Integration of glacier databases within the Global Terrestrial Network for Glaciers (GTN-G)

M. Zemp (1), B.H. Raup (2), R. Armstrong (2), L. Ballagh (2), I. Gärtner-Roer (1), W. Haeberli (1), M. Hoelzle (3), A. Kääb (4), J. Kargel (5), and F. Paul (1)

(1) World Glacier Monitoring Service, University of Zurich, Zurich, Switzerland, (2) National Snow and Ice Data Center, University of Colorado, Boulder, U.S.A., (3) World Glacier Monitoring Service, University of Fribourg, Switzerland, (4) Global Land Ice Measurements from Space, University of Oslo, Oslo, Norway, (5) Global Land Ice Measurements from Space, University of Arizona, Tucson, U.S.A.

Changes in glaciers and ice caps provide some of the clearest evidence of climate change and have impacts on global sea level fluctuations, regional hydrological cycles and local natural hazard situations. Internationally coordinated collection and distribution of standardized information about glaciers and ice caps was initiated in 1894 and is today coordinated within the Global Terrestrial Network for Glaciers (GTN-G). A recently established GTN-G Steering Committee coordinates, supports and advices the operational bodies responsible for the international glacier monitoring, which are the World Glacier Monitoring Service (WGMS), the US National Snow and Ice Data Center (NSIDC) and the Global Land Ice Measurements from Space (GLIMS) initiative.

In this presentation, we provide an overview of (i) the integration of the various operational databases, (ii) the development of a one-stop web-interface to these databases, and (iii) the available datasets. By joint efforts consistency and interoperability of the different glacier databases is elaborated. Thereby, the lack of a complete worldwide, detailed glacier inventory as well as different historical developments and methodological contexts of the datasets are major challenges for linking individual glaciers throughout the databases. A map-based web-interface, implemented based on OpenLayer 2.0 and Web Map/Feature Services, is elaborated to spatially link the available data and to provide data users a fast overview of all available data.

With this new online service, GTN-G provides fast access to information on glacier inventory data from 100,000 glaciers mainly based on aerial photographs and from 80,000 glaciers mainly based on satellite images, length change series from 1,800 glaciers, mass balance series from 230 glaciers, special events (e.g., hazards, surges, calving instabilities) from 130 glaciers, as well as 10,000 photographs from some 470 glaciers.