

Atmospheric Modification: Frequently Asked Questions

This FAQ is designed to help state legislators understand the basic terms, history, risks, and policy questions surrounding atmospheric modification, including public concerns about "chemtrails," ordinary aircraft contrails, cloud seeding, traditional weather modification, and geoengineering. State lawmakers have a responsibility to respond to constituent concerns, to understand the programs and regulatory frameworks already in place within their states, and to evaluate whether additional oversight or clarification is warranted. Because activities in the atmosphere can affect air quality, water systems, ecosystems, and public trust, clear information and transparent governance are essential.

This document contains the following sections:

Section I: Key Definitions and Concepts
Section II: History and Use in the United States
Section III: Risks, Concerns, and Public Perception
Section IV: International Context
Section V: State-Level Actions and Options

This resource is intended to provide a factual foundation about a growing and complex issue to support informed decision-making, public confidence, and responsible stewardship of shared environmental resources. It is split into five overarching sections with thematically linked questions. Sources are provided for each section at the end of the document.

Section I: Key Definitions and Concepts

1. What are "chemtrails," and is there evidence they exist?

"Chemtrails" is a term many citizens use to describe governments or powerful institutions' actions of spraying chemicals into the atmosphere for undisclosed or harmful purposes. People who hold this belief often point to the white lines that linger behind aircraft as visual evidence that something unusual is happening in the sky.

Though some experts believe these patterns are fully explainable by normal aircraft condensation trails, it is understandable that other people have questions. During the Cold War and Vietnam era, the U.S. government conducted classified atmospheric and environmental experiments, including the use of cloud seeding for military purposes, which only became widely known years later. Historical secrecy, the growth of weather-modification tools, and expanding calls for widescale geoengineering to prevent climate change all fuel mistrust.

2. What are contrails, and why do they sometimes persist or spread?

Contrails, short for "condensation trails," are clouds that form behind high-altitude aircraft. When hot and humid exhaust from jet engines mixes with very cold air at cruising altitude, the water vapor condenses and freezes into tiny ice crystals, creating a thin, linear cloud.

Sometimes contrails dissipate quickly because the surrounding air is dry. In other cases, if the upper atmosphere is cold and humid, the ice crystals can persist for long periods and spread out under the influence of wind, eventually forming broader cloud layers. The appearance of a "grid" or "checkerboard" pattern usually reflects the interplay of scheduled flight routes and upper-level winds. Contrails can have small climate effects by slightly increasing high cloud cover, but they are not themselves a dedicated climate-control program.

3. What is cloud seeding, and how does it work?

Cloud seeding is a long-standing form of weather modification that seeks to nudge existing clouds into producing slightly more precipitation than they otherwise would. In a typical cloud-seeding operation, aircraft or ground-based generators release tiny particles—commonly silver iodide, potassium iodide, or salt—into suitable clouds. These particles can help ice crystals form and grow, increasing the chance that precipitation falls as rain or snow.

Cloud seeding does not create storms from nothing or allow precise control over exactly where rain falls. Studies suggest that, under the right conditions, cloud seeding can increase precipitation, but estimates vary widely and it is often difficult to isolate seeding effects from natural variability. Because the method intentionally influences how clouds produce precipitation and introduces substances into the environment, it raises reasonable questions about long-term effects and potential misuse. Though some studies indicate there are no health or environmental problems associated with cloud seeding, there are caveats, which will be explained later in this document.

4. What is weather modification, and how is it different from cloud seeding?

Cloud seeding is one specific technique within the broader category of weather modification. Weather modification refers to intentional efforts to influence local or regional weather conditions and can include precipitation enhancement, hail suppression, fog dissipation near airports, and other similar activities.

Most weather-modification efforts are geographically limited and short-lived. They aim to affect particular storms, watersheds, or areas of concern rather than the global climate. Examples of states and countries that have weather modification programs in place are provided later in this document.

