1037	2052	A.133	B.122	BB.16				
GCN40	CL1039	2054	A.134	B.123	BB.17				
GCN41	CL1040	2055	A.135	B.124	BB.18				
GCN42	CL1041	2056	A.136	B.125	BB.19				
GEBROULAZ	FR0009	352	A.373	B.196					
GEPATSCH F.	AT0202	522	A.24	B.21				D.3	
GIETRO	CH0037	367	A.675	B.463					
GIGANTE CENTR.	IT0929	646	A.452	B.260					
GIGANTE OCC.	IT0930	645	A.453	B.261					
GIGJOKULL	IS0112	245	A.391	B.207					
GLAERNISCH	CH0080	418	A.676	B.464					
GLENMARY	NZ711F1	1550	A.534	B.338					
GLJUFURARJOKULL	IS0103	282	A.392	B.208					
GODLEY	NZ711M3	1581	A.535	B.339					
GOESSNITZ K.	AT1201	532	A.25	B.22					
GOLETTA	IT0148	683	A.454	B.262					
GORNER	CH0014	391	A.677	B.465					
GR. GOLDBERG KEES	AT0802B	1305	A.26	B.23	BB.2				
GR. MURAILLES	IT0260	622	A.455	B.263					
GR. GOSAU G.	AT1101	536	A.27	B.24					
GRAASUBREEN	NO0547	299	A.591			C.59	CCC.36		
GRAN PILASTRO	IT0893	652	A.456	B.264					
GRAND DESERT	CH0031	373	A.678	B.466					
GRAND PLAN NEVE	CH0045	455	A.679	B.467					
GREY AND MAUD	NZ711M2	1580	A.536	B.340					
GRIES	CH0003	359	A.680	B.468		C.81	CCC.54		
GRIESS (KLAUSEN)	CH0074	425	A.681	B.469					
GRIESSEN (OBWA.)	CH0076	423	A.682	B.470	BB.204				
GROSSELEND K.	AT1001	542	A.28	B.25					
GROSSER ALETSCH	CH0005	360	A.683	B.471					
GRUBEN	CH	460	A.684						F
GRUENAU F.	AT0315	599	A.29	B.26				D.4	
GUALI	CO0003	1519	A.362	B.185					

GLACIER NAME	PSFG-NR	WGMS ID	DATA TABLE AND RECORD NUMBER							
GULKANA	US0200	90	A.767			C.88				
GURGLER F.	AT0222	511	A.30	B.27						
GUSLAR F.	AT0210	490	A.31	B.28						
GUTZ	CH	2662	A.685							F
HAGAFELLSJOK.E	IS0306	255	A.393	B.209						
HAGAFELLSJOK.W	IS0204	275	A.394	B.210						
HALLSTAETTER G.	AT1102	535	A.32	B.29						
HAMAGURI YUKI	JP0001	897	A.502			C.50				
HANSBREEN	NO12419	306	A.592			C.60		CCC.37		
HANSEBREEN	NO36206	322	A.593			C.61		CCC.38		
HARBARDSBREEN	NO30704	2320	A.594			C.62				
HARDANGERJOEKULEN	NO22303	304	A.595			C.63		CCC.39		
HELLSTUGUBREEN	NO0511	300	A.596	B.393		C.64		CCC.40		
HELM	CA0855	45	A.113			C.13				
HINTEREIS FERNER	AT0209	491	A.33	B.30		C.2		CCC.2	D.5	
HOCHALM K.	AT1005	538	A.34	B.31						
HOCHJOCH F.	AT0208	492	A.35	B.32						
HOELLENTAL	DE0003	348	A.377						D.16	
HOFFELLSJ.W	IS2031	269	A.395	B.211						
HOFSJOKULL E	IS0510B	1467	A.396			C.39				
HOFSJOKULL N	IS0510A	284	A.397			C.40				
HOFSJOKULL SW	IS0510C	1468	A.398			C.41				
HOHSAND SETT.	IT0357	631	A.457	B.265						
HOOKER	NZ711H2	1576	A.537	B.341						
HORACE WALKER	NZ880B1	1600	A.538	B.342	BB.197					
