

Southwest HYDROLOGY

The Resource for Semi-Arid Hydrology

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Cloud Seeding

Southwest Hydrology
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A bimonthly trade magazine for hydrologists, water managers, and other professionals working with water issues.



From the
Publisher

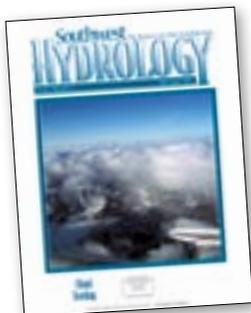
"Seeding is believing" was heard at a recent cloud seeding conference, and the practitioners of cloud seeding are indeed an enthusiastic bunch. Although many uncertainties in understanding the process and results of cloud seeding remain, the potential for achieving additional precipitation for relatively low investment is great enough to foster several large projects in the Southwest. Is this "weather modification" a solution to our long-term water supply concerns? Cloud seeding might augment the water supply somewhat in some areas, but don't scrap the desalination and conservation programs just yet.

Plans for the Aug. 29-Sept. 1 joint Southwest Hydrology/Arizona Hydrological Society symposium, "Sustainable Water, Unlimited Growth, Quality of Life: Can We Have It All?" are well underway. We have many distinguished speakers confirmed and ready to discuss hard questions about water supplies, policy, and technology. Concurrent technical sessions will feature a diversity of relevant topics. In addition, optional workshops and field trips are available to help you make the most of your trip to Tucson. Many sponsors and exhibitors have already made generous contributions, but there's still space for more! Registration will open in late April, but you can reserve your room now at the beautiful Westin La Paloma Resort and Spa for \$109 (single/double), or \$83 for government employees.

Visit www.watersymposium.org for all the details.

As always, we are grateful to our contributors and sponsors for providing the means to produce this publication.

Betsy Woodhouse, Publisher



A water cloud spills eastward and evaporates beyond the crest of the Sierra Nevada toward Reno, Nevada, after having deposited some of its water in the form of snow on the ridge. Cloud seeding can accelerate the conversion of cloud water to precipitation and enhance the snowpack. Photo by D. Rosenfeld during the SUPRECIP field campaign, March 2, 2005.

Southwest Hydrology

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Cloud Seeding

As western water managers look for ways to diversify their water portfolios, they're increasingly looking up to the clouds, wondering if they can squeeze any additional water from them. Is cloud seeding a viable new source of water for the West? Perhaps. Under certain conditions, microscopic-sized materials injected into clouds can cause more precipitation to occur than would have fallen naturally. But many questions remain regarding the details of the process, the success of programs, and the impacts of air pollution. Such questions have held up federal funding of research programs, but some local groups are proceeding on their own.

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William R. Cotton

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Aerosols from smoke and urban air pollution can actually suppress raindrop formation, particularly from orographic clouds. Could cloud seeding offset this effect?

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Bruce Boe and Barry Lawrence

A five-year cloud seeding pilot project underway in Wyoming is unique in that it gained full funding from the legislature, will be independently evaluated by NCAR, and involved local, state, federal, and tribal interests from the start.

26 Seeding Is Not Just Believing: More Science Is Needed

Roelof Bruintjes

Human activities can affect the weather, and seeding *will* cause changes to a cloud. However, in many cases we are still unable to translate these induced changes into verifiable changes in rainfall, hail fall, and snowfall on the ground, or to employ methods that produce scientifically credible, repeatable changes in precipitation.

28 Will Congress Act to Support Weather Modification?

Tom DeFelice

A National Weather Modification Program that would administer resources for all R&D efforts for optimizing cloud seeding technologies has been proposed to Congress.

29 ASCE's Standard Practice Provides Procedures Overview

Betsy Woodhouse

For an overview of how cloud seeding works from both the scientific and practical perspectives, turn to ASCE's *Standard Practice*.

Publishing **Southwest Hydrology** furthers SAHRA's mission of promoting sustainable management of water resources in semi-arid regions.



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