



An experimental system for flood risk forecasting and monitoring at global scale

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Global flood forecasting and monitoring systems are nowadays a reality and are being applied by a wide range of users and practitioners in disaster risk management. Furthermore, there is an increasing demand from users to integrate flood early warning systems with risk based forecasting, combining streamflow estimations with expected inundated areas and flood impacts. Finally, emerging technologies such as crowdsourcing and social media monitoring can play a crucial role in flood disaster management and preparedness. Here, we present some recent advances of an experimental procedure for near-real time flood mapping and impact assessment. The procedure translates in near real-time the daily streamflow forecasts issued by the Global Flood Awareness System (GloFAS) into event-based flood hazard maps, which are then combined with exposure and vulnerability information at global scale to derive risk forecast. Impacts of the forecasted flood events are evaluated in terms of flood prone areas, potential economic damage, and affected population, infrastructures and cities. To increase the reliability of our forecasts we propose the integration of model-based estimations with an innovative methodology for social media monitoring, which allows for real-time verification and correction of impact forecasts. Finally, we present the results of preliminary tests which show the potential of the proposed procedure in supporting emergency response and management.