

**Christiana Ade** University of California Merced. USA; Erin Hestir (University of California Merced) and Christine M. Lee (NASA Jet Propulsion Laboratory)

### **Assessing Fish Habitat Potential and the Effects of an Emergency Barrier on Turbidity in a Drought Impacted Estuary Using Satellite Remote Sensing**

**Abstract:** Estuaries experiencing drought stress often require intervention by environmental managers and government agencies. Novel technologies and methodologies can support effective management decisions. In this study, we evaluate the use of high frequency, high resolution satellite remote sensing within two management-relevant case studies in the San Francisco Estuary and the Sacramento-San Joaquin River Delta. Using remote sensing-derived time series of turbidity maps created during the height of the great California drought (dry season of 2015), we were able to 1) identify favorable turbidity conditions for the endangered fish species, delta smelt (*Hypomesus transpacificus*), and 2) evaluate changes in turbidity following the installation of an emergency saltwater intrusion barrier. Potential habitat frequency maps indicated several persistent areas of turbidity refugia throughout the summer in the north and west Delta; however, there was infrequent connectivity between refugia. The barrier assessment enhances and supports previous findings derived from field samples, which determined that the installation may have resulted in increased turbidity in two areas near the barrier, by providing spatial context. Similar analyses could be applied to other drought stressed estuaries to evaluate the impacts of mitigation and management procedures on species habitat potential and water quality.