



Adaptation of the ADAMONT statistical downscaling method to seasonal prediction systems

Paola Marson, Christian Viel, Sébastien Bernus, François Besson, Raphaëlle Samacoits, Lauriane Batte, Jean-Michel Soubeyroux, Pierre Etchevers, Béatrice Vincendon, and Samuel Morin
Météo France, Toulouse, France (paola.marson@meteo.fr)

The ADAMONT method [Verfaillie, D et al. 2017] is a statistical method that adjusts a set of parameters of daily climate projections from regional climate models (RCM) and that further disaggregates them at hourly time steps. The adjustment is based on a refined quantile mapping conditioned by weather regimes, while the sub-daily disaggregation exploits an analogue-based method and uses as reference an observational reanalyzed dataset at hourly time step.

We adapted ADAMONT v.1.0 to seasonal forecast systems, by taking the notions of ensemble simulations and lead times into account, and by furthermore modifying the analogue-based method. For the latter, we let it account for observed spatial patterns of precipitation in addition to conventional circulation patterns.

The adapted methodology is part of the forecast chain developed within the PROSNOW project, which builds a demonstrator of a snow management system for informing ski resorts on snow production and grooming. The chain relies on a prediction system spanning from weather forecast to seasonal predictions whose downscaled data are input of snowpack models..

The adapted methodology will also be part of a post-processing R package “cstools” publicly released as the MEDSCOPE project Toolbox, designed and built to evaluate and improve the quality of climate forecasts in the Mediterranean region at seasonal to multi-annual scales.

We will present the principles of ADAMONT and an application to seasonal forecast data from MF-Sys6. Moreover, we will show the flexibility of the adapted methodology in dealing with different types of reference data, from weather station records to spatialised reanalyzed data, and thus its suitability to various applications.