

***Interactive comment on “Quantifying the impacts of human water use and climate variations on recent drying of Lake Urmia basin: the value of different sets of spaceborne and in-situ data for calibrating a hydrological model” by Seyed-Mohammad Hosseini-Moghari et al.***

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There is a growing body of literature revolving around the human impacts of Urmia Lake. This study contributes to the ongoing debate on the shrinkage of the Urmia Lake and its ultimate fate. It assesses the impacts of climate and human water use on the desiccation of Lake Urmia in Iran using WaterGAP model. In particular, quantification of the anthropogenic effects reflected on the different parts of total water storage over

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time gives a comprehensive picture of the changes in hydrology of the Lake Urmia basin caused by human interference. However, discussing and comparing results with more recent studies, such as Alizadeh et al., (2017, 2018), Chaudhari et al., (2018) and others, would add value to the manuscript. Here are some additional minor comments that the authors may want to consider during the revision.

1. The results from natural simulation in the manuscript shows a negative TWSA trend (Page 21, Lines 11-13), especially in 2009-2013; to what do the authors attribute this declining trend? Does any of the climate variables, such as precipitation and temperature, over the region show a similar declining trend? How much of the negative TWSA trend can be explained by the changes in climate variables? Even though the manuscript title says “climate variations”, discussion regarding this part is currently too brief.
2. Figure 5 in the manuscript shows the WGHM grids. Significant area of the lake basin is excluded from the model domain. As the authors are estimating the total basin water storage change it is essential to encompass the entire basin.
3. The authors should use contrasting colors in figures. It is difficult to distinguish the WGHM-ANT and WGHM-NAT lines in Fig 9 due to similar colors.

References: Alizade, G. G. Y., Baykara, M. and Unal, A.: Analysis of decadal land cover changes and salinization in Urmia Lake Basin using remote sensing techniques, , (July), 1–15, 2017. Alizade, G. G. Y., Altunkaynak, A. and Unal, A.: Investigation Anthropogenic Impacts and Climate Factors on Drying up of Urmia Lake using Water Budget and Drought Analysis, Water Resour. Manag., 32(1), 325–337, doi:10.1007/s11269-017-1812-5, 2018. Chaudhari, S., Felfelani, F., Shin, S. and Pokhrel, Y.: Climate and anthropogenic contributions to the desiccation of the second largest saline lake in the twentieth century, J. Hydrol., 560, doi:10.1016/j.jhydrol.2018.03.034, 2018.

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