Dust from Africa Affects Snowfall in California

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LOS ANGELES (AP) — One of the driest spots on Earth — the Sahara desert — is increasingly responsible for snow and rain half a world away in the western U.S., a new study released Thursday found.

It's no secret that winds carrying dust, soot and even germs make transcontinental journeys through the upper atmosphere that can affect the weather thousands of miles away. Yet little is known about the impact of foreign pollutants on the West Coast, which relies on mountain snowmelt for its water needs.

Previous studies hinted these jet-setting particles may retard rainfall in the Sierra Nevada mountains in Northern California by reducing the size of water droplets in clouds. But scientists who flew through storm clouds in an aircraft, measured rain and snow and analyzed satellite imagery found the opposite: Far-flung dust and germs can help stimulate precipitation.

During the 2011 winter, a team from the University of California, San Diego and National Oceanic and Atmospheric Administration traced particles suspended in

clouds over the Sierra to distant origins — from the skies over the arid Sahara that later mingled with other pollutants in China and Mongolia before crossing the Pacific.

The days with the most particles in the clouds were also "days when we see the most snow on the ground," said study leader Kimberly Prather, an atmospheric chemistry professor at UC San Diego, whose study was published online Thursday in the journal Science.

Scientists believe wafting dust, grit and microbes — including bacteria and viruses — can spur the formation of ice crystals in clouds that in turn can influence how much rain or snow falls.

For years, governments and utilities in California and other Western states have used cloud seeding, in which a chemical vapor is sprayed into clouds, in a bid to increase rainfall.

The new study shows how "Mother Nature has figured out how to give us more precipitation" and that may lead to changes in cloud-seeding efforts, which can be hit-or-miss, Prather said.

David J. Smith at the NASA Kennedy Space Center said it was refreshing to see measurements from the ground, air and orbit to tackle how airborne particles affected Northern California snowfall.

"Such a comprehensive approach is the only way to thoroughly examine global transport" of particles, Smith, who had no role in the research, said in an email.

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