

## Technical Questions

### SWB Module

#### SWB Model

Q1 Does the beta version take in account capillary rise, percolation, lateral runoff?

A1 Capillary rise/percolation will be included during 2017 operation, before the delivery of the release version...; runoff is taken into account as mentioned in point 5 of SWB algorithm elucidation.

Q2 Does the beta version take in account in-season crop maps, LAI derived from CWD?

A2 ICM maps can be used for in-season product generation as soon as available.

#### SWB algorithm

(D3.3, p 43) "In more detail, the irrigation algorithm of MOSES SWB can be summarized in this sequence of checks:

1. if the current day of simulation is included in the irrigation season;
2. **if the number of days from the last irrigation is higher than the irrigation shift;**
3. If the forecast rain is lower than 5 mm;
4. if the actual ratio between actual transpiration and potential transpiration is lower than **the tolerated stress percentage for the crop;**
5. if the H2Oavb is lower than zero.

If all the previous conditions are true, an irrigation volume is distributed. This is computed as the **minimum between the predefined irrigation quantity for the crop and the maximum quantity of water that can daily infiltrate without runoff**, so an irrigation without losses is computed."

Q3 How is **the irrigation shift** parameter set?

A3 Default parameters are as follows: 1 - drop irrigation; 5/7 – aspersion; ...

Q4 How is the **tolerated stress percentage for the crop** set? (which is the value currently?)

A4 Ratio between actual and potential evapotranspiration of the previous day - it is set to 1 if no stress is tolerated; default values used in currently disseminated product are...

Q5 How is the "**predefined irrigation quantity for the crop**" set?

A5 It is provided by local reference expert (e.g. kiwi Italy 5 mm/day; maize Italy 40 mm; maize Spain 80 mm).

[My comment] If the amounts are provided by local experts it seems that only irrigation timing is derived by the model.

Q6 How is the "**maximum quantity of water that can daily infiltrate without runoff**" set?

A6 It is derived from soil properties... add some hints on computation method; if runoff > 5 mm irrigation volume is decreased.

### CWD Module

Q1 NDVI - To which day does this value refer to, per satellite image downloaded? Is it the result of interpolating data of the remote imagery?

A1 It is referred to the last satellite image processed (chosen within a time windows of 7 days)

Q2 Crop coefficient – To which day does this value refer to, per satellite image downloaded?

A2 It is referred to the current Kc (the product is updated daily and does not produce results if no image is available within a time windows of 7 days or if no meteo data are available). Crop coefficient is calculated with current meteorological data and last available image (chosen within a time Window

of 7 days)

Q3 Gross irrigation requirement emp (mm/day) - How is it calculated?

A3 It is calculated as Precipitation - Crop water demand (ETc)

## FQA for General Users

### CWD

Q1 Is CWD equal to crop potential evapotranspiration?

A1 Yes

Q2 What is the relationship between CWD monitoring and forecast

A2 Monitoring is a daily CWD estimate whereas the forecast is a cumulated amount summed over the next 7 days.

Q3 Does CWD provide indications on stressed crop conditions?

A3 No

### SWB In-season products

Q1 What are the “available water”, the “readily available water” and the “fraction of available water”?

A1 Add straightforward definitions... – it is computed over 1 meter of soil.

### Short term irrigation forecast

Q1 Does the system alert me on beginning of irrigation period?

A1 In-season product dissemination start can be decided depending on the tendency of the current irrigation year.

Q2 If am not following MOSES advice from the beginning of the irrigation season, how can I consider the figure you are providing?

A2 Cumulated irrigation amounts simulated using observed data are available for a period of two weeks backward and since the start of current year (1<sup>st</sup> of January).

Q3 How can I couple the information from the two products CWD and Short Term Irrigation Forecast?

A3 e.g. case of Spain

Q4 Is there a way to derive information about stressed areas?

A4 ..

Q5 Is the precipitation forecast (7days) the current or the cumulative value?

A5 It is the cumulative value for the period.

Q6 Does the concept of readily available water come from the manual of FAO 56- Irrigation and Drainage paper; Guidelines for computing Crop evapotranspiration – page 162: Readily available Water (RAW)?

A6 Yes

Q7 How is the Previous irrigation (all season) product computed?

A7 It is the sum of previous model suggestions, from the beginning of the irrigation season, using the observed meteo data

Q8 Is the Current soil water deficit a static parameter? Does it changes with time? How is it computed?

A8 It's not static, it is the sum of Field capacity - Current water content. It is computed on layers of 2 cm of thickness into the first meter of soil (or more, if the root depth is deeper than 1 meter).

### **Cumulated irrigation**

Q5 When does the cumulated irrigation start from?

A5 From the beginning of the current irrigation year.