

## ***Interactive comment on “Short-to-medium range hydrologic forecast to manage water and agricultural resources in India” by Reepal Shah et al.***

**S. Prakash (Referee)**

sprakash@citytech.cuny.edu

Received and published: 1 November 2016

The manuscript entitled “Short-to-medium range hydrologic forecast to manage water and agricultural resources in India” by R. Shah, A. K. Sahai, and V. Mishra evaluates precipitation and air temperature reforecasts/forecasts from CFSv2, GEFSv2 and IITM models over India for the period of 2001 to 2009. The evaluation is performed at lead times ranging from 7 to 45 days for the southwest monsoon season. The focus of this study is to assess the performance of operational numerical model forecasts for water resources and agricultural practices in India. The topic of research is of broader interest and vital in Indian perspective. The authors have also used bias correction method to precipitation and air temperature forecasts and integrated them in VIC model to assess

C1

total runoff and soil moisture.

Before getting to my specific comments, I hope that my inputs are not taken as criticisms, but as constructive suggestions.

Specific comments: 1. The improvement after bias-correction should be explicitly mentioned quantitatively in “Abstract” and “Conclusion” sections.

2. Please mention the spatial resolutions of the IITM forecast products as well.

3. The spatial resolution of IMD gridded air temperature is  $0.5^\circ$  and also all the model products are available at coarser spatial resolution. But, the assessment is performed at finer spatial resolution of  $0.25^\circ$ . It is suggested to discuss about the propagation of errors due to resampling from coarser to finer spatial resolution with at least one example.

4. The use of mean absolute error (MAE) alone for error quantification might be misleading eventually (Ref: Chai and Draxler, 2014, Geosci. Model Dev., 7, 1247-1250). The use of any normalized error metric would be more appropriate to better understand the error characteristics.

5. Again, CSI is not an equitable categorical metric to evaluate the performance of any numerical model. It is surprising why authors selected CSI alone for this study, even though several better skill metrics are now well-documented.

6. It is suggested to discuss about the impact of sample size at significance of the evaluation in the “Conclusion” section.

7. The authors have appreciably used VIC model here to assess one of the droughts in India. Better prediction of floods is also equally important during the monsoon in India. It would be great if authors demonstrate the same for one flood case too.

8. A careful language check is recommended. For instance, first sentence of page 2 needs to be re-written.

C2

