

# Monitoring and Mapping of Soil Salinity Variability in Fars Province

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## ABSTRACT

The exact magnitude and extent of salt-affected soils in Iran is not clearly known, yet. Towards this, the present paper emphasized the necessity to define the national salinity study project by collaboration of a research group from Netherlands with aim to provide a list of the problems facing the salinity crisis, as well as drawing a road map in order to bring short- and long-term solutions against soil salinity. This poster is provided some salinity information on Fars Province, as an important hotspot in Iran. This province is geologically prone to salinity problems because of existing the Maharlu Lake, Bakhtegan Lake and Ghataruye Desert. Additionally, groundwater drainage due to recent drought and incorrect management in the agricultural sector has accelerated the water salinization, irrigation reduction and land use change in this province. This project will be very helpful to better management of Iranian salt-affected soils.

**Keywords:** Future planning, Salinization consequences, Soil management

## BACKGROUND OF SALINITY IN FARS PROVINCE

**Fars Province** is recognized as one of the hotspots of soil and water salinity in Iran. This province is vast (Figure 1) and the distribution of points that geologically causes salinity of the soil, including Maharlu Lake, Bakhtegan Lake and Ghataruye Desert, is high (Sajadipour et al., 2019).



Many rivers of this province also pass through saline geological formations, such as salt domes they assume that after solving their solutes into the water and moving into the downstream areas, it can lead to salinity problems. On the other hand, groundwater drainage due to recent drought and incorrect management in the agricultural sector has resulted in water salinization, irrigation reduction and land use change in the province (Pazira & Homaei, 2010). Soil salinity has observed in Neyriz, Lar, Fasa, Darab, Arsanjan, Kazeroun and Jahrom counties.

Mokarram et al. (2016) via studying the relationship between landform and soil salinity in the surface and subsurface soils in the southeast of Fars Province, reported the high EC values in plain small for subsurface soil ( $>0.8$  ds/m) and surface soil ( $>3$  ds/m). While the low EC values were seen in mountain top and stream for subsurface soil ( $<0.8$  ds/m) and surface soil ( $<0.4$  ds/m) that was indicative leaching of the soil (Figure 2).

**Figure 3 also showed the trend of the monthly salinity changes in Maharlu Lake as a case study in Fars Province.**

## References

- Mokarram, M., Najafi-Ghiri, M., Negahban, S. et al. Model. Earth Syst. Environ. (2016) 2: 16. <https://doi.org/10.1007/s40808-015-0073-7>
- Pazira, E. and Homaei, M. 2010. Salt leaching efficiency of subsurface drainage systems at presence of diffusing saline water table boundary: a case study in Khuzestan plains, Iran. Proceedings of International of the XVIIth World Congress of the International Commission of Agricultural Engineering (CIGR), Quebec City, Canada, pp: 1-15.
- Sajedipour, S., Zarei, H., & Oryan, S. (2017). Estimation of environmental water requirements via an ecological approach: A case study of Bakhtegan Lake, Iran. Ecological engineering, 100, 246-255.
- Zamanpoore, M., Daremipouran, M. R., Ghaed-Abdi, M. R., & Ahmadi, N. K. (2019). Chemical and Physical Properties of Maharlu Salt Lake (Iran) Prior to an Extensive Drought. ECOPERSIA, 7(1), 59-67.

