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The knowledge of precipitations still remains a tricky issue in mountaineous areas: the available rain-gauges are in a limited number and most often located in the valleys, and the radar rainfall estimates have to deal with a lot of problems due to the relief and the difficulty to distinguish the different types of hydrometeors (snow, hail, rain). In this context, the "RHYTMME" project deals with two main issues:
- Providing an accurate radar rainfall information in mountainous areas.
- Developing a real-time hazards warning system based on this information.
To answer to the first issue, a X-band doppler dual polarized radar network is currently implemented in the French South Alps. At the end of the project (2013), three new radars will be installed, completing a pre-existing radar already installed on the Mont Vial top since 2008 (Hydrix® technology developed by the Novimet company, and tested in a previous project).
The present communication focuses on the flash flood warning issue. It presents some results obtained by coupling the radar estimates to a simple distributed hydrological model (the AIGA method). Results are compared on damages observed by end-users, which were strongly involved into the project.

The RHYTMME project is co-piloted by Meteo-France and the Cemagref and has the financial support of the European Union, the Provence-Alpes-Côte d'Azur Region and the French Ministry in charge of Ecology.