INTELLIGENT INFRASTRUCTURE INITIATIVE

WATER, TRANSPORTATION, CITIES

MISSION

This CITRIS initiative will help the state face a water crisis that offers numerous challenges: the collapse of the Sacramento-San Joaquin River Delta ecosystem and infrastructure, the draining of the state's groundwater reserves, and changes in the timing of mountain precipitation, leading to water shortages and floods. CITRIS researchers are working with state agencies to create a state-wide information 'infrastructure' that will enable better management of the state's water resources.

ABOUT

At CITRIS, a team of hydrologists, ecologists, computer scientists and engineers from all four campuses (UC Berkeley, UC Davis, UC Merced and UC Santa Cruz) are using wireless sensor networks and the developing real-time computing techniques to meet the challenge. By developing prototype information systems for each of the major elements of the Californian water system, CITRIS scientists can work with partners to translate and scale these systems in ways that will benefit society.

FEATURED PROJECTS

SIERRA SNOWMELT

Conducted through the deployment of a large-scale wireless sensor network, researchers are able to study snowmelt phenomena in a small, contained watershed in the southern Sierra Nevada. With 60 wireless nodes and more than 240 independent sensors, this is believed to be the largest eco-wireless system in the world. Aside from scientific information, these deployments are also shedding light on the interaction between technology and the environment. Data collected by these networks will improve WSN design and will investigate the feasibility of instrumenting an area as large as the entire Sierra Nevada mountains.

FLOATING CENTURY: PUTTING WATER ONLINE

Researchers release "floating robots" in the Sacramento River Delta and then use wireless networks to obtain information about water levels, flow rate, salinity, chemical levels, and mercury content. This info is combined to provide a situation awareness map — like a Google traffic map — of the entire system, including how fast the water is moving and how far up the delta salt water has moved with tides or potentially because of levee failure. Because pumps in the upper delta send Southern California much of its freshwater supply, monitoring salt water is key.

CONTACT

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CENTER FOR INFORMATION TECHNOLOGY RESEARCH IN THE INTEREST OF SOCIETY

CITRIS