Eidgenössische Technische Hochschule Zürich
Swiss Federal Institute of Technology Zurich

Institute of Environmental Engineering

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SEMINAR

Monday, June 11, 17:00 h, ETH Hönggerberg HIL D10.2

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Assessing snow and glacier cover for large-scale hydrological modelling in the Alps

Abstract:

Snow and ice melt are dominant components of alpine discharge and their accurate representation in hydrological models is crucial for sustainable water resources management. Model accuracy depends on data quality, but the acquisition of hydro-meteorological data in alpine basins is challenging due to complex topography. Additionally, processes such as snow redistribution by wind and avalanches induce high spatial-temporal snow cover variability. This heterogeneity is difficult to assess with in-situ measurements but can have great impact on the hydrograph and also influence glacier retreat. To assess the variability of snow and ice melt in the discharge at the large-scale and for long time periods, we therefore need simple but robust hydrological models able to deal with data scarcity and large spatial variability of snow cover. In this presentation, I first show how well large-scale datasets, such as interpolated meteorological products and glacier outlines from historical topographic maps, can reproduce snow distribution and transient glacier cover in hydrological models. I finally outline the importance of snow redistribution processes and the remaining challenges in their representation in hydrological models.

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