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

Anonymous Referee #3

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Summary

This paper proposes to increase the lead time at which operational forecasts of three-month streamflow volumes can be issued by the Bureau of Meteorology in Australia. Currently, the data collection and processing cause the forecasts to be sometimes issued in the second week of the forecast period. The development of sub-seasonal forecasts in the region prompts the need for timelier forecasts. In this paper, the authors first present a forecasting method that would allow forecasts to be issued several days prior to the forecast period. Then, they investigate the relationship between forecast lead time and forecast quality.

The authors show that being able to issue forecasts several days prior to the forecast period can be achieved without any loss in forecast reliability. Nevertheless, accuracy

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decreases as the lead time increases. The optimal trade-off between forecast accuracy and forecast lead time must then be decided on. Forecasts with lead times shorter than 7 days may offer an acceptable loss in accuracy as compared to the gain in anticipation time.

General comments

The topic is an interesting one and allows to look at forecast quality within an operational context, with timing constraints The paper is very well written and is easy to follow. The proposed figures are also easy to read and well illustrate the paper. A catchment set is used to obtain relatively general results and the forecast evaluation criteria are relevant. The detailed comments are only minor suggestions and questions I had when reading the manuscript.

Detailed comments

Throughout the paper, “N-days lead time” and “N-month lead time” were confusing at first, probably due to the “N”. Could you maybe reformulate or add a small sentence in the first occurrences to define the terms?

In Section 2.3, have you compared the performance of the current forecasting system with that of the proposed system? Do you have an idea of their difference in skill, if the forecasts are both run at lead time 0?

Page 8, Lines 8-9: Is there a specific reason why you chose -5 and 5 as thresholds?

Page 8, Lines 12-13: Could you maybe add a short sentence to further explain this? For instance, is the number of cases below -5 sufficient to assert this?

Page 9, Lines 26-27: This sentence is, I think, very important in this paper, as it links forecast quality with operational expectations and requirements. I am just curious: have the authors further investigated the topic? How would you discuss / How have you discussed the acceptable loss in quality with operational managers? Is there a way to weigh the loss in skill more pragmatically, and relate it to the gain in anticipation

time?

Figure 4 and 5: It is interesting to put in parallel these figures with Figure 1 and Table 1. But how are the catchments ordered? I could not find it in the text, nor when looking at Table 1.

Figure 5: If I understand correctly, the objective of this figure is to show that the patterns between 0-day lead time and 7-days lead time are quite similar. Have you thought of showing the skill score of the 7-days lead time computed with the 0-day lead time as reference to highlight the differences between Figures 4 and 5? I understand that Figures 6 and 7 go in this direction but Page 8 Lines 3-6 could be illustrated in that way as well.

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