5. What is weather modification, and how is it different from cloud seeding?

Geoengineering refers to proposals for deliberate, large-scale modification of the Earth's climate system, usually with the stated goal of offsetting some effects of greenhouse gas emissions. International governmental organizations, non-governmental organizations, some academics, and certain philanthropic funders have promoted these ideas because they believe climate change presents a severe long-term risk. Many Americans dispute that premise or regard it as exaggerated. Regardless of one's views on climate change, the proposals raise serious questions about sovereignty, consent, and various risks.

The key differences between geoengineering and ordinary weather modification are scale, duration, and intent. Weather modification seeks relatively small, short-term adjustments to specific clouds or storms. Geoengineering proposals aim to change global or regional temperature patterns over years or decades. Because of this, geoengineering is much closer to climate control than to traditional tools like cloud seeding.

6. What is weather modification, and how is it different from cloud seeding?

Most discussions of geoengineering focus on two broad areas: solar radiation modification (SRM) and carbon dioxide removal (CDR). The most commonly discussed proposals include:

- **Stratospheric aerosol injection:** Releasing reflective particles such as sulfate aerosols into the stratosphere to reduce the amount of sunlight reaching the Earth.

- **Marine cloud brightening:** Spraying fine sea-salt particles into low-lying ocean clouds, which then reflect more sunlight back into space.
- **Cirrus cloud thinning**: Altering certain high-altitude clouds so that more heat can escape into space.
- **Carbon dioxide removal:** Removing carbon dioxide from the atmosphere over time using approaches such as direct air capture, enhanced rock weathering, or large-scale ecosystem projects.

Because these ideas are designed to affect climate at a very large scale, they raise serious questions about unintended consequences and potential harms. Those risks are discussed in more detail in Question 12, while current use and status are discussed in Question 10.

Section II: History and Use in the United States

7. How long have cloud seeding and weather-modification programs existed in the U.S.?

Cloud seeding was first demonstrated in the United States in the mid-1940s, when researchers working with General Electric showed that certain substances could trigger ice formation in clouds. By the 1950s and 1960s, experimental seeding programs were underway across parts of the West, supported by state agencies, utilities, and private companies interested in water supply and agriculture. Today, several western states support or permit cloud-seeding operations.

8. Who typically conducts cloud seeding or weather modification today, and for what purposes?

In the contemporary United States, cloud seeding and other weather-modification activities are typically conducted through partnerships between public sponsors and private, specialized operators. Common sponsors include:

- **State and local water authorities** seeking to enhance precipitation.
- **Electric utilities and hydropower operators** that depend on runoff.
- **Agricultural interests** concerned about hail damage or drought.

Federal reviews have noted that cloud-seeding programs have been active in at least nine states in recent years—California, Colorado, Idaho, Nevada, New Mexico, North Dakota, Texas, Utah, and Wyoming—though program structures and reporting requirements vary by jurisdiction. Projects commonly operate under state-level permitting, licensing, or notification systems. Transparency and public engagement vary widely, and many citizens may be unaware that programs exist in their region.

9. Has the U.S. government ever conducted atmospheric experiments, and how do those differ from modern programs?

Yes. The most notable example of U.S. military weather modification is Operation Popeye, a classified cloud-seeding program carried out by the U.S. Air Force over parts of Vietnam, Laos, and Cambodia between 1967 and 1972. The goal was to extend the monsoon season along key supply routes, turning roads into mud and increasing landslides to disrupt enemy logistics.

During the same era, the United States and other nations funded research into ionospheric modification for communications and defense purposes, exploring how radio waves interact with the atmosphere. Though this did not demonstrate capabilities of controlling the weather, their classified nature and technical complexity have contributed to public skepticism about what governments may be doing in the sky.

Public revelation of Cold War-era environmental and atmospheric programs contributed to political backlash and helped prompt negotiations that led to the Environmental Modification (ENMOD) Convention of 1977,

a United Nations-sponsored international agreement that prohibits hostile military use of environmental modification techniques that have widespread, long-lasting, or severe effects.

