

Interactive comment on “On the sources of global land surface hydrologic predictability” by S. Shukla et al.

Anonymous Referee #3

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This article is an important and interesting study on the relative contribution of initial hydrologic conditions and seasonal climate forecast skill for global seasonal hydrologic prediction. The overall article is well written and comprehensive. So, I suggest minor revisions for this paper.

General comments.

1. This truly interesting article give primary information for global seasonal hydrologic forecasting : the sources of predictability of such forecast. Indeed, I think that before doing seasonal hydrologic forecast, the first step is to know the sources of predictability at seasonal scale. So, the authors use the ESP and reverse-ESP method. These methods are well explained in the manuscript. 2. In sect.3, I think that it would be more appreciated if results about soil moisture and snow equivalent could be shown

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before results about cumulated runoff (as soil moisture and snow equivalent influence cumulated runoff). 3. Finally, be careful please when you generalize northern and southern hemisphere. For example, p. 1995, from line 15 to 20 when you say : “ This contrast between hemispheres and forecast periods [...] January to March are the highest precipitation months for most parts of the Southern Hemisphere and [...] forecast period starting in July the high precipitation period for many region in the Northern Hemisphere. There are some regions [...] noteworthy exceptions...”. It could be more appropriated to separate high latitude, mid latitudes, tropical and equatorial regions?

Specific comments.

1. In sect. 2.3, when you describe score, can you precise that is a deterministic score with calculation on the ensemble mean? And say one or two thing about other interesting score that can be used for seasonal hydrologic forecast (e.g. time correlation?) 2. Could you add, please, some information about the first perspectives of this study? the use of statistic or dynamic model, multi-model depending on the source of predictability for example?

Technical comments.

P1989-line 7. A small c for change instead of “climate Change”. P1990-line 18. “More recently, Koster et al. (2010) and Mahanama et al. (2011) used a suite of hydrologic models ..” What are the main conclusions of these studies? Could you say a little more? P1995. Line 1. Could you add an equation for Kappa ? P1997_line 6. Do you mean fig. 2a? P1998- line 20. Do you mean fig.3a? P1998-line 24. Do you mean fig.2a?

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