

Interactive comment on “Spatio-temporal trends in the hydroclimate of Turkey for the last decades based on two reanalysis datasets” by Mustafa Gokmen

Anonymous Referee #5

Received and published: 24 March 2016

General Comments:

This manuscript analyzes the trends of hydro-climatic variables (annual precipitation, air temperature, snow water equivalent, runoff and ET) from two reanalyses data (ERA Interim and ERA Interim/land) over Turkey from 1979 to 2010. The magnitude of the variables between these years, direction and different significance levels of the changes are evaluated spatially over the map of Turkey with a particular focus on several important watersheds. Seeing the contradiction and agreement of two reanalyses data for different variables are important as the study potentially provides a good reference for future applications in this semi-arid country where the climate change impacts become vulnerable. The following issues should be considered to make the manuscript

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in better quality before its publication:

Some Issues:

1. As I agree with other referrers, Turkey shows strong seasonality and therefore it is better to include seasonal changes particularly for precipitation. Other studies show that some important trends are available seasonally but such trend is lost when it is evaluated annually (offsetting).
2. A more in depth explanations with other findings available in the literature should be given. For example, it is very obvious that there is strong warming and it is very significant on some regions (west, south west), so it should have some impacts on the type and intensity of precipitation. Snow becomes rain and their frequency and intensity are changing. Seasonality analyses can help identify these results but at least some literature supports can be incorporated to your results.
3. Figure 3a, are the station values compared with yearly country-averaged values from ERA Interim data set? You should have compared averaged of observations with averaged of corresponding pixels from dataset (not all country). Make the plots more visible. Why just used temperature data at that location (inland part). As you used precipitation observation from different location across the country you can use the same for temperature to make it more representative spatially. The reason for using these stations should be given (maybe this is the area where very significant increase in temperature but it should be explained).
4. Make the plots showing the performance of datasets with observations more visible. Use different legends.
5. All figure captions describing the trend direction and magnitude (except temperature) are wrong. they should be corrected according to figure panels.
6. As contradictory results for some areas are obtained for ET, runoff and SWE, a suggestion to readers should be given to which dataset to be used in a possible fu-

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ture studies. Whether the author suggests using ERA Interim Land is more preferable because it uses an updated land surface model.

7. Derivation of surface runoff should be given. Does it include contribution from sub-surface flow or just an excess water on surface after infiltration? I don't think streamflow on river channels are considered.

8. In text or in figure captions, the basins whose borders are shown in Figures should be explained.

9. It is explained that ERA Interim is available at 80 km resolution but the author used them at 25 km (0.25) resolution. Have you done a re-scaling (downscaling)? Give explanations.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., doi:10.5194/hess-2016-23, 2016.