The ENMOD Convention arose after studies from the U.S. Department of Defense galvanized Congress to call for an international treaty banning the use of weather modification, with an eye towards the Soviet Union given the United States and Soviet Union were embroiled in the Cold War. The United Nations approved the ENMOD resolution by an overwhelming margin, with the United States, Soviet Union, and several of their closest allies all ratifying the text shortly thereafter. As of today, 78 UN member states have ratified or acceded to the treaty.

However, the programs targeted by ENMOD are far different from modern civilian cloud seeding in purpose and oversight. Modern water-management projects are generally public, regulated at the state level, and justified as peaceful uses. Still, the record of secret experimentation is a major reason many citizens question whether they are being told the full truth today.

10. Has any geoengineering program ever been deployed in the U.S.?

No publicly available information indicates that any large-scale geoengineering deployment has been carried out in the United States as an operational program designed to cool the climate by altering sunlight or clouds. Most solar radiation modification (SRM) work remains limited to modeling, laboratory research, atmospheric measurements, and governance assessments, and proposed outdoor experiments have often been postponed or reconsidered after public pushback.
Carbon dioxide removal (CDR) is different. Some CDR approaches—including direct air capture and other carbon-removal or carbon-management projects, sometimes paired with underground storage—are already operating in the United States in limited, early-stage form. However, these efforts are not yet being deployed at a scale that would measurably influence climate, and they raise a different set of concerns than SRM.

Section III: Risks, Concerns, and Public Perception

11. Are there significant risks associated with cloud seeding?

Most scientific and regulatory reviews to date—including the World Meteorological Organization's statement on weather modification and a 2024 U.S. Government Accountability Office review—conclude that silver iodide and other commonly used seeding agents have not shown significant environmental or human health impacts at the low concentrations typically associated with operational U.S. cloud-seeding programs.

More specifically, one commonly cited review from May 2011—published on the website of the Utah Division of Water Resources—concludes that "there is no evidence for adverse effects to human health or the environment from the use of silver iodide for cloud seeding." Another review published by the U.S. Department of the Interior's Bureau of Reclamation in December 2010 explains, "All of the studies are consistent in concluding that the contribution of the primary cloud seeding material (silver iodide) to the environment from cloud seeding is negligible compared to background levels and are well below threshold limits for human safety, aquatic organisms, and water quality standards. Silver iodide is considered water insoluble and is not able to bio-accumulate to toxic levels." It is important to note that many of the studies on silver iodide are more than a decade old and may not fully account for the increased use or higher quantities being utilized today. As a result, there are concerns that the long-term impacts of silver iodide use remain unknown.

Because of these findings, cloud seeding is often described as low risk at the operational scales and frequencies typical of current U.S. programs. At the same time, "low risk" is not the same as "no risk," especially if programs scale in intensity, duration, or geographic scope. This caveat is specifically provided in

the GAO review and other studies. Long-term, independent monitoring is uneven, and there is less clarity about cumulative effects over decades, including potential interactions with soil chemistry, groundwater systems, and sensitive ecosystems. Even when direct health risks are believed to be small, cloud seeding can still drive public concern especially if decisions are being made without citizens knowledge or consent.

In some countries—including the United Arab Emirates and Saudi Arabia—aggressive cloud-seeding programs have been blamed by critics for contributing to extreme weather events or flooding, though official meteorological agencies dispute those claims.

12. What are the major risks associated with geoengineering?

Proposals for solar radiation modification (SRM)—which have emanated from myriad vectors, including the United Nations, as will be discussed later in this document—raise far more serious concerns than traditional cloud seeding. Modeling studies and expert assessments suggest that large-scale stratospheric aerosol injection and marine cloud brightening could alter regional precipitation patterns, potentially changing where and when rain falls and affecting agriculture and water supplies.

If SRM approaches change where storms form or where rain falls, the consequences could show up as more flooding in some regions, deeper drought in others, and disruptions to growing seasons and water planning. That can translate into crop losses, damaged infrastructure, higher insurance and disaster-recovery costs, and uncertainty for property owners and local governments. A key concern is that these interventions would be difficult to test at meaningful scale in advance, and once deployed, could be hard to "undo" quickly if unintended effects emerge.