HORCONES INF.	AR5006	919	A.2							F
HORN K.(SCHOB.)	AT1202	531	A.36	B.33						
HORN K.(ZILLER)	AT0402	589	A.37	B.34					D.6	
HRUTARJOKULL	IS0923	263	A.399	B.212						
HUEFI	CH0073	426	A.686	B.472						
HYLLGLACIAEREN	SE0780	344	A.622	B.414						
HYRNINGSJOKULL	IS0100	283	A.400	B.213						
ICE WORM	US2054	82	A.768			C.89	CC.10			
ICHKELSAY	SU	2140	A.307		BB.170					
INN.PIRCHLKAR	AT0228	505	A.38	B.35						
IRIK	SU3029	759	A.308	B.149						
IRIKCHAT	SU3028	758	A.309	B.150						
ISFALLSGLAC.	SE0787	333	A.623	B.415						
IVORY	NZ9011	900	A.539	B.343						F
JAMTAL F.	AT0106	480	A.39	B.36		C.3		CCC.3		
JOKULKROKUR	IS0007	242	A.401	B.214						
JOSTEFONN	NO	1676	A.597			C.65		CCC.41		
JUNCAL NORTE	CL0064	2001	A.137	B.126						
JUNCAL SUR	CL0065	2002	A.138	B.127						

GLACIER NAME	PSFG-NR	WGMS ID	DATA TABLE AND RECORD NUMBER							
KAELBERSPITZ K.	AT1003	540	A.40	B.37						
KAHUTEA	NZ685E1	1569	A.540	B.344						
KALDALONSJOKULL	IS0102	244	A.402	B.215						
KALTWASSER	CH0007	363	A.687	B.473	BB.205					
KARA-ART	SU	2192	A.310		BB.171					
KARA-BATKAK	SU5080	813	A.311	B.151		C.25				
KARACHAUL	SU3022	835	A.312	B.152						
KARLES F.	AT0207	493	A.41	B.38						
KARLINGER K.	AT0701	568	A.42	B.39						
KARSOJIETNA	SE0798	330	A.624	B.416						
KEHLEN	CH0068	431	A.688	B.474						
KESSELWAND FERNER		AT0226	507	A.43	B.40		C.4		CCC.4	
KESSJEN	CH0012	393	A.689	B.475						
KHAKEL	SU3003	700	A.313	B.153	BB.172					
KJENNDALSBREEN	NO37223	2294	A.598	B.394						
KL.FLEISS K.	AT0801	547	A.44	B.41						
KLEINEISER K.	AT0717	555	A.45	B.42						
KLEINELEND K.	AT1002	541	A.46	B.43						
KLOSTERTALER M.	AT0102B	485	A.47	B.44						
KLOSTERTALER N.	AT0102A	486	A.48	B.45						
KOELDUKVISLARJ.	IS2700	1621	A.403			C.42				
KONGSVEGEN	NO15510	1456	A.599			C.66				
KOPPANGSBREEN	NO	2309	A.600	B.395						
KORUMDU	SU7103	793	A.314	B.154						
KORYTO	SU8003	791	A.315	B.155		C.26		CCC.19		
KOZELSKIY	SU8005	790	A.316	B.156		C.27		CCC.20		F
KOZITSITI	SU3009	706	A.317	B.157	BB.173					
KRASNOSLOBODTSEV		SU	2183	A.318		BB.174				
KRIMMLER K.	AT0501A	584	A.49	B.46						
KROPOTKINA	SU8006	789	A.319	B.158						
KVERKJOKULL	IS2500	248	A.404	B.216						
KVIARJOKULL	IS0822	264	A.405	B.217						
KYUKYURTLYU	SU3033	763	A.320	B.159						
KYZYLDZHILGA	SU	2207	A.321		BB.175					
LA CONEJERA	CO0033	2264	A.363	B.186						
LA LISA	CO0004	1520	A.364	B.187						
LA MARE	IT0699	636	A.458	B.266						
L'A NEUVE	CH	2312	A.690							F
