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Insights into and findings from global datasets on glacier distribution and changes

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Glacier monitoring has been internationally coordinated since the late 19th century. For the last 25 years (i.e., 1998-2023), the compilation and dissemination of global glacier datasets has been coordinated by the Global Terrestrial Network for Glaciers (GTN-G, <https://gtn-g.org>). Authorized under the Global Climate Observing System (GCOS) and supported by an international Advisory Board, GTN-G is jointly run by the science officers from the World Glacier Monitoring Service (WGMS, <https://wgms.ch>), the US National Snow and Ice Data Center (NSIDC, <https://nsidc.org>), and the Global Land Ice Measurements from Space initiative (GLIMS, <https://glims.org>), in collaboration with related working groups of the International Association of Cryospheric Sciences (IACS, <https://cryosphericsscience.org/>).

We present an updated overview of the various observational glacier datasets (https://www.gtn-g.ch/data_catalogue/), including world regions for regional glacier assessments (GTN-G Glacier Regions), glacier attributes (WGI: World Glacier Inventory), centerlines, and outlines (GLIMS, RGI: Randolph Glacier Inventory), ice velocities (ITS_LIVE), ice thickness (GlaThiDa: Glacier Thickness Database), glacier photographs (GPC: Glacier Photograph Collection), and glacier maps (GMC: Glacier Map Collection). For each dataset, we provide insights into the increased amount and richness of available data. We also demonstrate the value of these datasets by presenting selected findings from our own analyses as well as from user applications.