



## US STARTS CLOUD SEEDING EXPERIMENTS

A five-year, \$8.8 million pilot project to examine whether seeding clouds with silver iodide produces a measurable increase in snowfall has started in the US. The test area is the skies over Wyoming's Medicine Bow, Sierra Madre, and Wind River mountain ranges and involves intensive observations of Wyoming snow clouds. Scientists from the National Center for Atmospheric Research (NCAR) designed the experiment to evaluate a technique that has been mired in controversy for decades.

In the experiments, 24 ground-based generators will burn a silver iodide and acetone solution, creating plumes of silver iodide particles aimed at clouds upwind and over the target areas. Simultaneously, a Piper Cheyenne II twin-engine turboprop airplane will burn flares mounted on its wings to inject silver iodide into clouds two thousand feet or higher above the ground. Silver iodide's ice-like particles attract the cloud's liquid water, which freezes around the particles to form snow.

Cloud seeding is big business and NCAR's partners in the observations include Weather Modification, Inc., a private company. WMI has been contracted to seed the target area's snow clouds and is also providing the research aircraft and ground-based instruments for the observations. Western states spend millions each year seeding clouds but studies to evaluate the method's effectiveness, at least on a large scale, have been inconclusive. The Wyoming Water Development Commission has funded the Wyoming Weather Modification Pilot Program to resolve whether cloud-seeding might provide users with a low-cost source of fresh water.

According to a water commission report, a 10% increase in snowpack in the project's targeted areas would provide between 130,000 and 260,000 acre-feet of water in additional runoff each spring. Conservative estimates value this water between \$2.4 and \$4.9 million. The numbers do not include values for generating more hydroelectric power, enhancing recreation or tourism, improving water quality, or other environmental benefits. At \$6.60 to \$13.00 per acre-foot, the technique would be a bargain; as water from Wyoming's High Savery Dam, for example, runs \$158.93 per acre-foot.

Decades of ongoing winter weather research, improved techniques for releasing chemicals into clouds, and better forecasting and assessment tools are giving scientists a leg up in the new pilot program, which combines operational seeding with sophisticated scientific evaluation. The project is important as Wyoming and other areas of western North America have suffered years of drought, with many of their reservoirs still running low. Air pollution from human activities may have worsened the problem. If cloud seeding proves to be effective, the additional snowpack would raise reservoir levels and help protect the state during dry years ahead.

“People are sometimes concerned about changing what they think is natural weather”, said a project scientist, “but studies have shown that in some areas we’re already affecting clouds unintentionally through increases in airborne particulates and other pollution. If cloud seeding is shown to work,” he added , “it may help counteract the effects of air pollution as well as ease those of natural drought cycles.”

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