



Smart Irrigation From Soil Moisture Forecast Using Satellite And Hydro –Meteorological Modelling

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Increased water demand and climate change impacts have recently enhanced the need to improve water resources management, even in those areas which traditionally have an abundant supply of water. The highest consumption of water is devoted to irrigation for agricultural production, and so it is in this area that efforts have to be focused to study possible interventions.

The SIM project funded by EU in the framework of the WaterWorks2014 - Water Joint Programming Initiative aims at developing an operational tool for real-time forecast of crops irrigation water requirements to support parsimonious water management and to optimize irrigation scheduling providing real-time and forecasted soil moisture behavior at high spatial and temporal resolutions with forecast horizons from few up to thirty days.

This study discusses advances in coupling satellite driven soil water balance model and meteorological forecast as support for precision irrigation use comparing different case studies in Italy, in the Netherlands, in China and Spain, characterized by different climatic conditions, water availability, crop types and irrigation techniques and water distribution rules. Herein, the applications in two operative farms in vegetables production in the South of Italy where semi-arid climatic conditions holds, two maize fields in Northern Italy in a more water reach environment with flood irrigation will be presented.

This system combines state of the art mathematical models and new technologies for environmental monitoring, merging ground observed data with Earth observations.

Discussion on the methodology approach is presented, comparing for a reanalysis periods the forecast system outputs with observed soil moisture and crop water needs proving the reliability of the forecasting system and its benefits.

The real-time visualization of the implemented system is also presented through web-dashboards.