There are also concerns about "termination shock." If an SRM program were started and then suddenly halted, the planet could experience rapid warming over a short period, which could be highly disruptive for agriculture, ecosystems, and infrastructure.

Carbon dioxide removal (CDR) raises a different set of risks. Unlike SRM, some CDR approaches already exist in early form, but scaling them dramatically would require major energy, land, water, and industrial infrastructure. In practice, large CDR tied to carbon capture and underground storage can mean extensive pipeline networks and new storage sites, which raises property-rights concerns from the use of eminent domain for corridors and facilities. It also carries real public-health and environmental risks: a major pipeline rupture can release concentrated CO_2 that can be dangerous or even fatal in certain conditions, and poorly sited or managed storage can raise concerns about groundwater impacts and long-term environmental integrity. Even when framed as "non-solar," large-scale CDR can therefore impose significant local costs and risks that policymakers should weigh carefully.

Finally, because geoengineering would operate at a global or continental scale, it has clear geopolitical implications. If one government or coalition deployed SRM and another nation experienced droughts, floods, or unusual storms, the affected country might blame the intervention and treat it as a hostile act. The risk of miscalculation or conflict is a central reason many scientists and policymakers urge extreme caution, even in research.

13. Could weather modification or geoengineering affect weather or climate patterns across state lines?

With traditional cloud seeding and hail suppression, effects appear modest and localized, and it is difficult even for experts to prove whether a particular rainfall event was caused by seeding rather than natural variability, especially at long distances. Nonetheless, when one region runs large-scale seeding programs and a neighboring region experiences drought or flooding, concerns often arise about whether weather modification played a role.

For SRM, cross-border effects are much clearer. By design, stratospheric aerosol injection and other SRM methods would operate at regional or global scales and would influence multiple countries at once.

Recent U.S. flooding events have led to growing concerns regarding weather modification. After catastrophic flooding in Texas in 2025, online speculation and political commentary circulated claims that cloud seeding or other "geoengineering" activity may have contributed, though there is disagreement with that theory. Whether or not any such claims are substantiated in a given event, the episode illustrates the practical need for clear public disclosure, clear definitions, and credible accountability.

14. Why do some people believe geoengineering resembles the "chemtrails" idea, and how are they different?

From the standpoint of a skeptical citizen, geoengineering can sound similar to the chemtrails concept. Both involve dispersing substances into the atmosphere, and both are often discussed in institutions that feel remote from ordinary people's concerns.

However, there are important distinctions. Chemtrail narratives usually describe an ongoing, secret program targeting the general population with unknown chemicals and motives. Geoengineering refers to openly debated proposals, white papers, modeling studies, and policy discussions, many of which warn about deployment risks and argue it may never be acceptable. At this stage, solar geoengineering is a controversial research topic, not a confirmed operational program.

15. What transparency or governance issues make geoengineering controversial even among scientists?

Even experts who view geoengineering as a possible emergency option tend to acknowledge major governance challenges, including:

- The **absence of a clear international framework** to authorize or prohibit deployment.
- Difficulty obtaining **meaningful consent** from affected populations.
- The possibility of **unilateral action** by a country or private actor.
- The risk that early research could create **political or financial momentum** toward deployment even if uncertainties remain large.

The existence of the 1977 Environmental Modification (ENMOD) Convention, which bans hostile military use of environmental modification techniques with widespread, long-lasting, or severe effects, reflects long-standing concern that environmental tools could be weaponized. However, ENMOD does not provide a detailed framework for regulating peaceful geoengineering or deciding when a project crosses the line into a hostile act.

Many rural communities and landowners argue that any atmospheric intervention—whether described as research, cloud seeding, or a future geoengineering project—should not occur above their land without clear notice and meaningful opportunity for input.

Section IV: International Context

16. How have other countries used cloud seeding or other weather-modification programs?

Several countries have adopted weather modification on a scale far exceeding most U.S. operations. Examples include:

- **China:** One of the world's largest weather-modification systems, using aircraft, rockets, and ground-based generators for rainfall enhancement, hail suppression, and special events. In 2020, China's State...

