Research Seminar Programme 2023/24

When: Tuesday 14-16 (or as announced)
Where: via ZOOM

Date	Topic	Lecturer
07.11.2023 14:00	**IGM, a glacier evolution model boosted by deep-learning** Deep-learning emulators permit to reduce dramatically the computational times for solving physical models. The Instructed Glacier Model (IGM, https://github.com/jouvetg/igm) is an easy-to-use python code that can simulate the 3D evolution of glaciers with high-order ice flow mechanics and very efficiently thanks to physics-informed deep learning. Switching to Graphics Processing Unit (GPU) permits additional significant speed-ups, especially when modeling large-scale glacier networks and/or high spatial resolutions. Here I give an overview of IGM, illustrate its potential to simulate past and future glacier evolution in the Alps, and do a quick live demo of the model.	Guillaume Jouvet Uni. Lausanne (CH)
21.11.2023 14:00	**Disentangling ice-sheet processes in space geodetic measurements.** Estimates of present-day mass balance have considerable spread and uncertainties for some parts of the Antarctic Ice Sheet, in particular the East Antarctic Ice Sheet. For each of the three approaches (the input output, or component, method; the gravimetric method; the altimetric method), small systematic errors may sum up to considerable errors when integrating over the ice sheet. In addition, the geodetic measurements usually reflect the superposition of different ice-sheet processes (ice mass change due to effects of ice flow dynamics and surface mass balance, change in firn density structure, vertical bedrock motion). This calls for the combination of complementary measurements and modeling techniques. The seminar will give some review of the research area and discuss recent related work at TU Dresden.	Martin Horwath TU Dresden
12.12.2023 14.00	**Icy worlds and the power of electromagnetic waves** This will be a journey through world of radars on ice in the context of global climate change. We will visit alpine glaciers and polar ice sheets, and show you some (hopefully) exiting science application which involve instrument development, data integration and inversion. A picture of a pinguin will also be included.	Reinhard Drews Uni. Tübingen

16.01.2024 14.00	**Challenges and opportunities of historical aerial/satellite images for studying glacier changes** Although global glacier changes are now well documented from remote sensing observations since 2000, it is important to extend regional/global observational records further back in time to better discriminate long-term changes from climate variability. Historical, i.e film-based, images from aerial campaigns and declassified reconnaissance satellites present a great opportunity to document such changes. But working with such data presents huge challenges: preprocessing of the scans into distortion-free digital images, degradation of the film, lack of metadata. In this presentation, I will provide an overview of the challenges and tools to work with such data with examples taken from the US reconnaissance satellite KH-9 to Swiss terrestrial images.	Amaury Dehecq Uni. Grenoble (FR)
06.02.2024 14:00	**Global estimations of glacier mass changes from glaciological and geodetic methods** Part 1: Review of our observational knowledge across time Part 2: ESA Glacier Mass Balance Intercomparison Exercise	Michael Zemp Uni. Zürich, WGMS (CH)
t.b.a.		