

Séminaire **Mercredi 11** décembre 2013 **11h** / Seminar **Wednesday** december **11th** 2013 **11h**

Sujet/Subject: A High-resolution modeling in mountainous terrain : from sub-kilometer simulations using GEM in the Canadian Rocky Mountains to Large Eddy Simulations of wind-induced snow transport in the French Alps.

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Résumé/Abstract

Mountainous areas are associated with a large spatiotemporal variability of weather conditions due to the interactions between the atmospheric flow and the complex terrain. In the past two decades, a large growth in high-resolution numerical modelling has been observed for these regions. In this talk we will present two examples of such model simulations focusing on wintertime conditions.

Our first example focuses on the use of the mesoscale model GEM-LAM for wintertime forecasts. The model has been applied down to 250-m grid spacing over a region of the Canadian Rocky Mountain for 15 consecutive days of winter 2008/2009. The impact of decreasing horizontal grid spacing on the forecasts of near-surface variables (temperature, humidity, wind) is firstly detailed. The model's sensitivity at 250-m grid spacing is then discussed by evaluating the effects of (i) accounting for orographic component of aerodynamic roughness, (ii) considering slope and aspect on surface radiation, and (iii) using high-resolution initialization for the surface fields.

Our second example presents the use of a mesoscale model as a research tool for studying wind-induced snow transport in alpine terrain. The fully coupled snowpack/atmosphere model Meso-NH/Crocus will be briefly introduced. Examples of model's use in the French Alps will be then detailed. They concern the quantification of snow sublimation during a blowing snow event and the study of the spatiotemporal variability of snow accumulation in mountainous terrain.