Can dirty air intensify a drought?

Susanne Rust, California Watch, 7-7-10

Dirty air may not just affect your lungs.

It could affect your tap, too.

Scientists at the Desert Research Institute, a division of the Nevada System of Higher Education, say polluted air can cut a storm's snowfall in half.

Randy Borys, co-author of the study and director of the institute's Storm Peak Laboratory in Steamboat Springs, Colo., said pollutants aren't creating drought – they are just making it worse.

What's happening is that pollutants, such as sulfate, nitrate or other compounds, attract tiny droplets of moisture in the atmosphere.

These tiny droplets, in ordinary circumstances, combine with bigger ice crystals that tend to hang around in the atmosphere over mountains. When the small drops crash into the crystals, they are released from the clouds as snow or rain.

But when pollutants are in the air, they grab the tiny particles of water coming in from a storm, and for a variety of physical and climatological reasons, make it harder for the tiny droplets to combine with the crystals.

"This action prevents the water from gathering into droplets large enough to be removed from the sky by falling rain or snow," Borys told the Reno Gazette Journal. "Instead, they just disperse and evaporate."

Douglas Lowenthal, co-author of the study, said the research does not indicate that pollutants have cut overall snowfall in half. It just shows they can cut a particular storm's snowfall by as much as 50 percent.

"This is complicated research," he told California Watch. The institute has been examining the issue since 2001. The team's most recent published research appeared in 2009 in the Journal of Applied Meteorology and Climatology.

The Desert Research Institute's research adds to a growing body of evidence that soot and pollutants in the air can affect snowpack and water availability.

Research published last year by the Department of Energy's Pacific Northwest National Laboratory showed that pollution from car tailpipes and industrial smokestacks (from as far away as China) settle on mountain snowpack, creating a dark layer of soot on top of the white fluffy snow.

The dark layer absorbs sunlight, making the snow melt faster.

Borys told the Reno Gazette Journal that water authorities are taking notice, and are alarmed.