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The World Glacier Monitoring Service (WGMS)

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Abstract

Apart from a few regions in the Karakoram and Kunlun Shan, glaciers worldwide are losing mass at increased rates. This is confirmed by countless measurements going back into the 19th century. In 1894, the ‘*Commission Internationale des Glaciers*’ was founded and its subsequent organisations have since then coordinated the related scientific monitoring of glaciers, resulting in a freely available, quality-checked and standardized data set that is now collected and disseminated by the WGMS. This dataset has been widely used by key stakeholders and the scientific community and is a unique demonstration of the strength of open and free data exchange. Today, worldwide glacier monitoring is organized within the Global Climate Observing System (GCOS) and glaciers are recognized as an important Essential Climate Variable (ECV). The Global Terrestrial Network for Glaciers (GTN-G) was established in 1999 and it is jointly operated by the World Glacier Monitoring Service (WGMS), the U.S. National Snow and Ice Data Centre (NSIDC), and the Global Land Ice Measurements from Space initiative (GLIMS) to collect and distribute glacier measurements. GTN-G also ensures the continuous development and adaptation of the international strategies to the long-term needs of users in science and policy.

Today, important research questions are related to sea level rise, to estimate current and future runoff from glaciers, and to the detection of glacier-related hazards such as glacier lake outbursts (GLOFs). In order to tackle these questions, a combination of traditional observations with datasets derived from new technologies such as remote sensing and numerical models is a prerequisite. Calibration and validation of these models would not be possible without free access to the glacier measurements collected by a global network of national correspondents and later dissemination by WGMS. Here we will highlight some current efforts to re-establish and improve former measurements in different regions of the world (such as Central Asia or South America) to establish a well-distributed baseline for sound estimates of climate-related glacier changes. In addition, increased capacity building activities are conducted to put the long-term glacier monitoring on strong and sustainable pillars.