- **...Council announced plans to expand weather-modification coverage to more than 5.5 million square kilometers—more than 60 percent of China's landmass.**
- **United Arab Emirates: Heavy investment in cloud seeding as part of water management, including aircraft operations and research grants to increase rainfall in an arid region. Reporting indicates substantial flight activity and significant costs, with debate over effectiveness and possible links to extreme weather.**
- **Russia: Long history of cloud seeding for events and parades, including attempts to prevent rain over Moscow, along with experimentation with hail suppression.**
- **Australia and Israel: Use of cloud seeding for water-supply and agricultural purposes, with mixed conclusions and periodic review. Israel historically operated a longer-running cloud-seeding effort focused on key northern watersheds.**
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17. Which countries or institutions are researching or debating geoengineering, and what are they proposing?

Geoengineering research, debate, and proposals span multiple continents. Examples include:

- **Universities and national laboratories** in the United States, the United Kingdom, and the European Union conduct modeling studies and preliminary research on SRM and CDR.
- **Philanthropic funding** from prominent individuals, including initiatives associated with Bill Gates.
- **Private companies** exploring weather-modification and geoengineering-related technologies.
- **International discussions** in the United Nations and expert groups about principles and guidelines for governing future geoengineering research or deployment.

At the same time, ENMOD and other agreements show that countries are sensitive to environmental manipulation as a form of warfare. For many critics, proposals for new global frameworks raise serious concerns about ceding authority to international bodies that often do not share American values or priorities.

Section V: State-Level Actions and Options

18. What steps have U.S. states taken to regulate or report weather modification and cloud seeding?

Several states have long maintained permit, notice, and reporting frameworks for weather modification, adopted in the mid-20th century and revised over time. For example, Colorado and Wyoming require permits and recordkeeping/reporting for weather-modification operations, and Utah and Nevada also have state licensing/permit provisions for cloud seeding or weather modification.

Separately, some states operate modern cloud-seeding programs through designated water agencies. Idaho, for instance, authorizes cloud seeding through the Idaho Water Resource Board under state law and documents program activity through administrative criteria and reporting practices.

In addition to state requirements, weather-modification projects are also subject to federal reporting to NOAA under the Weather Modification Reporting Act framework.

19. Are any states addressing concerns about geoengineering or atmospheric experimentation?

Yes. In recent years, a growing number of states have taken a more aggressive stance, moving beyond ordinary permitting to address broader concerns about atmospheric modification. In 2024, Tennessee enacted legislation (SB 2691 / HB 2063) that prohibits the intentional injection, release, or dispersion of chemicals or substances into the atmosphere within the state for the express purpose of affecting temperature, weather, or the intensity of sunlight.

In 2025, Florida enacted SB 56 (effective July 1, 2025), which repeals Florida's prior weather-modification licensing statutes and prohibits geoengineering and weather-modification activities, with criminal penalties. The law also includes state-level reporting and investigation mechanisms, including a reporting channel and monthly reporting requirements for publicly owned airports regarding aircraft equipped for geoengineering or weather modification activities.

Many other states have considered or introduced similar bills, with some proposals motivated by constituent concerns over "chemtrails" as well as broader concerns about geoengineering and atmospheric experimentation.

Legislators in several states have also raised concerns about the growth of private-sector aerial-dispersal capabilities, including unmanned drones that can release materials at low altitude. Because these technologies are relatively inexpensive and widely available, lawmakers worry that private companies—including firms with foreign ownership or overseas ties—could conduct atmospheric-release activities without meaningful oversight or notice.