LA PEROUSE	NZ882B2	1605	A.541	B.345						
LAEMMERN	CH0063	437	A.691	B.476						
LAENGENTALER F.	AT0305	499	A.50	B.47						
LAGUNA AZUL	CO0026	2269	A.365	B.188						
LAMBERT	NZ8973	1612	A.542	B.346						
LANA	IT0913	650	A.459	B.267						

GLACIER NAME	PSFG-NR	WGMS ID	DATA TABLE AND RECORD NUMBER							
LANDECK K.	AT0604	569	A.51	B.48						
LANG	CH0018	386	A.692	B.477						
LANGFJORDJOEKUL	NO85008	323	A.601	B.396		C.67		CCC.42		
LANGJOKULL SO. DOME		IS	2321	A.406			C.43			
LANGTALER F.	AT0223	510	A.52	B.49						
LAPATE NO.51	CN0027	842	A.148	B.137						
LARES	IT0634	1149	A.460	B.268						
LAUSON	IT0116	1275	A.461	B.269						
LAVAZ	CH0082	416	A.693	B.478						
LAWRENCE	NZ	2275	A.543	B.347						
LECONTE	US1900	206	A.769							F
LEEB	NZ	2288	A.544	B.348						
LEIRBREEN	NO0548	301	A.602	B.397						
LEIRUFJ.JOKULL	IS0200	277	A.407	B.218						
LENGUA	CL1019	2034	A.139	B.128	BB.20					
LENTA	CH0084	414	A.694	B.479						
LEVIY AKTRU	SU7102	794	A.322	B.160		C.28				
LEVIY KARAGEMSK	SU7107	1084	A.323	B.161						
LEWIS	KE0008	695	A.503			C.51		CCC.29		
LEX BLANCHE	IT0209	682	A.462	B.270						
LIESENSER F.	AT0306	498	A.53	B.50						
LIMMERN	CH0078	421	A.695	B.480						
LISCHANA	CH0098	400	A.696	B.481						
LITZNERGL.	AT0101	607	A.54	B.51						
LOBBIA	IT0637	1150	A.463	B.271						
LOWER CURTIS	US2055	77	A.770			C.90	CC.11			
LUNGA(VEDRETTA)	IT0733	661	A.464	B.272						
LYELL	NZ685C2	1567	A.545	B.349						
LYNCH	US2056	81	A.771			C.91	CC.12			
LYS	IT0304	620	A.465	B.273						
M. OKTYABRSKIY	SU4037	710	A.324		BB.176					
MALADETA	ES9020	942	A.621			C.74				
MALAVALLE	IT0875	672	A.466	B.274						
MALIY AKTRU	SU7100	795	A.325	B.162		C.29		CCC.21		
MALIY AZAU	SU3032	762	A.326	B.163						
MANDRONE	IT0639	664	A.467	B.275						
MARION	NZ863B4	1591	A.546	B.350						
MARMADUKE DIXON	NZ664C1	1541	A.547	B.351						
MARMAGLACIAEREN	SE0799	1461	A.625			C.75		CCC.49		
MARMOLADA	IT0941	676	A.468	B.276						
MARTIAL	AR0131	917	A.3		BB.1				D.1	
MARTIAL ESTE	AR	2000	A.4						D.2	
MARUKHSKIY	SU3001	727	A.327	B.164	BB.177					
MARZELL F.	AT0218	515	A.55	B.52						

GLACIER NAME	PSFG-NR	WGMS ID	DATA TABLE AND RECORD NUMBER							
MAURER K.(GLO.)	AT0714	558	A.56	B.53						
MAURER K.(VEN.)	AT0510	576	A.57	B.54						
MC COY	NZ693C2	1572	A.548	B.352						
MCCALL	US0001	1388	A.772	B.545		C.92				
MEIGHEN ICE CAP	CA1335	16	A.114			C.14				
MER DE GLACE	FR0003	353	A.374	B.197						
MIAGE	IT0213	613	A.469							F
