



## **Indirect evaluation of a high-resolution precipitation reanalysis system in mountainous areas during winter**

Antoine Verrelle, Matthieu Lafaysse, Camille Birman, Eric Bazile, Patrick Le Moigne, and Camille Szczypta  
CNRM-GAME (Meteo-France, CNRS), Toulouse, France (antoine.verrelle@meteo.fr)

The MESCAN high-resolution precipitation reanalysis system, based on a two-dimensional univariate optimum interpolation between the precipitation gauge measurement and a background field, was assessed in mountainous areas (French Alps) during winter.

In this study, the background of 24-h accumulated precipitation from 6 UTC until 6 UTC next day, comes from the NWP AROME model at 1.3-km grid spacing. It has been shown that precipitation amount of the analysis was underestimated at high altitude. In order to unbiased the surface precipitation analysis, the parametrization of the background error covariances was modified to take into account the altitude of precipitation gauge station. Furthermore, a simple snow correction algorithm was applied on liquid precipitation data.

These two modifications were evaluated with off-line simulations, made by the French land surface model SURFEX over France, driven by meteorological forcing from the SAFRAN French analysis system (operational over French territory) combined to the MESCAN precipitation reanalysis, that were compared to in situ measurements such as snow depth.

The optimum MESCAN setup in those regions is then discussed in terms of precipitation reanalysis quality.