

Summary of GLIMS Workshop, July 6, 2007, Perugia, Italy

The shrinkage of glaciers is global, fast, and accelerating, making it increasingly important to complete and speed up global glacier mapping efforts. In this context, members of the GLIMS consortium met to discuss issues facing the Global Land Ice Measurements from Space (GLIMS) project.

This GLIMS workshop addressed two broad categories of issues: 1) How GLIMS relates to other international monitoring programmes, and 2) the status of the current GLIMS inventory and how best to expand it. Michael Zemp began the morning with a summary of global glacier monitoring efforts, including the World Glacier Monitoring Service (WGMS) and GLIMS, and links to other organizations such as the Intergovernmental Panel on Climate Change (IPCC), the Global Terrestrial Observation System (GTOS), the Global Climate Observation System (GCOS), the Global Terrestrial Network for Glaciers (GTN-G), and Glacier and Permafrost Hazards in Mountains (GAPHAZ). He reiterated the strong working relationship between WGMS and GLIMS/NSIDC, and pointed out that these efforts should be professionalized and based on a secure foundation of funding.

Frank Paul gave a summary of the GlobGlacier project, a new activity within the European Space Agency's Data User Element programme. This three-year project aims to establish services for operational glacier monitoring from space, using and complementing the GLIMS infrastructure. GlobGlacier will focus on mountain glaciers, and will start late summer 2007.

Bruce Raup gave an update on the contents of and Web-interfaces to the GLIMS Glacier Database. As of July 2007, the database contains data on over 58000 glaciers. The Web-based interfaces include an interactive map application as well as a text-based search tool (e.g. to be able to search by glacier name or size). He also showed two ways to search for ASTER imagery over glaciers: 1) a layer in the MapServer application; and 2) a layer using Google Earth. He concluded by showing some new Web-based tools for Regional Centers.

Atsumu Ohmura summarized the status of global glacier inventories and emphasized the need to complete them quickly.

Andreas Ahlstrøm presented PROMICE, a new monitoring programme for the Greenland ice sheet being undertaken by the Geological Survey of Denmark and Greenland. The programme has wide scope, and involves modelling, remote sensing, and in situ measurements.

Much of the afternoon was dedicated to discussion of technical challenges with glacier mapping from remote sensing data. Tobias Bolch, of the Technical University of Dresden, Germany, presented results of their study of the Khumbu Glacier, and summarized the difficulties they faced with geolocation and calibration of digital elevation models (DEMs). This led to a productive open discussion of glacier mapping techniques and tools, quality control, DEM generation and evaluation, and problems of varying definitions of various glaciological terms, and the standardization of the calculation of certain parameters such as glacier area and length. The discussion of DEMs touched on several commonly used tools for creating them. Silcast produces reasonable DEMs, but the morphometric

parameters are frequently not realistic. PCI Geomatica produces artifacts, even with the use of ground control points (GCPs). ENVI produces aesthetically pleasing DEMs, but there is no way currently to find out where it interpolated to fill in voids due to poor correlation. DEMs produced from these different commercial packages vary greatly depending on region and software package.

In order to compare glacier analysis results from different analysts, it is imperative that common parameters be produced according to a single definition. For simpler parameters (such as glacier area), GLIMS should begin with the WGI definitions and expand the lexicon from there.

The workshop concluded with an open discussion of how to integrate GLIMS and WGMS efforts into GTN-G and other international programmes.

See <http://glims.org/> for more information.