



## Uncertainty propagation for flood forecasting in the Alps: Different views and impacts from MAP D-PHASE

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D-PHASE stands for Demonstration of Probabilistic Hydrological and Atmospheric Simulation of flooding Events in the alpine region and it is the Forecast Demonstration Project of the World Weather Research Programme (WWRP) that is related to the Mesoscale Alpine Programme (MAP). Its goal was to demonstrate the reliability and quality of operational forecasting of orographically influenced (determined) precipitation in the Alps and its consequences on the distribution of run-off characteristics. A special focus was, of course on heavy-precipitation events.

The D-PHASE Operations Period (DOP) ran from June to November 2007, during which an end-to-end forecasting system was operated covering many individual catchments in the Alps, with their water authorities, civil protection organizations or other end users. The forecasting system's core piece was a Visualization Platform where precipitation and flood warnings from some 30 atmospheric and 7 hydrological models (both deterministic and probabilistic) and corresponding model fields were displayed in uniform and comparable formats. Also, meteograms, nowcasting information and end user communication was made available to all the forecasters, users and end users. D-PHASE information was assessed and used by some 50 different groups ranging from atmospheric forecasters to civil protection authorities or water management bodies.

In the present contribution the various elements of D-PHASE will be presented, its outstanding scientific results and, in particular the lessons learned with respect to uncertainty propagation. A focus thereby will be on the transfer ensemble prediction information in the hydrological community and its use with respect to other aspects of societal impact. Objective verification of forecast quality will be contrasted to subjective quality assessments during the project (end user workshops, questionnaires) and some general conclusions concerning forecast demonstration projects will be drawn.