

Interactive comment on “Investigating uncertainty of climate change effect on entering runoff to Urmia Lake Iran” by P. Razmara et al.

Anonymous Referee #1

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This paper touches on a potentially interesting topic with an attempt to assess the risk of water resources of a large lake under projected future climate change. However, the paper is poorly written with numerous awkward English phrases and sentences, making it really difficult to follow. The description of the methodology is confusing and unclear; the interpretation of the results is inadequate or unsupported. The reviewer hereby recommends the manuscript be returned for major revision before it can be considered for final publication in HESS. My comments are given below.

1. The authors should give more explanations with regards to the selection of the two scenarios A2 and B1 for the analysis. Why were these two scenario chosen instead of the others? Are they representative of future climate changes for the study region?
2. It is mentioned in Section 2 (page 2189) that the temperature observations are taken

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from the Urmia city station. How about the precipitation observations? Are they taken as the mean of the 15 meteorological stations in the lake area?

3. It is unclear how the downscaling of the chosen climate scenarios is done with the LARS model to generate proper daily time series of precipitation and temperature. Relevant details should be included in Section 3.3.
4. The final chosen ANN model (page 2196, line 2) involves using evaporation. However, only the downscaling of precipitation and temperature of the climate change scenarios are discussed. Where does the evaporation data come from?
5. In Section 3.3.1, it is mentioned that the difference in temperature and the ratio in precipitation between the future period and the base period are used to compute the climate change scenarios. However, Equations (2) and (3) show that the difference is used for both temperature and precipitation?
6. In Section 3.3.2, what does the risk levels 25%, 50%, and 75% mean from a user/decision maker's perspective?
7. Multiple terms are used throughout the paper for the LARS model. These include: LARS, change factor LARS, change factor-LARS, LARS-WG, among others. Please be consistent.
8. Page 2196, Line 9-10: the first 'validation' should be 'calibration'?
9. Page 2197, Line 27: are these statistics from the calibration period or the validation period?
10. Figure 2 and Figure 3: please explain the box plots, i.e., what do the stars, bars, boxes mean, respectively?
11. Figure 4: what are the solid and dotted lines, respectively? If the dotted line is the model simulated runoff and the solid line is the observed runoff, why the simulation is always underestimating the observation?

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12. Finally, the entire manuscript should be thoroughly revised with proper English.

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