



Simulation of the blowing snow flux in Adélie Land, Antarctica, by a regional climate model

Hubert Gallée (1), Charles Amory (1), and Cécile Agosta (2)

(1) CNRS/Université de Grenoble, Laboratoire de Glaciologie et Géophysique de l'Environnement, St-Martin d'Hères, France (gallee@lgge.obs.ujf-grenoble.fr), (2) Université de Liège, Laboratoire de climatologie, Liège, Belgique

The parameterization of blowing snow in the regional climate model MAR (Modèle Atmosphérique Régional) has been tested.

The model is set-up over Adélie Land, Antarctica, with a fine horizontal resolution (5 km) and an improved vertical resolution near the surface (lowest level is now situated 0.15 m above the surface). The domain of the model covers the steepest slopes of Adélie Land, on an area of 500 times 500 km². Simulations last 2 summer months (December 2010 and January 2011).

The influence of model parameterizations on the simulated wind speed, relative humidity and horizontal blowing snow flux near the surface is assessed. It is found that model parameters influencing turbulence and in particular the parameterization of the roughness length are the main contributors to the sensitivity of the above-mentioned model variables. Therefore model sensitivity tests to various parameterizations of the roughness length are performed, allowing to define a new parameterization of the roughness length depending on snow erosion by the wind.