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Hydrology and Earth System Sciences
Discussions

Interactive comment on "Operational river discharge forecasting in poorly gauged basins: the Kavango River Basin case study" *by* P. Bauer-Gottwein et al.

Anonymous Referee #1

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Review "Operational river discharge forecasting in poorly gauged basins: the Kavango River Basin case study" Bauer-Gottwein et al.

General:

The paper is potentially interesting but the scientific issue/hypothesis of the paper at this moment is unclear. Besides the unclear hypothesis the manuscript does not go into the issues in enough depth. The paper maybe worthwhile to publish in HESS after improvements and added in depth analysis.

Detailed comments:

Abstract I doubt/am not sure if it is appropriate to highlight TIGER-NET and the funding behind the project/paper in the abstract. It is unclear what a competitive forecast is.

The scientific hypothesis of the paper is unclear. What scientific issue/problem is being researched? The operational goals of the TigerNET project are listed, but this is inappropriate for a scientific study. What is the added value of the work conducted and what is the relationship to work done elsewhere/previously? Or is this just another case study? As a result, a clear experimental setup to test a hypothesis is missing and the scientific contributions stay unclear.

In the introduction some DA papers are being mentioned. I think in operational hydrologic DA there is not yet, a preferred method, variational approach have also been proposed by Seo et al 2003/2009 and Lee et al 2012. Some papers also try to update both the hydrologic and routing states (see e.g. Rakovec et al., 2012)=>See Liu et al. 2012 for the references for all these papers.

I looked at the reference (NOAA, 2014) but could not find the GFS forecast from 2006 onwards. There are only forecasts from 201208 onwards (ftp://nomads.ncdc.noaa.gov/GFS/Grid4/) are available. Therefore, it is unclear what data is being used for Figure 2 and further results. It needs to be clear which data is being used otherwise it is impossible to judge the results.

I also wondered why GFS is being used and not GEFS for which a hindcast exists from 1984 onwards, see ftp://ftp.cdc.noaa.gov/Projects/Reforecast2/). Especially, because in the discussion it is mentioned that no EPS is available but NOAA also provides GEFS/GENS (http://nomads.ncep.noaa.gov:9090/dods/gens) with 21 ensemble members. So this needs to be revised in the manuscript.

Verification metrics: I think it is necessary to use persistence as reference forecast and analyse the CRPSS and maybe some other metrics (BSS, ROCS, etc) This may make clear what the source of the the skill is because the main question that remains unanswered in my opinion is where skill is coming from: updated initial conditions or

bias corrected GFS forecasts or/and how important the hydrological model is especially for these short lead times.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 11, 11071, 2014.