Integrated computer modeling and monitoring for irrigation planning in Italy

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**Abstract.** As part of the process of implementation of the Water Framework Directive 2000/60 EC (WFD hereafter), withdrawals for irrigation purposes emerge as one of the main pressures on water bodies in Mediterranean countries. This justifies the particular attention that has been paid in recent years to the quantification of irrigation uses at national level, also from a regulatory point of view, especially since the promulgation of the Ministerial Decree of 31 July 2015 of the MiPAAF and of the consequent regional regulations. The WFD actually marks a fairly clear demarcation in the approach to planning water resources, shifting the focus from the needs of water use to that of their protection and the requalification of water bodies. This approach has been consistently maintained in the subsequent Community directives and strategies and is fully reflected in the recent European Green Deal and in the Farm to Fork Strategy. The current context is therefore characterized by partly contrasting pressures: those linked to sustainability, which may lead to a reduction in withdrawals from water bodies; those resulting from climate change, which foreshadow a reduction in water availability. The combined effect of these thrusts can put irrigated agriculture in serious difficulty.

In this context, the INCIPIT- INtegrated Computer modeling and monitoring for Irrigation Planning in Italy Project aims to systematize and deepen the knowledge acquired on the methods of estimating irrigation needs and on the development of mathematical models for simulating irrigation systems within six of the major agricultural departments nationwide. INCIPIT addresses a set of crucial issues: i) the potential of remote sensing for identifying effectively irrigated areas and for estimating their irrigation needs; ii) the effect on the estimation of evapotranspiration and irrigation needs of the use of different sources of agro-meteorological data; iii) the application of models for estimating irrigation needs in various agricultural contexts; iv) the potential of simulation models of irrigation uses in collective irrigation systems for the improvement of water management and for the definition of climate change adaptation strategies . A characterizing element of the project is the implementation of these issues through four case studies, involving seven Italian areas with irrigation systems of different extent and complexity. Results emerging from the case studies are presented in a set of other contribution within this AIIA conference.