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The Analogs method in the framework of severe rainfall forecasting in the Swiss Alps

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The MINERVE project aims at reducing flood peaks of the Rhône river by means of water retention in dams. As a part of this project, the Analogs method is implemented to forecast precipitation for the western Swiss Alps. The statistical forecasting should extend the information on which decision makers build up their choices.

The analogs method is an adaptation technique that allows forecasting local precipitation on the basis of the synoptic atmospheric circulation. The first predictor is the gradients of the geopotential heights, representing the atmospheric circulation patterns and intensity. The second predictor accounts for humidity by means of the relative humidity and the precipitable water column. The predictands are the precipitation measured at the rain gauges stations.

It was found that the most predictive areas for the predictors do not necessarily include the Swiss Alps, but may be located further away. These locations are situated where the atmospheric circulation is dominant during heavy precipitation events. As the different parts of the catchment are sensitive to different meteorological situations, the predictors' most pertinent areas differ from one station to another.

Examples of various precipitation events in the validation period illustrate the good forecasting capabilities of the method. The model should be running in real-time forecasting by the end of April 2011.