

Interactive comment on “A coupled human-natural system to assess the operational value of weather and climate services for irrigated agriculture” by Yu Li et al.

Anonymous Referee #3

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General comments: The paper is interesting and novel and it certainly falls within the scope of HESS. The paper presents a novel approach to evaluate climate predictions through the impacts they have on the user decisions. This is an important aspect in the evaluation of the predictions which is often overlooked in the context of climate services. The paper tries to reach some substantial and interesting conclusions but the results are somehow weakened by the design of the experiments and the methodology that has been followed. The assumptions made are clearly outlined but the scientific methods (bias-correction) and datasets used (ENSEMBLES) lag a bit behind what I would consider the current state of the art.

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Specific comments: More information on the bias correction methodology should be provided to allow the reproduction of the results by fellow scientists. In particular reading section 3 it is not clear whether the bias correction is applied to the forecast on a lead-time basis or weather instead the author perform the Q-Q bias correction using a CDF obtained looking at the entire forecast period. If, as it seems, it is the latter, the approach is likely to lead to incorrect results as the forecast bias is lead-time dependent (e.g. Doblas-Reyes et al 2013) whilst the CDF would be calculated on a full 7 month forecast. This is unlikely to be a major problem in regions characterise by a limited seasonal cycle and a small model drift as you could assume the relationship linking model output and observations to be roughly the same throughout the year. Unfortunately I don't think such an assumption would hold in the region of study.

The paper appears to be based on a set of seasonal prediction ensembles characterised by a relatively small ensemble size. Given that we now know that, at least in the case of the NAO in Europe, the climate model signal strength depends on the number of ensemble members (e.g. Scaife et al. 2014) the results presented here may significantly under represent the real usefulness of seasonal climate prediction for the target users.

As noted by other reviewers the evaluation was made on an extremely short time period something which can only further reduce the significance of the results.

In the light of the points raised above I am not convinced the approach, despite its novelty and user-consideration, is necessarily fair in the analysis of the seasonal predictions and their value for informing decision makers.

Technical comments:

Weather and Climate Services (WCS) is not an acronym I came across before. Given the fundamental difference between the way in which climate and weather model output are typically dealt with I am not sure this is particularly useful. Furthermore World Climate Services. (WCS) is also a trade name of a MeteoGroup product.

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Stream 2 was an experiment in the context of ENSEMBLE project rather than a project per-se as erroneously stated in section 4.

The statement about usefulness of seasonal prediction in agricultural application that appears in line 9 of the abstract is too general to be correct as there are regions of the world where these kind of predictions are known to be usable and useful.

Cloke and Pappenberger 2009 doesn't strike as being the most relevant reference to describe the recent development of WCS especially considering is nearly 10 years old now.

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