# Investigating the temporal and spatial variations of water consumption in Urmia Lake River Basin considering the climate and anthropogenic effects on the agriculture in the basin

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## Abstract

Urmia Lake River Basin (ULRB) is one of the most important habitats in the world and one of the major agricultural regions in Iran. On average, the ratio of irrigation to evapotranspiration in this basin is more than 73%. Investigating the irrigation water requirement pattern changes and the spatial distribution of evapotranspiration during the basin development period on a regional scale play important roles in understanding the basin situation. In this study, the actual evapotranspiration has been estimated by SEBAL model. By estimating the precipitation distribution in the basin, the agricultural irrigation water requirement pattern has been calculated using the land use map in 1995, 2010 and 2014 in the total agricultural lands and in its 7 major subbasins where ET changes from 369 to 1000 mm. The maximum irrigation water consumption were 535 million cubic meters in Urmia subbasin (2010) and then 469 million cubic meters in Miandoab Subbasin (2014). While its average was 2108 million cubic meters in the basin. Furthermore, the maximum and minimum levels of evapotranspiration pattern in the total agricultural lands were 765 and 555 mm in 2010 and 1995, respectively. This study included (1) a comparison between regional irrigation water requirement in the basin and (2) investigating the causes of (including natural and anthropogenic) changes in the amount of irrigation water consumption over the years. The study approach provided a simple but powerful assessment to describe the irrigation water consumption pattern in the subbasins using the minimum ground data and to identify the water management strategies in basin agriculture and climate changes.