



Modeling flood occurrences: test and validation of two hydrological stress indices over Italy.

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Providing suitable prediction for flood alert mapping represents a strategical issue to mitigate the impact of the increasing severe events, as they are recognized to be one of most evident signal of climate changes.

Furthermore a critical difficult for an effectual operational hydrological forecast is to establish, for each element of the simulated drainage network, a river discharge threshold, above which a flood event is expected to occur.

To overcome these difficulties two different indices have been tested and calibrated in order to provide a general numerical approach allowing to highlight the segments of drainage network where major risks are expected to occur. The warning and alarm threshold for such indices have been tuned, simulating several case studies characterized by severe events and affecting Italian Peninsula in the last years and causing damages and, in few cases, human victims. To validate the indices all the available official data, such as Civil Protection, Environmental Agencies and Firefighters reports on damages, press releases, POLARIS (IRPI-CNR) database, COPERNICUS-EMS have been used.

Results will be reported showing as the proposal numerical technique appear to a suitable approach to locate the segments of drainage network where the critical hydrological events are more likely to occur. Emphasis will be given to the possibility to extend the operational activities that are provided, at the current time, for all the Italian peninsula.