



## **Compounding Impacts of Drought and Increased Human Water Withdrawal on Lake Urmia**

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Recently, drought and increase in human water withdrawal have caused ecological degradation in several terminal lakes worldwide. Among them, the shallow and hyper-saline Urmia Lake in Iran has experienced about 6 m drawdown in lake level and 80% reduction in surface area. Here, we assess the imposed stress on Urmia Basin's water availability and Lake's ecological condition in response to coupled climate change and human-induced water withdrawal. A generalized river basin decision support system model consisting network flow is developed to simulate the basin-lake interactions under a wide range of scenarios. This model optimizes water allocations based on available inflow, reservoir storage, downstream demands, and reservoirs/demand priorities. Studied scenarios represent a wide range of historic climate and water use scenarios including a historical baseline, future increase in future water demand and also improved water efficiency. In this presentation, we show the lake's water level, as a measure of lake's ecological health, under the compounding effects of the climate condition (top-down) and water use (bottom-up) scenarios. This method illustrates what combinations lead to failure in meeting the lake's ecological level.