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Discussions

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Interactive comment on "Scenario approach for the seasonal forecast of Kharif flows from Upper Indus Basin" *by* Muhammad Fraz Ismail and Wolfgang Bogacki

Anonymous Referee #2

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This paper introduced a scenario approach [actually the ensemble streamflow prediction (ESP)] to predict the Kharif flows from Upper Indus Basin (UIB) at seasonal timescale. Given the unique regional characteristics, the authors employed an improved Snowmelt Runoff Model (SRM) by incorporating the glacier component and divided the UIB region into Upper and Lower parts. The result shows this improved model (SRM+G)-based scenario approach seems to produce smaller overall mean absolute error in comparison with other different operational seasonal forecast models. As a regional case study, this study may be likely of interests of local researchers. However, I do not have a few major concerns.

Comments:

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[Discussion paper]

1. This paper is very short and looks like a letter. I am not sure whether it is suitable for HESS. Actually, some important information is missing (see my specific comments in following). 2. Section 2.2 (Line 11-14). You should provide enough quantitative evidences to explain how to divide the Upper and Lower parts within UIB. 3. Section 2.2 (Line 15-16). There are little details about the Kirpich travel-time equation that is used to determine the 3-day time lag between Kharmong and Tarbela. Please add the relevant information in the revised version. 4. Section 3 (Line 1-5). This part (forecast skill metrics) belongs to method description. Please move it to Section 2. 5. The authors only focused on the forecast performance of median (50%) volume values. Actually, the extreme volumes, like "dry" (20%) and "wet" (80%) conditions, may be of greater importance for the downstream regions. It should add a few additional skill assessments in terms of predicting extreme conditions. 6. This study assessed the forecast skill only by examining the volume difference of determined values. In the revised version, a few probabilistic quantitative metrics, like anomaly correlation (AC), Brier Score (BS), the false alarm rate (FAR), hit rate (HR), and Equitable Threat Score (ETS), should be employed to assess its skill in probabilistic forecasting. 7. Section 3. Please add 1-2 figures to illustrate the comparison of SRM+G model-based scenario approach with other forecast models. 8. You are suggested to add a comparison between SRM+G and SRM, to highlight the superiority of SRM+G in terms of incorporating glacier component. Also, a comparison of SRM+G estimates between with and without consideration of divisions (Upper and Lower parts) should be inserted and discussed in the revision. 9. Section 2.3 (Line 30). If I understand correctly, R indicates the daily runoff depth, not precipitation depth. 10. Section 2.5 (Line 33). "TRMM 3B34 product" should be "TRMM 3B34 product". Please correct it.

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