Geophysical Research Abstracts
Vol. 12, EGU2010-11942, 2010
EGU General Assembly 2010

Improving an operational probabilistic hydrometeorological forecasting chain in the Valle d'Aosta Region

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The operational hydrometeorological forecasting chain at the basis of the Valle d'Aosta regional warning system integrates a snow model (SRaM) in to a distributed hydrologic model (DRiFt) and uses a stochastic downscaling technique (RainFARM) for generating a high resolution (1km-1h) precipitation ensemble from the quantitative precipitation forecast issued by a Limited area model (COSMO-LAMI) and by the Regional Centres of Valle d'Aosta and Piemonte Regions. The procedure generates discharge ensemble predictions in relevant sections of the Dora river. A second version of the operational chain has been implemented. In this new version of the procedure the initial conditions for the hydrological model (i.e., the soil moisture) and the snow model have been both improved by using data assimilation techniques that combine satellite and ground based measurements. In this work the impact of such modifications are evaluated by comparing the two procedures via back analysis of the last four years.