**Hydrology and
Earth System
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Discussions

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Interactive
comment

Interactive comment on "Combined Simulation and Optimization Framework for Irrigation Scheduling in Agriculture Fields" *by* Mireia Fontanet et al.

Anonymous Referee #2

Received and published: 10 May 2020

General comments

The authors present an interesting and generally well-written manuscript about optimizing irrigation scheduling by combining 1-dimensional simulation of soil water movement and crop yield optimization. The research question is relevant. The methods used for simulation are well established. The results are interesting and promising for further research building upon the described methods.

Specific comments

Line 59: The publication of Hanson et al. (1977) might be too old as a reference to 'recent developments'.

Line 74: You write "several authors" – are there more sources than Srivastava and Yeh (1991)?

Line 109: Please provide the units of q_i at an earlier point than line 210.

Line 147: The unit of h is not consistent with the rest of Richards' equation. Usually, the pressure head is given in units of length. Throughout the manuscript, please try to better distinguish 'pressure' from 'pressure heads'.

Line 148: L is used as symbol for 'length unit' as well as for 'liter' (as in line 210, 287) in the manuscript. Please try to remove this ambiguity.

Line 256: Can you briefly indicate the method used for calibration?

Line 261: What is the distance between the study site and the nearest available weather station?

Line 335/336: 'Guarantee' is a strong word – maybe use a weaker one. I agree that the "optimal irrigation method" seems to ensure better conditions than the "traditional method".

Line 401: The word 'factor' is misleading – maybe better write "increase with respect to the traditional method by 7%". Moreover: Are 7% significant, considering the uncertainties involved?

Technical corrections

Line 33: promote

Line 34: designed

Line 77: Campbell (1982)

Line 83: stakeholders

Line 84/85: capable of assessing

Line 85: Siyal and Skaggs (2009)

Line 90: later

Line 90: irrigation scheduling

Line 97: as follows

Line 98: apply

Line 99/100: capable of simulating

Line 102: use

Line 128: Units of C_y should be [EUR.t-1].

Line 169: the models presented

Line 289: constrained

Line 328/329: capable of increasing

Line 353: an increase

Line 376: It should be Fig. 10.

Line 381: It should be a panel of Fig. 10.

Line 414: through the root zone instead of

Line 482: Reference seems to be incomplete/broken.

Table 2: Usually, the unit of α is [m-1] or [cm-1]. Units of K_s should be [cm.d-1]. Please be consistent with the symbol for the third shape parameter i/I.

Table 4: Willmott

Table 5: For consistency, maybe better use 'L' as symbol for 'liter'.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., https://doi.org/10.5194/hess-2020-146, 2020.