



Calibration of Alarm Indexes for Flood Alarm Mapping

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One of the main program in the operational use of hydrologic model deals with difficult to actually calibrate or validate the prediction of the flow discharge because of the lack of observed discharge time series especially for small rivers.

To overcome this difficulty three different alarm indexes have been checked to test the possibility of an operational flood alert mapping based on the simulations of an hydrological model. Cetemps HYdrological Model (CHYM) is a distributed grid-based model, one of the main feature of such model being the possibility to ingest different data sources to rebuild the precipitation field at hydrological scale.

A first CHYM index flood alert mapping is calculated dividing the total drained rain and the total drained area of each grid point at a fixed time interval; a second index is calculated considering, for each grid point, a time interval corresponding to the average runoff time of the selected grid point. A further approach consists in the comparison between the maximum discharge predicted by the model for each grid point and the hydraulic radius of the channel, the latter is calculated for as a function of the total drained area by each elementary cell. The alarm-values of these alarm indexes are calibrated using 15 different case studies affecting Italian territory in the last years. The performances of different indexes are reported and the possibility to use these different approaches in an integrated system for operation flood alert mapping is discussed.