RHYTMME Project : Risk Management based on a Radar Network

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Over the french Alps, the hydrological coverage of Météo-France operational radar network is poor due to mountain mask effects, ground clutter and beam altitude. However, the occurrence of natural hazards such as floods, debris flows, landslides, rock falls, snow avalanches and forest fires is frequent over this area and threatens numerous cities and transportation or industrial infrastructures. These hazards are largely dependent on precipitations.

A first step necessary to tackle these risks is to well know location, amount and kind of precipitations. For this purpose, in this high and rugged region, an X-band Doppler polarimetric radar network is being installed to complete the operational network. The first radar has been settled at 1770m height and its data are processed in real-time since June 2011 to estimate rainfall amount. The project includes all the science and engineering necessary to benefit from polarimetry and to adapt algorithms to X-band, not only for quantitative precipitation estimates but also for Doppler, kind of hydrometeor and refractivity works.
The radar outputs serve as inputs for hydrological models and more generally natural hazards models, aiming at anticipating strong events, which is the second main topic dealt with in this project.
A first panel of hydrometeorological maps useful for flood management has been developed in parallel with an Internet architecture built on web map services. An Internet prototype giving a functional access to these maps has been deployed in autumn 2011 and is being tested by a validation group. This group is composed of local authorities, river associations, government agencies and private societies all involved in risk management, what they test the relevance of the prototype information for.

Information anticipating other natural hazards will complete this first panel of products in next months.
The main results of this project, from radar developments to end-user information, if positive, will spread to other mountainous areas.