20. What oversight or transparency measures could states consider to ensure public trust and safety?

States that want to address the issue of atmospheric modification have several options. Legislators could consider:

- **Registration and notice:** Require any weather-modification or atmospheric-intervention activity in state airspace—whether cloud seeding, experimental research, or a future geoengineering project—to register with a designated authority, including basic information about operators, substances, locations, and objectives.
- **Prohibit / ban geoengineering and weather-modification activities:** States could implement reporting and investigation mechanisms, including a reporting channel and monthly reporting requirements for publicly owned airports regarding aircraft equipped for geoengineering or weather modification activities.
- **Clear definitions:** Clarify statutory definitions to distinguish ordinary contrails, traditional cloud seeding, small-scale atmospheric research, and large-scale geoengineering so laws target activities of greatest concern.
- **Legislative approval:** Require explicit legislative approval and public notice/comment for any participation in federally sponsored geoengineering research or any atmospheric project funded by outside entities.
- **Targeted prohibitions:** Prohibit specific categories of intervention outright, particularly attempts to alter sunlight intensity or climate at large scale.
- **Coverage of private actors:** Ensure oversight requirements apply not only to government agencies, but also to private contractors, drone operators, and firms with foreign ownership or control.
- **Protection of property and local consent:** Affirm that atmospheric experimentation should not occur over private or rural land without notice and democratic authorization, reinforcing long-standing property-rights traditions and principles of local self-government.

For Further Reading:

Section I

- Federal Aviation Administration, "Contrails," last updated July 21, 2025, https://www.faa.gov/contrails
- Environmental Protection Agency, "Information on Contrails from Aircraft," last updated July 22, 2025, https://www.epa.gov/regulations-emissions-vehicles-and-engines/Contrails
- National Aeronautics and Space Administration, "The Evolution of a Contrail," NASA Earth Observatory, May 26, 2012, https://science.nasa.gov/earth/earth-observatory/the-evolution-of-a-contrail-78154/
- Government Accountability Office, "Climate Change: A Coordinated Strategy Could Focus Federal Geoengineering Research and Inform Governance Efforts," September 2010, https://www.gao.gov/assets/gao-10-903.pdf
- Congressional Research Service, "Solar Geoengineering and Climate Change," May 9, 2023, https://www.congress.gov/crs-product/R47551
- National Academies, *Reflecting Sunlight: Recommendations for Solar Geoengineering Research and Research Governance,* Washington, DC: The National Academies Press, 2021, https://www.nationalacademies.org/projects/DELS-BASCPR-18-04/publication/25762
- National Research Council, *Climate Intervention: Carbon Dioxide Removal and Reliable Sequestration,* Washington, DC: The National Academies Press, 2015, https://www.nationalacademies.org/publications/18805

Section II

- National Science Foundation, "Weather and Climate Modification," Report of the Special Commission on Weather Modification, 1965, https://nsf-gov-resources.nsf.gov/nsb/publications/1965/nsb1265.pdf
- U.S. Bureau of Reclamation, "Project Skywater," 2013, https://www.usbr.gov/history/ProjectHistories/Project_Skywater_D1%5B1%5D.pdf
- Government Accountability Office, "Cloud Seeding Technology," *Technology Assessment,* December 2024, https://www.gao.gov/assets/gao-25-107328.pdf
- U.S. Department of State, Office of the Historian, "Memorandum From the Deputy Under Secretary of State for Political Affairs (Kohler) to Secretary of State Rusk," January 13, 1967, https://history.state.gov/historicaldocuments/frus1964-68v28/d274
- United Nations, "Convention on the prohibition of military or any other hostile use of environmental modification technique," December 10, 1976, https://treaties.un.org/doc/Treaties/1978/10/19781005%2000-39%20AM/Ch_XXVI_01p.pdf
- Department of Energy, "DOE Explains...Direct Air Capture," accessed December 12, 2025, https://www.energy.gov/science/doe-explainsdirect-air-capture

Section III

- Carnegie Endowment for International Peace, "Geoengineering: Assessing Risks in the Era of Planetary Security," July 16, 2025, https://carnegieendowment.org/research/2025/07/geoengineering-assessing-risks-in-the-era-of-planetary-security?lang=en
- Environmental Protection Agency, "Geoengineering: Frequently Asked Questions," accessed December 12, 2025, https://www.epa.gov/geoengineering/frequent-questions
- Nature.com, "Public concerns about solar geoengineering research in the United States," *Communications Earth and Environment,* July 31, 2025, https://www.nature.com/articles/s43247-025-02595-5

