Evaluation of Renewable Water Resources of Urmia Lake Basin Using GLEAM

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Abstract
Lake Urmia, located at northwestern Iran, is the biggest territorial lake in Iran and one of the most hyper saline lakes of the world with a basin of 51876 km². In recent years, as a consequence of excessive water extraction in upstream, ambitious water projects and decrease in precipitation, the lake water level has been dramatically lowered. One of the important factors to analyze the drop in Lake’s water level is the Water Balance of the Basin. In this research, in order to evaluate basin’s water balance, different tools like GLEAM, lake water balance and the updates by the Iran Water Resources Management Company have been used. Based on the results from GLEAM, the basin’s Natural Renewable Water (NRW) for water year 1394 has been 5780.59 MCM more than 83% of which has been used in agricultural sector. The estimated Available Water based on the updates by the Iran Water Resources Management Company was 5% less and the calculated Available Water based on historical data was 45% more than GLEAM’s result. Another important note is that in the study water year, 1541.02 MCM of the Potential Water have been used in the basin, from which, 421.4 MCM of it was regarded to the reduction in lake’s water level and the remaining 1119.62 MCM, have been provided by the groundwater supplies which caused reduction in ground water level in the basin. The official data released by the Iran Water Resources Management Company (IWRMC) have reported the basin’s groundwater exploitation as 2210.99 MCM for the water year 1389-1390.

Keywords: Lake Urmia Basin, Available Water, Actual Evapotranspiration, GLEAM.

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