

Interactive comment on “Impact of the European Russia drought in 2010 on the Caspian Sea level” by K. Arpe et al.

Anonymous Referee #1

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Summary

This paper analysis the impact of the drought in 2010 on the Capian Sea (CS) level. The main finding is that this drought is not caused by the low precipitation rates but rather by the high evaporation rates. This conclusion could be drawn by analyzing the travel time of the precipitation over the Volga Basin (VB) to the CS (which is 1 to 3 months) while the drop in CS level coincides with the drop in precipitation over the VB and an increase in evaporation over the CS.

General comments:

Several studies already investigated the CS level variability, yet according to the au-

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thors the novelty of this study lies in the improved data set used and its focus on smaller time-scales. And although it concerns a case-study focusing on a very specific region, the authors make a thorough analysis of the available data, focusing both on its quality and the inter-relationships between the different variables, I therefore think that the manuscript is of interest to HESS. The manuscript is well organized and provides a clear and short summary of the full analysis. Yet, the following points should be improved or clarified in a revised version.

- Were precipitation conditions comparable to normal for the months prior to the drought in 2010?
- Section 3.1 describes the overall budget. Does water use have any influence on this budget? It is not included in this section.
- Table 2 contains information on the delay in discharge. Is it possible to visualize this information in a clearer way, for example with correlograms or plots showing both precipitation and discharge maxima.
- Section 3.3 is rather unstructured and it is hard to extract the main findings while reading. Please re-write and subdivide in paragraphs.
- Section5, conclusions, last line 7791, first line 7792: The data from different sources is said to be consistent. Does this also include the satellite data? As, in section 3.3 the quality of the satellite is said to be doubtful and therefore seems to be disturbing the analysis.

Minor coments:

- page 7785, line 10: remove “as well”
- page 7786, line 6: “changes over time” ?
- page 7786, line 26: GPCC i.s.o. CPCC ?
- page 7787, line 6: “can partly be”

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- page 7787, lin 14-16: “none of the budget components [. . . .] only by a small amount.”
Sentence unclear.

- Page 7792, line 9-12: Sentence unclear. The decreased CSL is “compensated” by
increased evaporation?

- Table 1: I assume that the unit “change of the Caspian Sea Level per year in cm” can
not apply to all the variables in the table. Maybe replace change with anomaly from
normal.

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