



Use of soil moisture monitoring at national scale with assimilation of satellite products for the operational flash-flood forecast of the Italian civil protection

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Distributed soil moisture monitoring is of primary importance in reducing uncertainties related to flash flood prediction. Satellite monitoring provides new perspectives to deal with this task. The operational implementation over the Italian territory of an experimental operational system of soil moisture monitoring, based on the assimilation of LST and other MSG-derived products provided by LandSAF is presented here. The assimilation scheme is based on the surface energy balance. It is forced using both SAF products, such as incoming radiation (shortwave and longwave), cloud mask, LST and ground observations. The model is used to derive EF, turbulent conductivity for energy fluxes and heat and moisture fluxes at national scale. Soil moisture conditions used by some of the operational hydrological models run by the Italian Centri Funzionanti system are also derived through a simplified mass balance. The model has been recently implemented in DROPS, the experimental monitoring system of the Italian Civil Protection Department and the derived maps are currently tested within operational flood risk prediction chains.