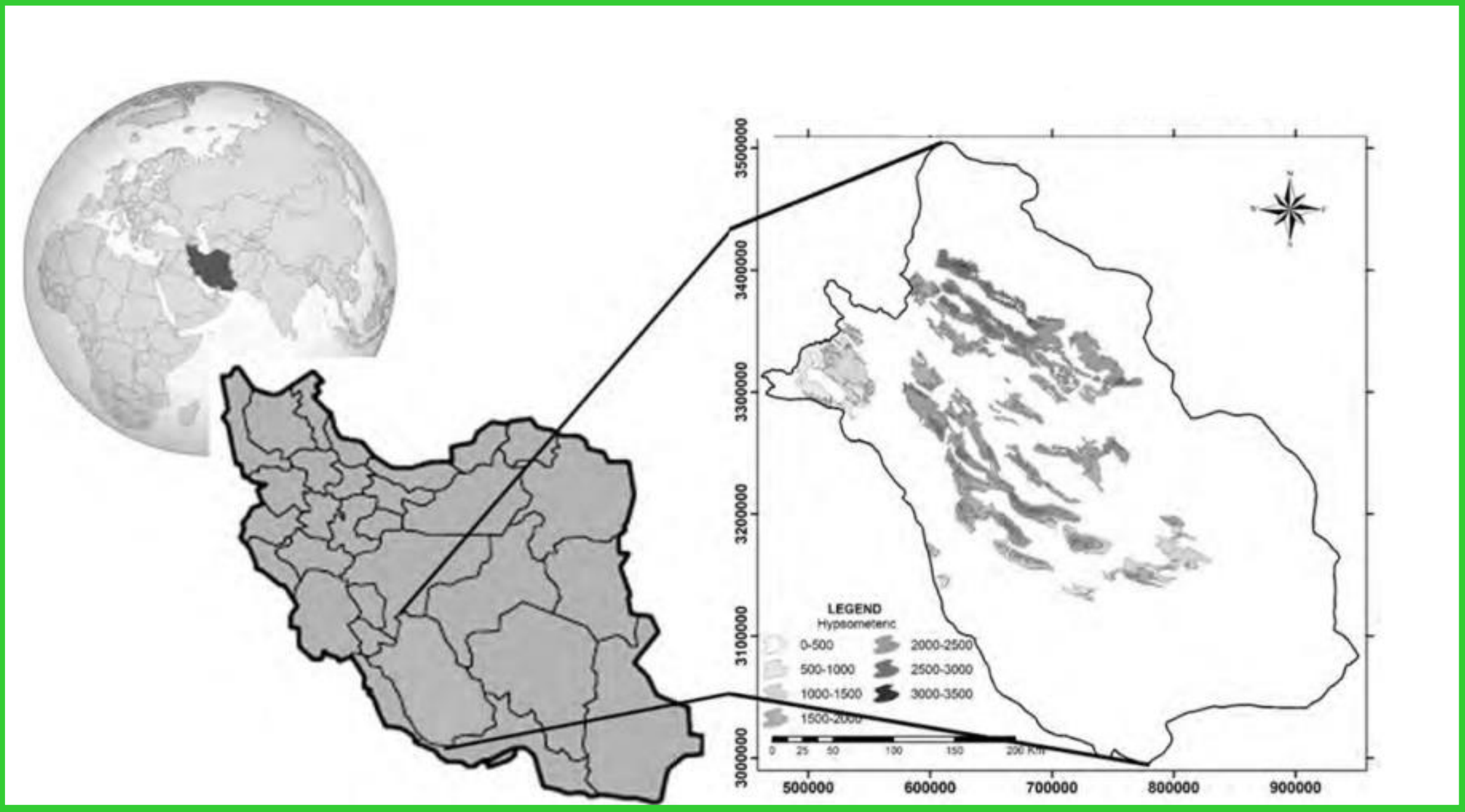


Figure 1. Location of Fars Province (Source: Nejabat et al., 2017)