MIDTDALSBREEN	NO04302	2295	A.603	B.398	BB.198	C.68		CCC.43		
MIDRE LOVENBREEN	NO15506	291	A.604			C.69		CCC.44		
MIEGUSZOWIECKIE	PL0140	903	A.618	B.411						
MIKELCHIRAN	SU3025	755	A.328	B.165						
MIKKAJEKNA	SE0766	338	A.626	B.417						
MITTELALETSCH	CH0106	470	A.697	B.482						
MITTERKAR F.	AT0214	487	A.58	B.55						
MIZHIRGICHIRAN	SU3043	1509	A.329	B.166						
MOIRY	CH0024	380	A.698	B.483						
MOLINOS	CO0002	1518	A.366	B.189						
MOMING	CH0023	381	A.699	B.484						
MONACHE OR.	IT0723	2272	A.470	B.277						
MONT DURAND	CH0035	369	A.700	B.485						
MONT FORT	CH0032	372	A.701	B.486						
MONT MINE	CH0026	378	A.702	B.487						
MORSARJOKULL	IS0318	252	A.408	B.219						
MORTERATSCH	CH94	1673	A.703	B.488						
MUELLER	NZ711H1	1575	A.549	B.353						
MULAJOKULL S.	IS0311A	253	A.409	B.220						
MURCHISON	NZ711J1	1578	A.550	B.354						
MUTMAL F.	AT0227	506	A.59	B.56						
MUTNOVSKIY NE	SU8011	788	A.330	B.167						F
MUTNOVSKIY SW	SU8012	787	A.331	B.168						F
MUTT	CH0002	472	A.704	B.489						
NANKALDY	SU	2150	A.332		BB.178					
NARDIS OCC.	IT0640	639	A.471	B.278						
NAUTHAGAJOKULL	IS0210	274	A.410	B.221						
NEREIDAS	CO0014	1513	A.367	B.190						
NEVES OR.	IT0902	651	A.472	B.279						
NICHKEDZHILGA	SU	2134	A.333		BB.179					
NIEDERJOCH F.	AT0217	516	A.60	B.57						
NIGARDSBREEN	NO31014	290	A.605	B.399		C.70		CCC.45		
NISCLI	IT0633	677	A.473	B.280						
NO. 125 (VODOPADNIY)		SU7105	780	A.334	B.169		C.30		CCC.22	
NO. 462V (KULAK NIZ.)		SU3005	702	A.335	B.170					
NOISY CREEK	US2078	1666	A.773			C.93				
NORTH KLAWATTI	US2076	1664	A.774			C.94				

GLACIER NAME	PSFG-NR	WGMS ID	DATA TABLE AND RECORD NUMBER						
OB.GRINDELWALD	CH0057	444	A.705	B.490					
OBERAAR	CH0050	451	A.706	B.491					
OBERALETSCH	CH0006	361	A.707	B.492					
OBERSULZBACH K.	AT0502	583	A.61	B.58					
OCHSENTALERGL.	AT0103	483	A.62	B.59		C.5		CCC.5	
OEDENWINKEL K.	AT0712	559	A.63	B.60					
OFENTAL	CH0009	469	A.708	B.493					
OKSTINDBREEN	NO64902	324	A.606			C.71		CCC.46	
OLDUFELLSJOKULL	IS0114	246	A.411	B.222					
OLIVARES BETA	CL0067	2004	A.140	B.129					
OLIVARES GAMA	CL0066	2003	A.141	B.130					
ORMELUNE	IT0177	2390	A.474						F
OTEMMA	CH0034	370	A.709	B.494					
PALUE	CH0100	398	A.710	B.495					
PANEYROSSE	CH0044	456	A.711	B.496					
PARADIES	CH0086	412	A.712	B.497					
PARADISINO	CH0101	397	A.713	B.498					
PARK PASS 1	NZ752B1	1559	A.551	B.355					
PARTEJEKNA	SE0763	327	A.627	B.418		C.76		CCC.50	
PASSUSJIETNA E.	SE0797	331	A.628	B.419	BB.200				
