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Added value flooding products coupling hydraulic modeling and COSMO Sky-Med SAR imagery

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In this work the real time use of a simplified two dimensional hydraulic model constrained by satellite data for the simulation of flooding events is studied. The main features of such a model are computational speed and simple start-up, with no need to insert complex information but a subset of simplified boundary and initial condition.
Those characteristics allow the model to be fast enough to be used in real time for the simulation of flooding events. The model fills the gap of information left by single satellite scenes of flooded area, allowing for the estimation of the maximum flooding extension and magnitude. The static information provided by earth observation (like SAR extension of flooded areas at a certain time) are interpreted in a dynamic consitent way and very useful hydraulic information (e.g., water depth, water speed and the evolution of flooded areas)are provided.
The model has been applied in several flooding events occured wordwide. amongst the other activations in the mediterranean areas like Veneto (IT) (October 2010), Basilicata (IT) (March 2011) and Shkoder (January 2010 and December 2010) are considered and compared with larger types of floods like the one of Queensland in December 2010.
In the past year the model has been used, by request of Department of Civil Protection, to provide previsions of scenarios to help authority involved in recent Magra flooding, using as input the predicted discharges.