- White House Office of Science and Technology Policy, "Congressionally-Mandated Report on Solar Radiation Modification," June 30, 2023, accessed from Bidenwhitehouse.archives.gov, https://bidenwhitehouse.archives.gov/wp-content/uploads/2023/06/Congressionally-Mandated-Report-on-Solar-Radiation-Modification.pdf
- Lawfaremedia.org, "Managing the Security Risks of Geoengineering," January 14, 2025, https://www.lawfaremedia.org/article/managing-the-security-risks-of-geoengineering
- Salata Institute for Climate and Sustainability, "Understanding and Addressing 'Chemtrails,'" June 25, 2025, https://salatainstitute.harvard.edu/understanding-and-addressing-chemtrails/
- *Geochemistry and Impacts of Silver Iodide Use in Cloud Seeding,* accessed from Utah Division of Water Resources, May 2011, https://water.utah.gov/wp-content/uploads/2024/02/Geochemistry-impacts-silver-iodide-cloud-seeding-2011.pdf
- U.S. Department of the Interior, Bureau of Reclamation, *Environmental Assessment for the Walker River Basin Cloud Seeding Project,* December 2010, accessed from weathermod.org, https://weathermod.org/wp-content/uploads/2017/11/Pub-WalkerBasinEnviroAssess.pdf

Section IV

- World Meteorological Organization, "WMO Statement on Weather Modification," *Fact Sheet,* June 14, 2025, https://wmo.int/content/wmo-statement-weather-modification
- United Nations Environment Assembly, "Draft resolution on Solar Radiation Modification," January 16, 2024, https://resolutions.unep.org/resolutions/uploads/a_5_-_solar_radiation_modification.pdf
- ScientificAmerican.com, "U.S. Blocks U.N. Resolution on Geoengineering," March 15, 2019, https://www.scientificamerican.com/article/u-s-blocks-u-n-resolution-on-geoengineering/
- CNN.com, "China to expand weather modification program to cover area larger than India," December 3, 2020, https://www.cnn.com/2020/12/03/asia/china-weather-modification-cloud-seeding-intl-hnk
- United Arab Emirates Research Program for Rain Enhancement Services, "About the Program," accessed December 12, 2025, https://www.uaerep.ae/section/the-program/about-the-program/introduction?nID=2006&locale=en
- American Meteorological Society, "The Israel 4 Cloud Seeding Experiment: Primary Results," *Journal of Applied Meteorology and Climatology,* March 1, 2023, https://journals.ametsoc.org/view/journals/apme/62/3/JAMC-D-22-0077.1.xml
- Associated Press, "Russia's anti-cloud program defeated on Victory Day," May 9, 2017, https://apnews.com/general-news-8c9d2e8d3d8e46f9a78cdede88f229f2

Section V

- National Oceanic and Atmospheric Administration, "Weather Modification Project Reports," accessed December 12, 2025, https://library.noaa.gov/weather-climate/weather-modification-project-reports
- Florida Senate, "CS/CS/SB 56—Geoengineering and Weather Modification Activities," 2025, Bill Summary, accessed December 12, 2025, https://www.flsenate.gov/Committees/BillSummaries/2025/html/56
- Tennessee General Assembly, SB 2691 / HB 2063, 2024, https://wapp.capitol.tn.gov/apps/BillInfo/default.aspx?BillNumber=SB2691&GA=113
- Texas Department of Licensing & Regulation, "Weather Modification," accessed December 12, 2025, https://www.tdlr.texas.gov/weather/
- Colorado Secretary of State, "Colorado Weather Modification Rules and Regulations," 22 CCR 401-1, https://www.sos.state.co.us/CCR/GenerateRulePdf.do?ruleVersionId=5336
- SRM360.org, "US proposals to ban solar geoengineering," September 16, 2025, https://srm360.org/us-bans/