GLACIER MONITORING: KYRGYZSTAN

The mean elevation of Kyrgyzstan is one of highest in the world and the Tian Shan mountains dominate the topography of the country. A total ice covered area of more than 5000 km² can be found. Even though the available observations are spatially well distributed continuous long-term fluctuation series are sparse or have been interrupted.

Available series

- Front variation observations: A comparatively high number of FV and MB series are available in Kyrgyzstan, starting in 1860. The amount of available series peaked in the 1980s. Unfortunately, many observation series (both MB and FV) were discontinued before 1991. Regional studies based on remote sensing data can help to partially bridge this gap. About 60% of the glaciated area has been inventorized in GLIMS after 2000.

- Glaciological MB measurements: After the break-down of the former Soviet Union most of the measurements were abandoned though. In a cooperative effort between the countries Kyrgyzstan, Uzbekistan, Germany and Switzerland, the measurement series are currently re-initiated.

- Geodetic MB measurements: About a dozen glacier with mass balance measurements before 1990s, about half of them resumed after 2010. Most of the observed glaciers are located in the Tien Shan.

- Glacier inventories: About a dozen glacier with mass balance measurements before 1990s, about half of them resumed after 2010. Most of the observed glaciers are located in the Tien Shan.

Key statistics

<table>
<thead>
<tr>
<th>Front Variation</th>
<th>Mass Balance</th>
<th>Thickness Change</th>
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<tbody>
<tr>
<td>Number of series:</td>
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<td>Average length (years):</td>
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<tr>
<td>Average number of observations:</td>
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Present state

- Tier 1: Well-coordinated monitoring system during Soviet times, abandoned during 1990s and re-initiated with the support of Germany, Switzerland and the US around 2010.

- Tier 2: Long-term and detailed monitoring programs at Kara-Batkak, Abramov and Golubin glaciers; all interrupted in 1990s and resumed around 2010.

- Tier 3: About a dozen glacier with mass balance measurements before 1990s, about half of them resumed after 2010. Most of the observed glaciers are located in the Tien Shan.

- Tier 4: A few dozen front variations series, mainly located in the Tien Shan. Very few geodetic observations. Most observations interrupted in 1990s.

- Tier 5: Region covered in the WGI as part of the Soviet inventory and partly covered in GLIMS.

Future potential/needs

- Continue the initiated capacity building and twinning efforts. Coordinate activities with other Central Asian countries.

- Select at least one of these glaciers for the continuation of long-term and detailed measurement programmes for process understanding and model calibration.

- Continue and resume glacier mass balance studies. Improve regional coverage in Pamir Alai.

- Resume decadal length change observations from remote sensing. Encourage geodetic change assessments for large glacier samples. Improve regional coverage in Pamir Alai.

- Complete glacier inventories with remote sensing data. Plan next repeat inventory towards 2020.

Spatial distribution of series

The available observations are rather well distributed over the mountainous regions in the south and the east of the country. Several glaciers, i.e. Abramov and Golubin were some of the most important reference glaciers in the world-wide glacier monitoring program representing important mountain ranges, such as the Pamir-Alay and the Tien Shan mountains. For these glaciers long-term series of more than 20 years are available.

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* in WGI part of (former) Soviet Union