PASTERZEN K.	AT0704	566	A.64	B.61					
PENDENTE	IT0876	675	A.475	B.281		C.48		CCC.28	
PEYTO	CA1640	57	A.115			C.15		CCC.12	
PFAFFEN F.	AT0324	591	A.65	B.62					
PIO XI	CL0044	1641	A.142	B.131	BB.21				
PIODE	IT0312	619	A.476	B.282					
PISGANA OCC.	IT0577	666	A.477	B.283					
PIZOL	CH0081	417	A.714	B.499					
PIZZO SCALINO	IT0443	1187	A.478	B.284					
PLACE	CA1660	41	A.116			C.16			
PLATTALVA	CH0114	420	A.715	B.500					
POD BULA	PL0111	1617	A.619	B.412					
POD CUBRYNA	PL0180	902	A.620	B.413					
PORCHABELLA	CH0088	410	A.716	B.501					
PRAEGRAT K.	AT0603	570	A.66	B.63					
PRAPIO	CH0048	453	A.717	B.502					
PRAVIY KARAGEMSKIY		SU7109	1085	A.336	B.171				
PRE DE BAR	IT0235	681	A.479	B.285					
PRESANELLA	IT0678	637	A.480	B.286					
PUNTEGLIAS	CH0083	415	A.718	B.503					
QUAIRA BIANCA	IT0889	686	A.481	B.287					
RABOTS GLACIAER	SE0785	334	A.629	B.420		C.77			
RAETZLI	CH0065	434	A.719	B.504					
RAINBOW	US2003	79	A.775			C.95	CC.13		

GLACIER NAME	PSFG-NR	WGMS ID	DATA TABLE AND RECORD NUMBER					
RAMSAY	NZ685C3	1568	A.552	B.356				
REISCHEK	NZ685C1	1566	A.553	B.357				
REMBESDALSKAAKI	NO22303	2296	A.607	B.400				
RETTENBACH F.	AT0212	488	A.67	B.64				
REYKJAFJARDARJ.	IS0300	273	A.412	B.223				
RHONE	CH0001	473	A.720	B.505				
RICHARDSON	NZ711E1	1574	A.554	B.358				
RIED	CH0017	387	A.721	B.506				
RIFFL K. N	AT0718	554	A.68	B.65				
RIKKA SAMBA	NP	1068	A.506	B.310	BB.195	C.54	CCC.31	
RISOPATRON	CL0070	2007	A.143	B.132				
RIUKOJIETNA	SE0790	342	A.630	B.421		C.78	CCC.51	
ROFENKAR F.	AT0215	518	A.69	B.66				
ROSEG	CH0092	406	A.722	B.507				
ROSENLAUI	CH0056	445	A.723	B.508				
ROSIM	IT0754	610	A.482	B.288				
ROSSA (VEDR.)	IT0697	674	A.483	B.289				
ROSSBODEN	CH0105	462	A.724	B.509				
ROSSO DESTRO	IT0920	648	A.484	B.290				
ROTFIRN NORD	CH0069	430	A.725	B.510				
ROTMOOS F.	AT0224	509	A.70	B.67				
RUOPSOKJEKNA	SE0764	340	A.631	B.422				
RUOTESJEKNA	SE0767	337	A.632	B.423	BB.201			
RUTOR	IT0189	612	A.485	B.291				
SAINT SORLIN	FR0015	356	A.375	B.198		C.33		
SALAJEKNA	SE0759	341	A.633	B.424				
SALE	NZ906B1	1614	A.555	B.359				
SALEINA	CH0042	458	A.726	B.511				
SANDALEE	US2079	1667	A.776			C.96		
SANKT ANNA	CH0067	432	A.727	B.512				
SARDONA	CH0091	407	A.728	B.513				
SARENNES	FR0029	357	A.376			C.34		
SATUJOKULL	IS0530	1623	A.413	B.224				
SCALETTA	CH115	1680	A.729	B.514				
SCHALF F.	AT0219	514	A.71	B.68				
SCHAUFEL F.	AT0311	602	A.72	B.69				
SCHLADMINGER G.	AT1103	534	A.73	B.70				
