ACCURACY VS OPERABILITY : A CASE STUDY ON ESTIMATION OF ACTUAL EVAPOTRANSPIRATION AT BARRAX, SPAIN

J.Colin\textsuperscript{1}, M.Menenti\textsuperscript{1}, E.Rubio\textsuperscript{2} and A.Jochum\textsuperscript{1,2}

1. Laboratoire des Sciences de l'Image, de l'Informatique et de la Télédétection, Université Louis Pasteur, France.
2. Instituto de Desarrollo Regional, Universidad de Castilla – La Mancha, Spain.

Objective of the study
The use of a physical approach in an Earth Observation based model for surface energy budget calculation leads to complex parameterizations, and hence to multiple needs in inputs. These inputs concern ground and atmospheric variables that can be measured or estimated with various techniques of various levels of difficulty. It is however possible to get most of them during major field campaigns. In the context of the DEMETER project, the demonstration of a routinely usage of such approaches implies to take in due account operability constraints. These constraints are related to: i) the available inputs; ii) the time needed to get the required variables and to perform the simulations.

Materials and Methods
The Multi-Scales Energy Balance System proposed here includes a panoply of possible algorithms to obtain intermediate results involved in the evaporative fraction calculation. It is therefore possible to use either external variables, obtained with advanced methodologies and adapted to the area and period of simulation, or different surrogates, depending on availability of observations on canopy geometric and/or radiometric properties. These surrogates are most commonly used empirical formulations found in literature.

The use of high quality observations in input leads to higher accuracy in the final results. As it may not be possible, in an operational context, to get such kind of inputs every time, the quality of the given evaporative fraction may vary from a simulation to another, all other things being equal. It is hence necessary to clarify two issues : i) what is the needed accuracy of the evaporative fraction ? ii) what is the minimum input quality needed to fit this goal ?

Results
The experiment presented is based on different scenarios that are assumed to be representative of different operational contexts.

Results obtained for a set of simulations for the same period of time, over the DEMETER reference area of Barrax, illustrate problems that can occur for practical use of evaporative fraction in irrigation management, and the trade-off between accuracy and operability.