Scientists studying why some Tahoe clouds produce moisture

By Bettina Boxall, Los Angeles Times

A Gulfstream turboprop sits on the McClellan Airport runway under gray, gloomy skies. Kim Prather has waited two weeks for this day.

“I can’t believe there are finally clouds,” she says gratefully as she and her research team check and calibrate several million dollars’ worth of equipment stacked in the plane’s cabin.

Looking for answers in Tahoe's clouds. Photo/LTN file

After the plane takes off, it slices through a 9,000-foot-thick layer of storm clouds, zigzagging up the western slope of the Sierra Nevada to probe the mysteries of California’s rain and snow.

Onboard, a special instrument that Prather invented and named “Shirley” will blow apart atmospheric particles with a laser and map their chemical composition, all in real time. Other devices will count and measure millions of cloud droplets, record water content and analyze gases.

On the ground, in the Tahoe National Forest, another array of equipment will simultaneously sample Sierra air masses.

Prather’s team is trying to figure out why some clouds give up their moisture and others don’t as they roll across the mountain ranges that provide much of the state with water.

They wonder: Is urban pollution reducing precipitation in Northern California’s high country? Is Gobi Desert dust blown thousands of miles across the Pacific Ocean boosting the Sierra snowfall? Will atmospheric rivers – the moisture-laden bands in the sky that drenched the state in December and March – dump even more rain with global warming?

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