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Hydrology and Earth System Sciences
Discussions

Interactive comment on "Optimising Seasonal Streamflow Forecast Lead Time for Operational Decision Making in Australia" *by* A. Schepen et al.

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General Comments:

The paper covers the important topic of forecast release time of monthly to seasonal forecasts. Many available observation products used for statistical forecasting, such as mean monthly SST of the last month, are generally available several days after the beginning of the forecast period. Additional time is needed for data control, the generation of the seasonal forecasts and the development of key messages and other communication products.

In the Australian forecast system presented here the forecasts are generally issued with a lag of 7 days. New data products based on daily SST from NOAA are tested for a timelier release of the forecast. The verification of the results is straightforward

and the methods used for verification, PIT and CRPSS, are suitable for this topic. The results show only a small degradation of average skill for forecasts with 7-days lead time compared to the current method. This is a good message as timelier release of forecast increases its potential value in decision making. Another advantage of the presented method is that the predictands are not limited to calendar months any more. In theory when using daily data a forecast of the next 28 days could be released every week.

The paper is of great importance, well written and easy to understand. It fits nicely the topic of the special issue and should be foreseen for publication. The only thing I am struggling with a little bit is that the current version of the paper is between a technical study and a scientific paper. Additional references of methods used for statistical forecasting and the differences compared to the BJP and the advantages of the BJP should be presented in the introduction. An additional interesting verification metric would be the sharpness of the predictive uncertainty of the different lead times compared to the original method (not only in the combined measure CRPSS). As the training data set of the available daily SST data product (starting 1982) is smaller than the training data set of the monthly SST data (starting 1854 but also depending on the length of the streamflow observation record) it is expected that the parameter and the total uncertainty of the BJP predictions are larger for the predictors with a smaller observation period.

Specific Comments:

p 4, l 5: Explain shortly the main characteristics of the different runoff regimes for non-Australian river experts. Probably add the regions of the different runoff regimes to Figure 1.

p 4, l 6: Add range of catchment areas considered: "... ranging from 102 to 36 230 km^2..."

p 4, l 10: Length of streamflow observation records? This is important to get an impression of the number of data points used for parameter estimation of the BJP (see

general comment).

p 4, l 15: Make clear that the predictands are still the three-month totals starting at the beginning of each month.

p 4, l 25 – l 30: Is there a relationship between subsurface ocean temperatures and SOI lagged by two / three months with the predictant? These predictors could still be used in the system with lead times up to 28 days.

p 8, l 8: Add % to the CRPSS values. In many other applications a maximum CRPSS of 1 (100% in your case) is used. This could be a little bit confusing.

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