SCHLAPPEREBEN K	AT0805	544	A.74	B.71				
SCHLATEN K.	AT0506	580	A.75	B.72				
SCHLEGEIS K.	AT0405	586	A.76	B.73				D.7
SCHMIEDINGER K.	AT0726	548	A.77	B.74				
SCHNEEFERNER N	DE0001	346	A.378					D.17
SCHNEEFERNER S	DE0002	347	A.379					D.18
SCHNEEGLOCKEN	AT0109	525	A.78	B.75				

GLACIER NAME	PSFG-NR	WGMS ID	DATA TABLE AND RECORD NUMBER							
SCHNEELOCH G.	AT1104	533	A.79	B.76						
SCHWARZ	CH0062	438	A.730	B.515						
SCHWARZBERG	CH0010	395	A.731	B.516						
SCHWARZENBERG F	AT0303	501	A.80	B.77						
SCHWARZENSTEIN	AT0403	588	A.81	B.78					D.8	
SCHWARZKARL K.	AT0716	556	A.82	B.79						
SCHWARZKOEPFL K	AT0710	560	A.83	B.80						
SE KASKASATJ GL	SE0789	329	A.634	B.425						
SEPARATION	NZ	2279	A.556	B.360						
SESVENNA	CH0097	401	A.732	B.517						
SEVERNIY DZHAYLYAU.		SU	2144	A.337		BB.180				
SEVERNIY ZULUMART		SU	2099	A.338		BB.181				
SEX ROUGE	CH0047	454	A.733	B.518						
SEXEGERTEN F.	AT0204	520	A.84	B.81						
SFORZELLINA	IT0516	667	A.486	B.292		C.49				
SHUMSKIY	SU6001	797	A.339				CC.3	CCC.23		
SIDUJOK.E M177	IS0015B	243	A.414	B.225						
SIEGE	NZ893A1	1616	A.557	B.361						
SILLERN	CH	2663	A.734							F
SILVER	US2077	1665	A.777			C.97				
SILVRETTA	CH0090	408	A.735	B.519		C.82		CCC.55		
SIMMING F.	AT0318	596	A.85	B.82						
SIMONY K.	AT0511	575	A.86	B.83						
SKAFTAFELLSJ.	IS0419	251	A.415	B.226						
SKAZKA	SU3008	705	A.340	B.172	BB.182					
SKEIDARARJ. E1	IS0117A	280	A.416	B.227						
SKEIDARARJ. E2	IS0117B	279	A.417	B.228						
SKEIDARARJ. E3	IS0117C	278	A.418	B.229						
SKEIDARARJ. W	IS0116	281	A.419	B.230						
SNESHNIKA	BG	2289	A.111							F
SNOW WHITE	NZ863B2	1588	A.558	B.362						
SNOWBALL	NZ863B3	1589	A.559	B.363						
SOLHEIMAJOK. W	IS0113A	247	A.420	B.231						
SONNBLICK KEES	AT0601A	573	A.87	B.84		C.6				
SOUTH CASCADE	US2013	205	A.778	B.546		C.98				
SPENCER	NZ888A2	1607	A.560	B.364						
SPIEGEL F.	AT0221	512	A.88	B.85						
ST. JAMES	NZ	2274	A.561	B.365						
STEGHOLTBREEN	NO31021	313	A.608	B.401						
STEIN	CH0053	448	A.736	B.520						F
STEINDALSBREEN	NO	2310	A.609	B.402						
STEINLIMMI	CH0054	447	A.737	B.521						
STORBREEN	NO0541	302	A.610	B.403		C.72		CCC.47		
STORGJUVBREEN	NO	2308	A.611	B.404						

GLACIER NAME	PSFG-NR	WGMS ID	DATA TABLE AND RECORD NUMBER						
STORGLACIAEREN	SE0788	332	A.635	B.426		C.79	CCC.52		
STOUR RAEITAGL.	SE0784	335	A.636	B.427					
STRAUCHON	NZ880A2	1599	A.562	B.366					
STYGGEDALSBREEN	NO30720	303	A.612	B.405					
