

New Measurements of Toxics and Organics in Tahoe Smoke

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To better understand the effects of catastrophic wildfires on the Lake Tahoe ecosystem, UC Davis researchers will install a fourth state-of-the-art air sampler at Lake Tahoe on Monday.

The UC Davis Tahoe Environmental Research Center has long-established air sampling programs at three Tahoe Basin locations -- in Tahoe City on the north shore; on a buoy at the center of the lake; and at their Incline Village lab. Instruments continuously measure particle mass and size, and components such as dust and nutrients, and are central to efforts to understand the basin's air quality and its effects on lake clarity.

The new sampler is designed to provide more detailed analyses of the organic compounds and toxic materials that result when forests burn. "The catastrophic wildfires that are burning in California are sending unusual amounts of smoke and particulates across California and into the Tahoe Basin," said Thomas Cahill, a UC Davis professor emeritus of physics and atmospheric sciences. "This sampler will tell us exactly what is in the air and what may be falling onto the lake."

Those analyses, paired with the research center's water studies, will show, for example, if the nitrogen fallout from burned trees ends up fueling an algae bloom in the lake, said Geoff Schladow, Tahoe Environmental Research Center director. During the June 2007 Angora fire, which occurred within the Tahoe Basin, smoke and ash resulted in a short-term increase in algal growth in the lake. This year's fires are producing less smoke within the Tahoe Basin, but the smoke has been present for a much longer period.

Cahill recently completed the most extensive analysis to date of Tahoe Basin wildfires. The work was commissioned by the U.S. Forest Service. He said one of his findings was that in pre-settlement times, summer fires in the basin were common.

"These historic lightning-caused fires would burn for weeks in the forest," Cahill said. "The difference between then and now is that the fires stayed low to the ground, unlike the catastrophic fires we have now, which burn all the way up into the treetops and send huge smoke clouds high into the air."

Cahill added that the shore-to-shore visibility that Tahoe visitors enjoy today is not usual, either. When low-burning summer fires were common, he said, "Every night, cool air flowing down the mountainsides would push the smoke into the center of the lake."

Source: UC Davis

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