

## ECI 273 Term Project

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### **Abstract**

Simulation modeling informed by downscaled GCM ensemble predictions coupled with hydrologic modeling is commonly used to gauge the future effects of climate change on water resource systems performance. However, climate models are highly uncertain and are thus reflected in significant variability in simulation results. In this study, the performance of objectives including flooding and reliability in the Sacramento-San Joaquin system projected until the year 2100 were tested against the historical period (1951-2000) to determine when a significant change can be detected. Model scenarios and subsequent significant detections were sorted by different climate and land-use scenarios and by GCM. Two approaches to analyzing significant detections were implemented: first, finding the proportion of the entire ensemble that detected a significant change before 2100 and second, studying the distribution of first detection years of individual scenarios. It was found that the reliability objective was far more likely to exhibit a significant change within the century, whereas detectable change in flood volume occurs after the year 2100.