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L.A. County hopes to fend off drought with cloud-seeding program

The plan is to begin this winter over the San Gabriel Mountains. Critics say the process is dubious and could trigger mudslides.

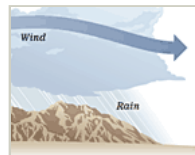
By Deborah Schoch, Los Angeles Times Staff Writer
June 16, 2008

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Hoping to wring water from the skies, a parched Los Angeles County plans to launch an \$800,000 cloud-seeding project in the San Gabriel Mountains that officials believe will boost rainfall and raise the levels of local reservoirs.

The project, which will rely on injecting clouds with silver iodide particles, has won county supervisors' backing and is slated to begin this winter.

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How cloud seeding works

"We're basically coaxing Mother Nature to give us 15% more rain than there would be otherwise," said county civil engineer William Saunders. He said the county did seeding for several decades, beginning in the 1950s.

This time, officials decided to resume the program after a seven-year lapse caused by concerns over mudslides in some mountain areas ravaged by brush fires.

With California gripped by dry weather and Gov. Arnold Schwarzenegger declaring a statewide

drought, cloud-seeding is attracting both fresh attention and skeptics.

Critics throughout the West have long dismissed seeding as a dubious technological rain dance. They worry it can trigger landslides, such as the deadly one in the San Gabriel foothills 30 years ago.

Some water experts, including Peter Gleick at the nonprofit Pacific Institute, a nonpartisan think tank in Oakland, believe public funds would be better spent promoting proven water-conservation measures, such as low-flow toilets.

"It's a bit of a sign of desperation," Gleick said. "They've been doing cloud seeding for decades, but we've never clearly been able to show if it's what we've done or what nature has provided."

That's because researchers who try to prove seeding's efficacy face unique roadblocks. Rain forms in nature, not in a laboratory, and scientists can't very well seed one cloud and leave another one unseeded as a "control cloud."

Also, cloud behavior varies widely.

"To have them be in the right place at the right time, that's where it gets really complicated," said scientist Daniel W. Breed, who studies cloud physics and precipitation at the National Center for Atmospheric Research, a federally funded center in Boulder, Colo.

When county public works officials estimate that seeding will increase rain 15%, for instance, they're depending on a 36-year-old county analysis that compares rainfall from a decade of seeding with rainfall during the previous 20 years.

The National Academy of Sciences released a report in 2003 calling cloud seeding unproven and urged more thorough study.

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But federal money is scarce, and the most significant studies today are happening in the Mideast and elsewhere overseas, often conducted by U.S. scientists.

"It's something that I wish there were more good hard research on," said Maury Roos, the state's chief hydrologist. "I think there's something to it. The question is, how much, versus how much is it going to cost?"

Yet the phones are ringing at the offices of so-called weather modification firms that use airplanes or ground-based generators to spray silver iodide above mountains and watersheds, typically on contract to public agencies.

Santa Barbara County water officials swear by the practice; so does a Monterey County water agency. Electric utilities have used it regularly in the Sierra Nevada. Even some cities in the bone-dry Southeast United States are investigating the approach.

"In a drought, that's when we get the majority of calls," said Don Griffin, president of North American Weather Consultants Inc., the firm the county is hiring, based in Sandy, Utah. "When there's above-average precipitation, people don't think about it."

Ironically, a drought can be the worst time to try cloud seeding because clouds are scarce, and the technique works best in a normal year, when it is believed to entice more raindrops from rain clouds, Breed said.

For years, companies such as Southern California Edison and Pacific Gas & Electric seeded clouds in winter over the Sierra Nevada to boost snow runoff that feeds hydroelectric plants. Until recently, the Los Angeles Department of Water and Power seeded in the Eastern Sierra, a major source of city water.

What sets the San Gabriel Mountains project apart from those programs is its proximity to urban areas.

The county plans to target the watersheds of five reservoirs -- Pacoima, Big Tujunga, Cogswell, San Gabriel and Morris -- high above the communities of the San Gabriel Valley.

While many think of airplanes seeding clouds, the county plans to use ground-based generators, another common method.

The generators will be placed along the base of the San Gabriels and will use flares or propane burners to spray particles. Flares would be used only during winter rains, not during fire season, said Diego Cadena, deputy director of the county Department of Public Works.

Rain and snow are created when ice nuclei in clouds swell from water in the air, create ice crystals and fall to earth. During seeding, silver oxide particles are supposed to act like a proxy for ice nuclei. Since their structure resembles that of ice crystals, the theory goes that spraying particles into clouds will mean more crystals and eventually more rain and snow.

In the San Gabriels, rainwater will be collected in the reservoirs and transferred to spreading basins. There it will percolate into aquifers and later be pumped for public use.

The county did cloud seeding over the San Gabriels in the 1960s and '70s but killed the program after a February 1978 storm caused major flooding in Big Tujunga Canyon near Sunland-Tujunga.

Eleven people died in the storm and subsequent landslides, with damage estimated at \$43 million. Dozens of people sued the county, alleging that seeding a day before the storm worsened its impact and that the uncertainty of the science made seeding dangerous.

Although the county prevailed in all the suits, its attorneys remained leery 13 years later when public works officials proposed restarting the program. The county counsel's office warned at the time that "cloud seeding immediately adjacent to the second largest metropolitan area in the nation involves potential risks of very substantial liability."

Even so, the county resumed seeding in 1991 after requiring North American Weather Consultants to take out a \$10-million insurance policy.

The 1978 cloud seeding occurred in the San Gabriel watershed, not where the flooding occurred, Cadena said Friday. He has requested that an upcoming environmental review include a study of potential flooding and whether more insurance was needed. The review will also look at the effects, if any, of silver iodide entering water supplies.

Seeding was halted again in 2002 after the Curve and Williams fires burned parts of the San Gabriel watershed, prompting concerns about landslides. But the burn area

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has recovered to the point that seeding can resume, officials said.

Cadena said that although the county is a strong supporter of conservation, funding low-flow toilets -- as Gleick suggested -- is better done by water supply agencies. He said county-funded seeding is timely.

"With everything that is going on today, and the potential for cutoffs of water coming from up north, we're looking at every source of water," he said.

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Should Los Angeles County seed clouds in the San Gabriel Mountains to try to increase rainfall?

- 1. Typical of LA County Government--ignore real solutions (like encouraging greywater which could reduce water demand in homes by half), and instead throw money after nonsense like this. Why? Because real change and real water conservation will require focus, effort and leadership, which would require our county supervisors to actually take action.
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4:47 PM PDT, Jun 16, 2008
- 2. what a waste of taxpayers money. 800,000 dollars while the average homeless person cant even get a couple of bucks for a meal
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- 3. NO! Do not allow the government to take over your sky. They have already done this for years. This is not new. They just want your approval now. DONT GIVE IT TO THEM! Do not believe the mainstream media. From 2005 www.waterplan.water.ca.gov/docs/cwpu2005/vol2/v2c
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