



The study of Lake Urmia desiccation: morphometry impress

Ayoub Moradi, Ali Akbar Rasouli, and Shahram Roostaei

Remote sensing & GIS department, University of Tabriz, Islamic Republic Of Iran. (ayoubmoradi@gmail.com)

Located in northwestern Iran, the hypersaline Lake Urmia has started a serious uninterrupted desiccation since 1995. The lake has lost about eight meters of water level and about 75% of water surface area during past 20 years. In particular, the lake water volume decrement has been accelerated in recent years. The importance of the Lake Urmia for human life in northwestern Iran, and its destructive effects on a vast region if totally dry up, demands comprehensive studies of the lake level fluctuations mechanism. According to literature review, the water volume of the lake behaves sometimes differently from the water storage of the whole basin. Our time series analysis using Land Data Assimilation Systems also confirms those differences within last decades. In other hand, many studies addressed the lake desiccation to climatic changes and/or anthropogenic influences such as excessive dam constructions in the watershed during last decades. As water leaves the lake only through evaporation, the fluctuation of evaporation has a distinctive role in the lake level variations. Dramatic decreament in the lake extent indicates of a special morphometry. The lake's morphometry has made it vulnerable to temperature and salinity changes. It strongly controls the lake's water heat capacity and water density. And, it therefore controls the rate of evaporation from water surface. We study the role of lake's morphometry on the lake desiccation. Although, the global climatic change is known as the primary reason for current droughts in the Middle East generally, our preliminary results show that the lake's morphometry is the main cause for the accelerating of water volume lost in Lake Urmia. In particular, after 2007, lake's water temperature and density show significant variations. Water heat capacity and evaporation rate are consistent with information of lake's hypsometry.