

Berkeley Lab researchers receive \$20 million to study watershed impact

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Researchers at the Lawrence Berkeley National Laboratory received \$20 million from the Department of Energy last week to lead a three-year research project in the Upper Colorado River Basin, where they will study the processes that influence water availability and water quality as a result of climate change.

The project — called the Watershed Function Scientific Focus Area — is a collaboration led by Berkeley Lab of more than 60 researchers from five different institutions. By the end of the study, Kenneth Williams, the deputy lead of the project, hopes they will have a firm understanding of the impact of climate disturbances or disturbance events on the flow of water and nutrients.

Because climate change has been causing snow to melt earlier and earlier, the researchers hope to understand how plants and microorganisms adapt. They aim to determine whether plants grow earlier in the season and for longer times or continue to use water and release nutrients in the way they always have.

“We want to understand the factors that will influence the Colorado river water to sustain its delivery of water to downstream users, including residents in the state of California,” Williams said.

The study is taking on a “system of systems” approach — a way of understanding the overall behavior of a system by viewing it as a collection of smaller systems. The researchers are interested in how mountainous systems retain and release water, nutrients, carbon and metals, especially as the climate continues to become hotter and drier.

Research will take place in the East River watershed at the Upper Colorado River Basin, a location chosen because of the vital role it plays in supplying water to seven states — including California — for drinking, agriculture and energy production.

The University of Oregon is working on a similar study, the Alsea project, which focuses on how logging affects watershed in Oregon creeks. Another related project, the Flood Prevention Authority, is working on a four-part plan to understand the characteristics of watershed and the changes over time that affect flooding of California’s Pajaro River, with an end goal of preventing floods.

According to Williams, the team hopes to artificially create conditions for early snow melt by the winter of 2017-18. Researchers then plan to compare and contrast how the artificial melt and snow melting in current conditions will impact their respective environments, though Williams noted that the experiments would have to be continued for multiple years to get an accurate understanding of the longterm effects of snow melt times on vegetation.

“As a resident of a state where we are fundamentally dependent on the Colorado River, I am excited to participate in a project that is looking to understand the impact of system disturbance on the Colorado River system,” Williams said.