

What is cloud seeding?

Cloud seeding is a technique used to increase rain or snowfall by adding chemical substances to clouds. Typically, substances with a small particle size, such as silver iodide or potassium chloride, provide additional surfaces for water vapor to condense around. Substances can be released into the clouds from planes or strategically located ground stations.

Current state of cloud seeding

Long-term cloud seeding projects are currently operating in California's Sierra Nevada Mountain Range, Santa Barbara County, and Los Angeles County. The California Department of Water Resources announced in 2023 their interest in dedicating additional resources to cloud seeding projects. However, due to California's recent droughts, projects statewide have had limited success since only those clouds likely to produce rain can be seeded. Ongoing scientific research is exploring ways to improve the effectiveness and measure the benefits of cloud seeding.



Meadow and hills on a cloudy and rainy day in Rancho San Antonio County Park.

Cloud seeding in Santa Clara County

Valley Water was an early pioneer for cloud seeding in California, launching its program in 1951, less than ten years after the discovery of the technique. The program was run regularly until the particularly rainy winter of 1994-1995, which caused Valley Water to reassess whether cloud seeding was a beneficial tool to ensure a reliable water supply for Santa Clara County. Valley Water determined that concerns about liability, effectiveness, and environmental consequences outweighed the program's benefits.

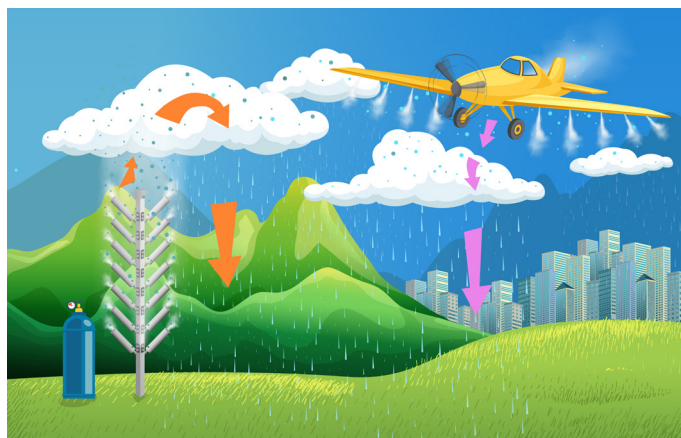


Illustration of artificial rain enhancement.

Concerns with cloud seeding

Peer-reviewed scientific studies on the effectiveness of cloud seeding show mixed results, with some demonstrating up to a 15-20% increase in rainfall and others indicating no increase in rainfall. A lack of a control group makes effective studies of the impacts of cloud seeding and the reproduction of scientific results rather challenging. As a result, it is very difficult to determine whether this technique would be cost-effective for Santa Clara County ratepayers. Additionally, peer-reviewed literature on the environmental and health implications of cloud seeding is scarce. The last environmental impact report for cloud seeding in Santa Clara County dates to 1975; additional studies would be needed to determine the long-term risks of cloud seeding chemicals in the county.

Conclusions

Currently, there is insufficient data to justify restarting cloud seeding in Santa Clara County. However, Valley Water will continue to follow cloud-seeding research studies and programs and will reassess using cloud seeding if positive progress is made. For now, the most reliable approaches to guaranteeing a stable water supply throughout the county are conservation, investments in purified water, retrofitting in-county reservoirs, and diversifying Valley Water's storage portfolio. More information on Valley Water's plan to secure a reliable water supply into the future can be found in Valley Water's Water Supply Master Plan 2040 and associated Monitoring and Assessment Program reports.