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## Challenges of biofuels related to water energy-food nexus and ecosystem processes under changing change climate in California case studies

**Qinqin Liu**

California Natural Resources Agency, USA

Global climate change creates critical challenges with increasing temperature, reducing snowpack and changing precipitation for water, energy and food, as well as ecosystem processes at regional scales. The increased regional temperature, changes in snowpack and precipitation and increased water stresses from drought can reduce ecosystem services in water, energy and food and affect biofuels and agricultural food production. Increasing water demand and water footprint in application of new technologies and management practices in water, energy and food sectors present a great challenge for limited water supplies and water stress related to biofuels, bioenergy & bioeconomy in California, especially under changing climate. California case studies have been used to assess multiple benefits, trade-offs and research needs for renewable energy with biomass in ecosystem services. Challenges of biofuels related to water energy-food nexus and ecosystem processes under changing climate are discussed in this presentation.

Qinqin.Liu@water.ca.gov