EMS Annual Meeting Abstracts
Vol. 10, EMS2013-289, 2013
13th EMS / 11th ECAM

Automated extreme rainfall monitoring and forecasting: towards an effective alerts dissemination for humanitarian practitioners

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It is widely agreed that there is an increasing need for developing innovative tools in support to emergency preparedness and response capacity, particularly in developing countries where the lack of accessible and accurate data is a main issue. Moreover, public services and citizens resilience to natural hazards can be improved through a more effective dissemination of warnings.
This paper introduces the Extreme Rainfall Detection System (ERDS), an automated warning system conceived as a strategic tool to be used by a wide range of international emergency management actors. ERDS has been elaborated with the active collaboration of end-users and in particular with the UN World Food Programme (WFP) Emergency Preparedness and Response Branch.
The main aim of ERDS is to provide timely and meaningful alerts related to exceptional rainfalls and potential flood events by elaborating near-real time and forecasted rainfall data with worldwide coverage. In particular, the data used for the near-real time detection of heavy rainfall are taken from the Tropical Rainfall Measuring Mission (TRMM) Multisatellite Precipitation Analysis (TMPA), while forecast precipitation data are based on NOAA-GFS (Global Forecast System) deterministic model, providing alerts up to 7 days in advance.
One of the most important challenges of early warning systems is to deliver more targeted and easy-to-use warnings, converting scientific data into meaningful information tailored on specific end-users. Therefore, a WebGIS platform has been developed including capabilities for the assessment of event magnitude: the integration of monitoring and forecasting tools with vulnerable data-sets (e.g. reference data, population data, etc.), generates value-added and event-specific information, such as countries and population affected or transportation network interruptions, at a temporal and spatial scale relevant for different end-users needs.
As an example of this automated warning system, the case study of Mozambique flood in January 2013 is presented, highlighting the aim of producing an effective alert dissemination.