

Interactive comment on “Seasonal forecasts of drought indices in African basins” by E. Dutra et al.

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Received and published: 23 November 2012

Review of: Seasonal forecasts of drought indices in African basins. This is an interesting study showing the results of a drought forecasting system applied in Africa using precipitation outputs from the ECMWF. I find the results very useful since they stress the difficulty of obtaining reliable datasets for the climate monitoring in Africa and how the climate forecasting outputs are within the range of validity of the currently used precipitation datasets. The main drawback of the manuscript is a very poor conclusions section. I think that the authors should stress and discuss in more depth the limitations existing for drought monitoring and forecasting in Africa, and how the available information is seriously affecting the accurate assessment of the current drought forecasting

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products in the region.

I recommend the publication of the article in HESS, but I would suggest some issues that authors could include in the revised manuscript to improve its quality.

11095. Line 15. Together WMO 2009, the authors should cite Hayes et al. (2011) Bull. Amer. Meteor. Soc., 92, 485, in which it is recorded the selection of the SPI as a reference global drought indicator.

11096. Line 3. The recent study by Vicente-Serrano et al. (2012). Earth Interactions 16 (10) shows a global empirical example of the comparison of different drought indices. 11096, Line 24. ECMWF must be defined the first time it appears in the text.

11097. Line 20. Please, cite Guttman (1999) J. Amer. Water Resour. Assoc., 35, 311–322., which directly focused on this issue.

11099: An assessment of the influence of the three different precipitation datasets on the SPI would be really useful. Although authors include correlations and maps in Figs 4 and 5, some SPI regional time series for the entire Africa and the four analyzed regions would be welcome.

11102. It is not clear how the verification metrics are obtained. What the authors are comparing? Predicted vs. observed SPI? Over which period?. This may be clearly stated in the methods section. Although in the results section the readers may see clearly what is the approach followed, the procedure must be clear from the beginning. A reference where to find these indicators or the equations would be welcome since they are not commonly used.

11105. Reference on the GRDC and more details on the quality of this dataset is also required. The streamflow data, as the climatic information, is not free of errors. Authors should be aware that several perturbations (damming, water management, land cover change, etc.) may affect streamflow. Therefore, the streamflow data cannot be considered as the true reference for the validation of the climatic datasets. A discussion of

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this issue is needed.

Table 3. Independently of the dataset used, correlations are low between streamflow and precipitation. It stresses the poor quality of the climate datasets currently available in Africa and the reliability of using this data for drought forecasting. Authors should stress this issue in the discussion and to state the need of a strong investment on climate monitoring. On the contrary, forecasting may be largely constrained. Figure 5 clearly shows how correlations tend to be higher in areas with better climate networks (Maghreb and South Africa).

Fig 4. How the discharge series were standardized? This issue is a bit more complex than for the precipitation series. See Vicente-Serrano et al. (2012). *Journal of Hydrologic Engineering*.

Figure 6. The white cells must be detailed in the caption. Do they correspond to non-significant coefficients?.

Figure 7. Given the low agreement between the precipitation datasets and the uncertainty in observational data and predictions, I have doubts on how the forecasting showed at 12-month SPI is reliable or not, given the strong memory of the index. For the 3-month SPI the forecasting model shows a lower reliability, but probably as a consequence of the lower memory of the 3-month time scale. It would be interesting to compare and/or discuss these results with a simple statistical model based on the SPI transitional probabilities (e.g., Moreira et al., 2008, *J. Hydrol* 354: 116) to check whether the dynamic model shows a relevant improved skill in comparison to autoregressive models and/or average precipitation values.

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Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 9, 11093, 2012.