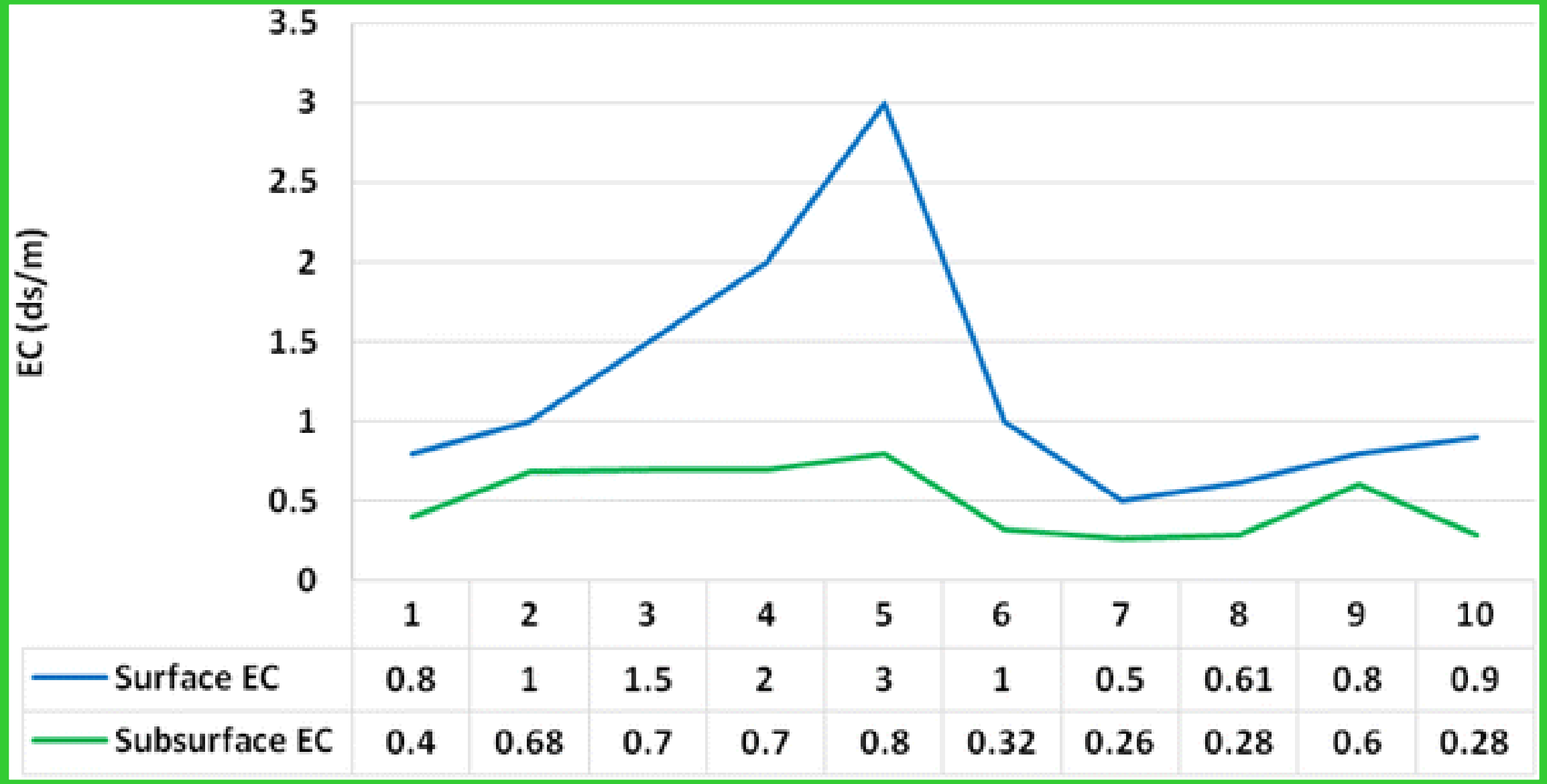


Figure 2. Relationship between landform classes and EC value in the southeast of Fars Province (Source: Mokarram et al., 2016)

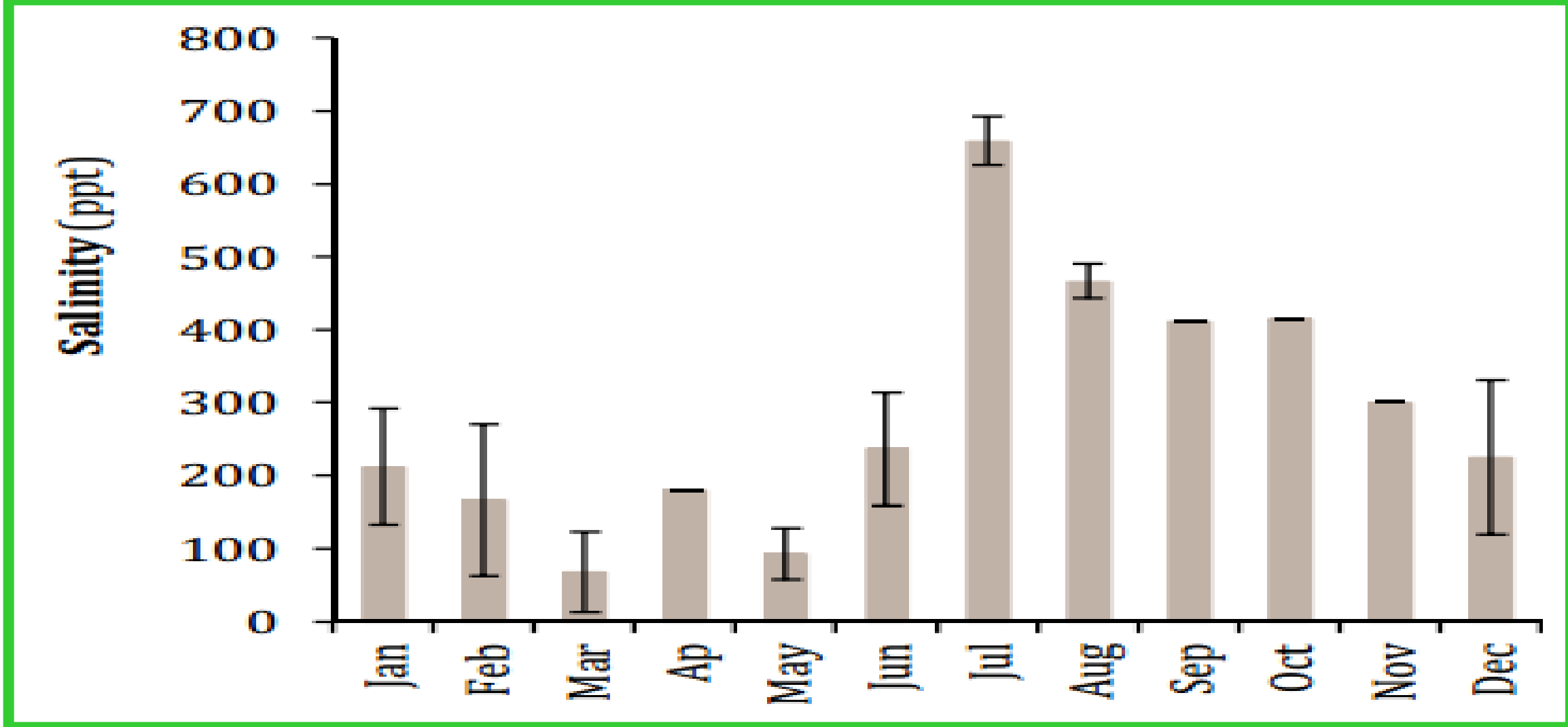


Figure 3. Monthly changes of salinity in Maharlu Lake (Source: Zamanpoore et al., 2019)

## Conclusion

It is obvious that the soil salinity in Iran found a rising trend. Thence adapting immediate controlling tools is vital for human well-being. In addition, considering that salinity of the soil affects the lives of migratory birds to the lakes of Fars Province, evaluating environmental issues can affect the management of saline soils.