**Enhancement of the National Water Model Forecast Predictions by Establishing Correlations in Reservoir Release Datasets**

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The National Water Model (NWM) is a hydrologic model that simulates observed and forecast streamflow over the entire continental United States (CONUS) using the network of USGS stream gages. The purpose of this project is to locate potential datasets to enhance the prediction capabilities of the NWM under low flow conditions. This will be done by the investigation of datasets and the establishment of data-driven correlations for reservoir releases with instream and environmental flow requirements. Two watersheds were selected for comparison: the Trinity River in Texas, USA and the Sacramento River in California, USA. The Trinity River drains into the Trinity-San Jacinto Estuary. Lake Livingston Reservoir is located on the Trinity River and is under environmental flow regulations to release a required amount of water to maintain seasonal inflow at a downstream USGS stream gage to ensure water researches the estuary. Data was collected for the counties downstream and surrounding Lake Livingston. Correlations were established between water rights diversions, water usages, population, rainfall, reservoir releases, and gauged flow. The Sacramento River drains into the San Francisco Bay. The Keswick Reservoir and Shasta Dam on the Sacramento River have minimum instream flow requirements to maintain the water temperature for downstream fisheries. Correlations were established between fisheries data, inflow, outflow, scheduled releases, precipitation, and gauged flow. The results of this research will contribute to anthropogenic research at the National Water Center. It will identify datasets that can be incorporated into the NWM to enhance the prediction capabilities. It will lead to a better understanding of the human component of why releases are being made from reservoirs, whether it is to meet a human use demand, a senior water right, or an instream or environmental flow requirement.

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