SULZ	CH0079	419	A.738	B.522					
SULZENAU F.	AT0314A	600	A.89	B.86				D.9	
SULZTAL F.	AT0301	503	A.90	B.87					
SUOTTASJEKNA	SE0768	336	A.637	B.428					
SUPPHELLEBREEN	NO33014	287	A.613	B.406					
SURETTA	CH0087	411	A.739	B.523					
SVINAFELLSJ.	IS0520A	250	A.421	B.232					
TAELLIBODEN	CH0008	362	A.740	B.524					
TASCHACH F.	AT0205	519	A.91	B.88					
TASMAN	NZ7111	1074	A.563	B.367					
TAUFKAR F.	AT0216	517	A.92	B.89					
TERSKOL	SU3030	760	A.341	B.173					
TESSA	IT0829	653	A.487	B.293					
THRANDARJOKULL	IS1940	1620	A.422			C.44			
THURNEYSON	NZ711B1	1554	A.564	B.368					
TIATSCHA	CH0096	402	A.741	B.525					
TIEFEN	CH0066	433	A.742	B.526					
TOTENFELD	AT0110	524	A.93	B.90					
TOULES	IT0221	614	A.488	B.294					
TOURNELON BLANC	CH	2664	A.743						F
TRAVIGNOLO	IT0947	1514	A.489	B.295					
TRESERO	IT0511	669	A.490	B.296					
TRIDENTE	CO0012	1625	A.368	B.191					
TRIEBENKARLAS F	AT0323	592	A.94	B.91					
TRIENT	CH0043	457	A.744	B.527					
TRIFT (GADMEN)	CH0055	446	A.745	B.528					F
TRINIDAD	CL0055	2014	A.144	B.133	BB.22				
TRONQUITOS	CL0029	1010	A.145	B.134	BB.23				
TS.TUYUKSUYSKIY	SU5075	817	A.342	B.174		C.31	CCC.24	D.15	
TSANFLEURON	CH0033	371	A.746	B.529					
TSCHIERVA	CH0093	405	A.747	B.530					
TSCHINGEL	CH0060	441	A.748	B.531					
TSEUDET	CH0040	364	A.749	B.532					
TSEYA	SU3007	704	A.343	B.175					
TSIDJIORE NOUVE	CH0028	376	A.750	B.533					
TUNGNAARJOKULL	IS2214	267	A.423	B.233					
TURTMANN (WEST)	CH0019	385	A.751	B.534					
TZA DE TZAN	IT0259	623	A.491	B.297					
ULLUCHIRAN	SU3021	836	A.344	B.176					
ULLUKAM	SU	2098	A.345	B.177					

GLACIER NAME	PSFG-NR	WGMS ID	DATA TABLE AND RECORD NUMBER							
ULLUKOL	SU3023	834	A.346	B.178						
ULLUMALIENDERKU	SU3024	833	A.347	B.179						
UMBAL K.	AT0512	574	A.95	B.92						
UNIVERSIDAD	CL0072	2009	A.146	B.135						
UNNA RAEITA GL.	SE0783	343	A.638	B.429						
UNNAMED NZ685C4	NZ685C4	1544	A.567	B.369						
UNNAMED NZ711N/012		NZ	2280	A.566	B.370					
UNNAMED NZ851A/036		NZ	2282	A.565	B.371					
UNNAMED NZ851B	NZ851B1	1560	A.568	B.372						
UNT.GRINDELWALD	CH0058	443	A.752	B.535						F
UNTERAAR	CH0051	450	A.753	B.536						
UNTERSULZBACH K	AT0503	582	A.96	B.93						
URTA-BAKCHIGIR 1	SU	2252	A.348		BB.183					
URTA-BAKCHIGIR 2	SU	2251	A.349		BB.184					
URUASHRAJU	PE0005	221	A.616	B.409						
URUMQIHE E-BR.	CN1001	1511	A.149	B.138		C.19		CCC.14		
URUMQIHE S.NO.1	CN0010	853	A.150			C.20				
URUMQIHE W-BR.	CN1002	1512	A.151	B.139		C.21		CCC.15		
