

Weather and Climate Collections

Weather and Climate

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Weather Modification Project Reports



Submission Information & Frequently Asked Questions

What is "weather modification"?

Any activity performed with the intention of producing artificial changes in the composition, behavior, or dynamics of the atmosphere. See 15 Code of Federal Regulations § 908) for what is considered weather modification.

What role does NOAA play in weather modification?

Companies that intend to engage in weather modification activities within the United States are required by the Weather Modification Act of 1976 (15 Code of Federal Regulations § 908) to provide a report to the Administrator of NOAA at least 10 days prior to undertaking the activity. Those reports are filed via the email address weather.modification@noaa.gov and may be found at the the bottom of this page.

Does NOAA conduct weather modification or weather modification experiments?

NOAA does not research or conduct weather modification experiments and has no plans to do so in the future.

Why does NOAA collect information about weather modification?

The Weather Modification Reporting Act of 1972, 15 U.S.C. § 330 et seq. requires that all persons who conduct weather modification activities within the United States or its territories report such activities to the U.S. Secretary of Commerce at least 10 days prior to and after undertaking the activities. Failure to report can result in fines of up to \$10,000.

All weather modification projects must be reported via the appropriate email address (weather.modification@noaa.gov) prior to being implemented. They are compiled and then posted on the NOAA Weather Modification Website.

Activities subject to reporting.

(a) Weather modification activities are defined as "Any activity performed with the intention of producing artificial changes in the composition, behavior, or dynamics of the atmosphere" (see 15 CFR § 908.1). The following, when conducted as weather modification activities, shall be reported (see 15 CFR § 908.3):

1. Seeding or dispersing of any substance into clouds or fog, to alter drop size distribution, produce ice crystals or coagulation of droplets, alter the development of hail or lightning, or influence in any way the natural development cycle of clouds or their environment;
2. Using fires or heat sources to influence convective circulation or to evaporate fog;
3. Modifying the solar radiation exchange of the earth or clouds, through the release of gases, dusts, liquids, or aerosols into the atmosphere;
4. Modifying the characteristics of land or water surfaces by dusting or treating with powders, liquid sprays, dyes, or other materials;
5. Releasing electrically charged or radioactive particles, or ions, into the atmosphere;
6. Applying shock waves, sonic energy sources, or other explosive or acoustic sources to the atmosphere;
7. Using aircraft propeller downwash, jet wash, or other sources of artificial wind generation;
8. Using lasers or other sources of electromagnetic radiation; or
9. Other activities undertaken with the intent to modify the weather or climate, including solar radiation management activities and experiments

(b) The requirement to report does not apply to activities of a purely local nature that can reasonably be expected not to modify the weather outside of the area of operation. This exception is presently limited to the use of lightning deflection or static discharge devices in aircraft, boats, or buildings, and to the use of small heat sources, fans, fogging devices, aircraft downwash, or sprays to prevent the occurrence of frost in tracts or fields planted with crops susceptible to frost or freeze damage. Also, the requirement to report does not apply to religious activities or other ceremonies, rites and rituals intended to modify the weather.

(c) All activities noted in paragraph (a) must be reported at least 10 days before the commencement of such project or activity. However, after the Administrator has received initial notification of a planned activity, he may waive some of the subsequent reporting requirements. This decision to waive certain reporting requirements will be based on the general acceptability, from a technical or scientific viewpoint, of the apparatus and techniques to be used.

(d) Other reporting exceptions may be made in the future by rule of the Administrator.

How do I file a weather modification report?

The following two forms are required for those conducting weather modification:

- 17-4 - Initial Report on Weather Modification Activities (Approved Information collection 0684-0025)
- 17-4A - Interim Activity Reports and Final Report (Approved Information collection 0648-0025)

When creating your reports, please use the following coding system as your NOAA file name: year, state, first four digits of the project name, and the respective report number. For instance, for a project that takes place in 2021 in Maryland and is titled Rock Canyon, the code would be 2021MDROCK-1 (initial report) and 2021MDROCK-2 (final report). You may also use this naming convention to save your files prior to submitting.

How do I submit the form(s)?

Please submit reports via email to weather.modification@noaa.gov.

How long before my submission will be published?

Submissions will usually be available in the repository within two (2) months after the end of the fiscal quarter.

What if I see streaks in the sky and I think someone is modifying the weather?

These are contrails, produced by planes.

Contrails are the condensed products of combustion and vapor generated by airplanes traveling at higher altitudes where the atmosphere is colder. They have been prominent atmospheric features since the beginning of jet plane travel in the early part of the twentieth century. Official observations of contrails were made just after World War I as planes began to fly at high altitudes.

NOAA does not have federal responsibility for regulating airplane exhaust, and we do not manage the National Air Space. The Environmental Protection Agency establishes aircraft emissions standards for any air pollution that could endanger public health and welfare, pursuant to the Clean Air Act.

The Federal Aviation Administration administers and enforces emissions standards [FAA factsheet \(pdf\)](#)

What is cloud seeding?

Cloud seeding requires the release of chemicals in the atmosphere in an effort to have water condense or freeze on them and become heavy enough to produce rain. Cloud seeding is considered a weather modification activity.

NOAA does not regulate cloud seeding activities but does collect information on such activities performed in the U.S. through the requirements for reporting in the Weather Modification and

Reporting Act.

Contact Information

Please see our full MAINTAINING RECORDS AND SUBMITTING REPORTS ON WEATHER MODIFICATION ACTIVITIES for more information or you can contact the NOAA Weather Modification Team at weather.modification@noaa.gov.

Publication History & Scope

In the late 1940's and 1950's many deemed "the deliberate or the inadvertent alteration of atmospheric conditions by human activity", also known as weather modification, as a promising science of the future. Currently, the most common form of weather modification is cloud seeding, which increases rain or snow, usually for the purpose of increasing the local water supply.

As required by that law, NOAA submitted a Report to Congress in 1979, available via the NOAA Library.

Below is a list of these reports and is updated on a quarterly basis.

Show entries

Search:

Search Project Designation	Search Project Number	Search Project Date Range	Search Activity
2021TPWMA_FinalReport	2021TXB	3/1/2021 - 11/15/2021	Augment snowpack
2021WTWMA_FinalReport	2021TXWT	3/1/2021 - 11/15/2021	Augment snowpack
2023CAMOKE-Interim	2024CAMOKE-1	11/1/2023 - 12/31/2023	Increase precipitation
Alameda, California	2024CACARE-1	4/2/2024-5/24/2024	Marine boundary layer
Alta/Snowbird	05 - 1260	10/15/2004 - 12/24/2004	Augment snowpack
Alta/Snowbird	06 - 1307	10/15/2005 - 12/24/2005	Augment snowpack
Alta/Snowbird	07 - 1346	10/17/2006 - 12/24/2006	Augment snowpack
Alta/Snowbird	07 - 1384	10/15/2007 - 12/24/2007	Augment snowpack
Alta/Snowbird	08 - 1422	10/15/2008 - 12/24/2008	Augment snowpack
Alta/Snowbird	10 - 1485	10/15/2009 - 12/24/2009	Augment snowpack

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