An ad-hoc hydrological model for operative warning system in Valle d'Aosta Region

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Non-structural policies for flooding defence have established themselves as an absolute necessity in the Mediterranean where the orography is particularly high near the coast and in the alpine environment and where complex urban areas do not allow vulnerability reduction by restructuring the urban settlements. Moreover the morphology of the basins and the very short times of the watershed response limit the use of alarm systems entirely based on measurements of both flow and rainfall rates. An early alert, useful for the implementation of civil protection measures on a given territory, becomes, consequently, the only possibility. It is essential the use of meteorological rainfall forecast as input for hydrological models.

Hydrological watershed modelling should be able to reproduce basin response accounting for both its morphoclimatic features and hydraulics structures (e.g. dams, barrages and weirs). To these cases has been required to implement an appropriate model for Valle d'Aosta alpine region that accounts for snow, dams and manoeuvre effect operated for hydroelectric production. Actually the model is in a pre-operative testing phase for warning procedure in the Functional Centre of Valle d'Aosta Region. It has shown good capability to reproduce observed discharge for different historical events.