VAL TORTA	CH0118	466	A.754	B.537						
VALLE DEL VENTO	IT0919	649	A.492	B.298						
VALLEGGIA	CH0117	467	A.755	B.538						
VALLELUNGA	IT0777	659	A.493	B.299						
VALSOREY	CH0039	365	A.756	B.539						
VALTOURNENCHE	IT0289	621	A.494	B.300						
VARTASJEKNA	SE0765	339	A.639	B.430						
VENEROCOLO	IT0581	665	A.495	B.301						
VENEZIA (VEDR.)	IT0698	673	A.496	B.302						
VENTINA	IT0416	629	A.497	B.303						
VENTORRILLO	MX0101	914	A.504	B.308		C.52				F
VERBORGENBERG F	AT0322	593	A.97	B.94						
VERDE	CL0075	2012	A.147	B.136	BB.24					
VERMUNTGL.	AT0104	482	A.98	B.95		C.7		CCC.6		
VERNAGT FERNER	AT0211	489	A.99	B.96		C.8	C.1	CCC.7	D.10	
VERSTANKLA	CH0089	409	A.757	B.540						
VICTORIA	NZ882A1	1603	A.569	B.373						
VILTRAGEN K.	AT0505	581	A.100	B.97						
VIRKISJOKULL	IS0721	249	A.424	B.234						
VITELLI	IT0483	671	A.498	B.304						
VOLODARSKIY 1	SU	2165	A.350		BB.185					
VOLODARSKIY 2	SU	2166	A.351		BB.186					
VOLODARSKIY 3	SU	2167	A.352		BB.187					
VORAB	CH0085	413	A.758	B.541						
W.TRIPP K.	AT1004	539	A.101	B.98						
WALDEMARBREEN	NO	2307	A.614	B.407	BB.199	C.73		CCC.48		

GLACIER NAME	PSFG-NR	WGMS ID	DATA TABLE AND RECORD NUMBER						
WALLENBUR	CH0071	428	A.759	B.542					
WASSERFALLWINKL	AT0705	565	A.102	B.99					
WAXEGG K.	AT0401	590	A.103	B.100					D.11
WEISSEE F.	AT0201	523	A.104	B.101					
WHATAROA	NZ	2285	A.570	B.374					
WHITBOURNE	NZ752C1	1583	A.571	B.375					
WHITE	CA2340	0	A.117			C.17		CCC.13	
WHITE	NZ664C1	1563	A.572	B.376					
WHYMPER	NZ893B1	1609	A.573	B.377					
WIGLEY	NZ873B2	1610	A.574	B.378					
WILDGERLOS	AT0404	587	A.105	B.102					
WILKINSON	NZ906B2	1615	A.575	B.379					
WINKL K.	AT1006	537	A.106	B.103					
WOLVERINE	US0411	94	A.779			C.99			
WURTEN K.	AT0804	545	A.107	B.104		C.9		CCC.8	
YALA	NP0004	912	A.507	B.311	BB.196				D.22
YANAMAREY	PE0004	226	A.617	B.410					
YAWNING	US2050	75	A.780			C.100	CC.14		
YUGO-VOSTOCHNIY	SU3018	778	A.353	B.180	BB.188				
YUZHN. KARAYKASHAN		SU	2155	A.354		BB.189			
YUZHNIY	SU3017	779	A.355	B.181					
ZAI DI DENTRO	IT0749	1515	A.499	B.305					
ZAI DI MEZZO	IT0750	1127	A.500	B.306					
ZAPADNIY OKTYABRSK.		SU	2181	A.356		BB.190			
ZAY DI FUORI	IT0751	609	A.501	B.307					
ZETTALUNITZ K.	AT0508	578	A.108	B.105					
ZINAL	CH0022	382	A.760	B.543					
ZMUTT	CH0015	390	A.761	B.544					
ZONGO	BO5150	1503	A.110	B.107		C.11		CCC.10	
ZORA	NZ868B1	1593	A.576	B.380					
ZORTASHKOL	SU	2202	A.357		BB.191				
ZULUMART	SU	2100	A.358		BB.192				

Notes