Interactive comment on "An experimental seasonal hydrological forecasting system over the Yellow River basin – Part II: The added valuefrom climate forecast models" *by* Xing Yuan

Anonymous Referee #2

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The second of the two papers concerning the establishment of the seasonal ensemble hydrological prediction system in the Yellow River basin, this paper describes the investigation of the added value from implementing the ensemble of climate models into the considered framework.

Two main forecast ensembles are compared: the ESP/VIC approach produces streamflow forecasts based on the ensemble of 28 meteorological conditions from the period of 1982-2010 and an ensemble of 8 North American Multimodel Ensemble models with a total of 99 members (referred to as NMME/VIC). The forecasts of soil moisture and naturalized streamflow are compared using two metrics – Anomaly Correlation and RMSE Skill score. The AC plots show that the NMME/VIC approach may enhance the

forecast skill for both streamflow and soil moisture at longer lead times.

To produce a forecast that would be comparable to the observations, the output from both approaches is then post-processed by a linear regression. The regression coefficients are derived by fitting the naturalized multiannual streamflow time-series to the observed time-series. After the post-processing, the NMME/VIC shows a significant reduction in RMSE as compared to the naturalized streamflow.

Considering a hydrological system with high human interventions, would applying a linear regression for streamflow time-series be the best practice in fitting the simulated streamflow to the obeserved? Would water subtractions be a linear or a non-linear process? Is it possible to introduce a seasonally-dependent water subtraction submodel in the VIC model based on e.g. municipal subtraction statistics and would the whole framework benefit from that?

The reviewer kindly asks the author to provide further insight in section 5 on the reasons for a significant decrease in forecast RMSE skill verified against the observed streamflow. As far as the reviewer have understood, the VIC model was calibrated against the naturalized streamflow and only fit to the observed streamflow by linear regression, so were the forecasts.

With the minor additions the paper is suitable for publication.

Technical corrections: - page 3 line 19: correction "of the simulated streamflow"