Impact of Satellite-based soil moisture index on hydrological simulation for floods prediction

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A Soil Moisture Standardized Index (SMSI) has been derived from the MSG LST product using well established techniques based on the apparent thermal inertia. SMSI maps have been produced over Italy from 2005 to present. Three operational implementations of hydrological models at three different Civil Protection centres in Italy have been chosen as case studies in order to explore the possible benefits of using such index in the modeling process targeted to flood prediction. The three case studies show differences in terms of hydrological modeling philosophy (from event to continuous models, from lumped to fully distributed) and in terms of local morphology. Means of linking quantitatively the SMSI index to the models state variables have been drawn and a discussion of operational benefits and drawbacks of using such index with reference to historical case studies is provided. Such work is part of the OPERA Project, a project which aims to analyze the benefits deriving from intensive use of satellite data within a civil protection operational chain against floods.