

NORTHERN NOVAYA ZEMLYA OUTLET GLACIERS 1990–2000, C.I.S.

(Thematic Satellite Map)

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The map based on satellite images shows changes in glacier terminal position of outlet glaciers of the Northern Novaya Zemlya Island. To assess glacier position changes, Landsat TM and ETM+ GeoCover imagery for two periods were used: circa 1990 and circa 2000. By comparing glacier terminal position for the two datasets, assessment of glacier advance/retreat was made for several outlet glaciers: 24 on the western (Barents sea) coast, 12 on the eastern (Kara sea) coast, and for 4 glaciers of the Lednikovoye lake in the southern part of the Northern Novaya Zemlya.

Most of the glaciers retreated during this period, the most pronounced retreat was observed for large Moshniy (-7.76 km²) and Roze (-6.55 km²) glaciers on the eastern coast. Only four glaciers of 40 advanced: two of them (Oga and Serp i Molot) on the eastern coast, they advanced very slightly (less than 1 km²), and two other glaciers (Borzova and Pavlova) on the western coast, whose advance was more pronounced (3.84 and 3.94 km², respectively).

Map is made in the UTM (Zone 40) Projection. Glacier boundaries and ice divide line are after a schematic map from Varnakova and Kotlyakov (1978), one of the few available sources of maps for Novaya Zemlya glaciers. Comparison of these boundaries with the ice-surface motion map produced using offset tracking from JERS-1 L-band SAR data (Strozzi et al. 2007) shows that they are generally consistent in the lower parts. However for upper parts, the JERS-1 based map shows significantly larger glacier feeding zones, suggesting potential improvement of the Novaya Zemlya glacier boundaries using remote sensing techniques.

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