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Discussions

Interactive comment on "Long-term precipitation forecast for drought relief using atmospheric circulation factors: a study on the Maharloo Basin in Iran" *by* S. K. Sigaroodi et al.

Anonymous Referee #2

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This paper presents results of long-term forecasts (10 months ahead) of precipitation using data-driven techniques. This is an interesting topic, but the current version of the paper has a number of shortcomings. Forecasting precipitation 10 months ahead is obviously a very ambitious objective and the results show that the accuracy of the forecasts is very low. The paper claims that the precipitation over the Maharloo basin can be forecast about 10 months ahead. Of course the forecasting is possible technically, but the question is how good are the forecasts to use them reliably for a practical purpose, e.g. to support drought risk management – which was the motivation of the paper. In my view, this aspect is not sufficiently argued in the paper. Moreover, the

paper does not show any attempt to analyze the uncertainty of the results and how the uncertainty may influence any pro-active decision to be made for drought management. The number of observed rainfall stations (four stations) used for the size of the basin (31,500 km2) is also very low. The relatively better performance of the non-linear ANN model compared to the liner regression is not new. Why 80/20 splitting of the data for calibration/validation is not discussed? The validation using only 20% of the data is not convincing. The forecasting is done treating each month separately, so the temporal correlation is not considered. Is 10-month lag always gives the best result? It would have been more interesting if the results were presented to show how the uncertainty or the forecast accuracy changes with the lag-time. The link of the study to drought risk management is also poorly presented, and even the widely used drought characterization index, the Standardized Precipitation Index (SPI) is defined differently in this paper (Eq. C1).

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