# Climate Change Effects on Reservoir Inflows using High-resolution Hydrologic Modeling Framework

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This study describes the impacts of projected climate change on reservoir inflows across the United States. For this purpose, we focused on 178 headwater basins where inflow to reservoirs is non-regulated (i.e. unaffected by human influence or upstream regulation) and also have long-term streamflow observations. Historic hydrologic conditions were simulated using the marco-scale Variable Infiltration Capacity (VIC) hydrological model at 1/24th degree grid cell resolution. The VIC-routing model was then used to simulate streamflow at the selected reservoir inflow locations. To project the climate change effects on reservoir inflows, the VIC model was driven by 10 meteorological forcings ensemble member of CMIP5 GCM models which were dynamically downscaled and bias corrected using RegCM4 to 1/24th degree grid cell. To better understand the impact of projected f uture changes in temperature and precipitation on shifts in streamflow discharge and distribution; and its implications on reservoir storage, temporal trends in reservoir inflows were also explored. Furthermore, hydrologic sensitivities experiments were conducted to identify the factors affecting the streamflow response to changes in precipitation and temperature. This study provides estimates for changes in the reservoir inflows over the next several decades in response to potential climate variations that can be used for optimized water supply management in the downstream areas.