

Interactive comment on “Real time drought forecasting system for irrigation management” by A. Ceppi et al.

Anonymous Referee #3

Received and published: 22 February 2014

General comments

The paper deals with an ensemble forecasting system and its usage to manage an irrigation system located in Northern Italy. Meteorological forecasts are the outputs of WRF-ARW runs provided by Epson Meteo Centre, up to 30 days ahead. They are used to force a hydrological model simulating water balance and soil moisture content dynamics, so that the benefits of planned irrigation scheduling can be evaluated and eventually changed in real time.

The topic of the paper is interesting and challenging, but I think a proper validation of the procedure is still missing. Only one growing season (2012) was considered to evaluate the reliability and the benefits of the forecasting chain, but the reliability

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assessment would definitely need more than a year of experiment and the benefits should be more clearly investigated by comparing two situations, one supported by the forecasting system and one without this system. Results are not well documented and not clearly explained.

The potentials of the forecasting system for other case studies is not discussed, nor are its limits. Rather than 'long-range' predictions I would talk about 'medium-range predictions', as usually one month-ahead forecasts are denoted. English usage and style need to be revised, as well as the structure of the paper. In chapter 2 a clear explanation of data used in this work and for model validation purposes is missing. Part of it is included in chapter 3 but should be moved in my opinion to chapter 2.

Some specific comments

Page 2 – line 10-14 The time scale of precipitation amount is not clear in these sentences.

Page 3- line 12 – Each acronym should be explained the first time it is mentioned. Here is WRF-ARW

Page 3 – line 26 – 'Average annual rainfall' over which time period?

Page 4 – line 6-7 - meteorological fields are available every two days? or every 12 hours (twice a day)?

Page 5 line 5-6 – 200 m spatial resolution and daily time scale, you should discuss the suitability of this space and time scale for the goal of your analysis

Page 5 line 7-8 – I guess the model is base on an inverse distance weighting technique as far as precipitation is concerned, not air temperature

Page 5 line 11- how many field tests were carried out? 740 km² is quite a wide area.

Page 5 line 23-33 this is a bit confusing: the hydrological model was applied to the whole territory of the Muzza Bassa Lodigiana or only to the 8ha Livraga experimental

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field?

Page 6 line 33 – deduction of eq. 2 is not clear.

Results and discussion- Figures and numbers provided only refer to the Livraga site, while it would be interesting to see how the hydrological model performs on the whole simulated domain (Livraga experimental field?)

References - Two papers by Ravazzani et al. (2011) are actually listed, they should be probably cited as 2011a and 2011b. Wilks (2006) is not listed, nor is Joliffe (2003) which should probably be substituted in the text by Joliffe and Stephenson (2003).

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 10, 15811, 2013.