



Statistical weather forecasting in the Swiss Alps by means of the Analogs method

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The Analogs method is under development for the Swiss Alps. The goal is to provide a statistical forecast to the MINERVE project, which aims to reduce the flood peaks of the Rhône by means of water retention in dams. The statistical forecasting, considered in parallel to the physically based one made by MeteoSwiss, should extend the information on which decision makers build up their choices.

The Analogs approach is a simple statistical downscaling method. It uses for instance the geopotential heights forecast from a GCM to statistically deduce the precipitation. This allows bypassing the modeling of physical processes generating the precipitation.

The different regions in the Swiss Alps are sensitive to distinct meteorological situations. As a consequence, the best predictors vary from a sub-region to another. The maps of the predictor relevance highlight the best location where predictors must be compared to downscale at best the precipitation of a sub-region. During the calibration of the method it appeared that the locations having the best predicting capabilities did not necessarily include the Swiss Alps, but were located at a certain distance. It was found that those locations correspond to features in the patterns of situations giving severe rainfall, which vary from the average state. Some known locations were clearly identified.

A semi-automatic optimization procedure was created to explore various variables and their combination.