

Interactive comment on
**“Intensity-Duration-Frequency and spatial
analysis of droughts using the Standardized
Precipitation Index” by M. Mohseni Saravi et al.**

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Dear Dr. Toth, The authors would like to thank for useful comments of the anonymous reviewers which helped us to improve the quality of the manuscript. All comments were considered carefully and included in the text and the revised manuscript will be uploaded soon.

The followings are our responses to the valuable comments of reviewer No. 1:

1. Abstract was revised to be more informative. 2. References were checked and compared with the text. 3. Formulas and references in the introduction section were removed. 4. Objective of study was revised to better demonstrate the work. 5. The

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manuscript is outcome of a thesis which used the most available data at the time project. 6. The requested maps were added to the manuscript. 7. As mentioned in section 2.2, we tried to select station with the longest data period and lowest missing data. The percent of data gaps was provided in the revised text. 8. Run test was used to check the homogeneity of data. This point was also considered in the revision. 9. Type of water resources including short term (3 and 6 months), medium term (12 months) and long term (24-48 months) were considered in the revised text. 10. The mentioned point was revised in the text. It is worth mentioning that statistical distributions were fitted to the observed data and then the best fitted distribution was selected. 11. Name of software was mentioned in the text. 12. Details of SPI calculation and characteristics of drought were presented in section 2 and section 1, respectively. Figures 1 and 3 show calculation process of drought values. 13. Issues related to uncertainty for time scales such as 12 months were presented in Discussion section. Details on the selection of the most suitable distribution and the values of statistical tests were included in the text as requested. 14. The process of calculation as well as values of RMSE was included in the text. It should be mentioned that other interpolation techniques were also used which provided relatively similar results as compared with IDW approach. 15. The mentioned corrections were made in the text. 16. The mentioned corrections were made in the text. 17. SPI in different regions should result similar values because it is based on probability theory. But interpolation and extraction of drought extent is meaningful and rational because of different duration and frequencies. Otherwise, preparation of a spatial drought maps will be meaningless. This is the common process which many countries and research center follow it. The presented drought maps in the manuscript also clearly confirm this fact. 18. The mentioned corrections were made in the text. 19. This was included in section 2.3. 20. This section was revised. 21. Only parts of results which have been discussed are included in discussion section. It was necessary to follow the rational coherence of this section.

Again, we deeply appreciate the reviewer No. 1 for useful comments and suggestions.

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