



Flood forecasting in an alpine watershed – potentials and limitations of coupled meteo-hydrological modelling

K. Schneider (1), J. Schöberl (1,2), J. Bellinger (1,2), S. Achleitner (3), F. Schöberl (2), and R. Kirnbauer (4)

(1) alpS GmbH, Center for Climate Change Adaptation Technologies, Innsbruck, Austria (schneider@alps-gmbh.com), (2) Institute of Geography, University of Innsbruck, Austria, (3) Institute of Infrastructure, University of Innsbruck, Austria, (4) Institute of Hydraulic Engineering and Water Resources Management, Vienna University of Technology, Austria

The reliability of runoff prognoses with a flood forecasting system relies on the model input as well as on the reliable representation of the catchment state. In particular, the meteorological nowcasting and forecasting as well as the performance of the hydrological and hydraulic models are crucial for operational flood predictions. In alpine areas, which are marked by snow melt in spring and runoff generation by glacier melt in summer, a realistic representation of the snow cover is of crucial importance because the snow cover may either dampen or magnify peak floods. Furthermore, the prediction of precipitation intensity, amount and duration in some cases is over- or underestimated by the meteorological model. This affects the predictive capability of the flood forecasting model, e.g. either too high or too low runoff peaks may be simulated, leading to inadequate preparation and management of floods. These challenges have to be managed in the presented flood forecasting system for the river Inn (HoPI) in Tyrol (Austria). The paper gives examples flood forecast with varying predictive quality and the reasons will be discussed (e.g. quality of meteorological now- and forecast, erroneous representation of the snow cover and snow water equivalent, or poor performance of the hydrological model).