Glacier-Space: Assessing the resilience and vulnerability of mountain ice masses

Understanding and quantifying the resilience of mountain glaciers is an important step in assessing their vulnerability to climate change. The Glacier-Space project provides a new, unified approach to systematically assess the resilience and vulnerability of mountain glaciers. The project aims to i) provide a revised perspective on the role of mountain glaciers in the climate system, ii) quantify the resilience of glaciers, and iii) estimate the committed loss of glacier resilience in the future, if the 1.5 and 2.0 ºC targets stated in the Paris Climate Agreement are met. The resilience concept is developed at Hintereisferner, one of the best studied glaciers in the world. Innovative observations of glacier microclimate and state-of-the-art high-resolution atmospheric models will be used to assess the impact of changing glacier microclimate on glacier retreat rates. This knowledge helps to refine projections of glacier-induced land system changes affecting local hydrological resources, rates of sea-level rise, natural hazard potential and mountain ecosystems. This new resilience concept of mountain glaciers provides scientists, stakeholders, and policy makers with a modern perspective on the future development of mountain glaciers.