C52A-01 - RAGMAC & GLAMBIE – Initiatives for inter-comparisons exercise of regional and global glacier mass changes

Friday, 16 December 2022

16:00 - 16:10

S505ab (South, Level 5, McCormick Place)

Abstract

Retreating and thinning glaciers are icons of climate change and impact the local hazard situation, regional runoff as well as global sea level. For past reports of the Intergovernmental Panel on Climate Change (IPCC), regional glacier change assessments were challenged by the small number and heterogeneous spatio-temporal distribution of in situ measurement series and uncertain representativeness for the respective mountain range as well as by spatial limitations of current satellite altimetry (only point data) and gravimetry (coarse resolution). Towards IPCC SROCC and AR6, there have been considerable improvements with respect to available geodetic datasets. Geodetic volume change assessments for entire mountain ranges have become possible thanks to recently available and comparably accurate digital elevation models (e.g., from ASTER or TanDEM-X). At the same time, new spaceborne altimetry (CryoSat-2, IceSat-2) and gravimetry (GRACE-FO) missions are in orbit and about to release data products to the science community. This opens new opportunities for regional evaluations of results from different methods as well as for truly global assessments of glacier mass changes and related contributions to sea-level rise. At the same time, the glacier research and monitoring community is facing new challenges related to data size, formats, and availability as well as new questions with regard to best practises for data processing chains and for related uncertainty assessments.

In this presentation, we introduce the working group on Regional Assessments of Glacier Mass Change (RAGMAC) of the International Association of Cryospheric Sciences, and the Glacier Mass Balance Intercomparison Exercise (GlaMBIE) of the European Space Agency. RAGMAC and GlaMBIE were established to tackle these challenges in a community effort. We will present our approach to develop a common framework for regional-scale glacier mass-change estimates towards a new consensus estimate of regional and global mass changes from glaciological, geodetic, altimetric, and gravimetric methods.

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