

A report to the Ranking Member, Committee on Oversight and Government Reform, House of Representatives

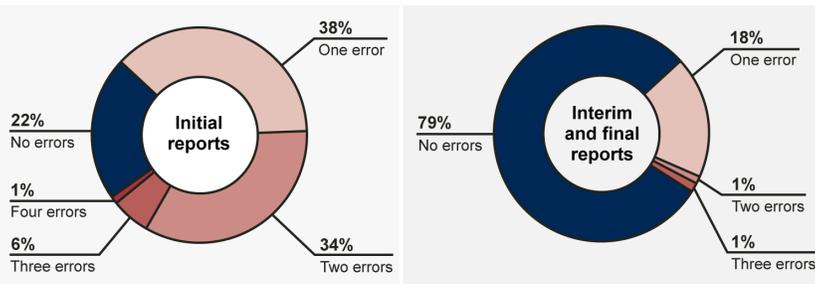
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**What GAO Found**

Anyone conducting weather modification operations in the U.S. is required to notify and update the National Oceanic and Atmospheric Administration (NOAA), which is in turn required to maintain a record of the activities and share it with the public. Weather modification includes cloud seeding (which seeks to alter local precipitation) and solar geoengineering (which seeks larger scale changes in climate). Several states use cloud seeding to address an ongoing lack of precipitation in the western U.S. Cloud seeding is the most common weather modification technique, but recently, more organizations have begun to conduct solar geoengineering operations or research.

NOAA has a statutory requirement to provide oversight of weather modification reporting, but the agency is not fully meeting its responsibilities to maintain and share weather modification reports. Weather modification operators may report inconsistent information or fail to report, and we estimate that over half of all the reports filed with NOAA likely have errors, including missing required information (e.g., maps). NOAA does not have written agency guidance for reviewing reports or maintaining its database. Such guidance could help NOAA meet its responsibilities and provide useful, complete, and transparent information to the public.

**Estimated Errors in Initial, Interim, and Final Reports from the National Oceanic and Atmospheric Administration (NOAA) Weather Modification Reports Database**



Source: GAO estimates based on representative sample of NOAA reports. | GAO-26-108013

NOAA is also required to maintain a record of emerging solar geoengineering activities, but its forms and processes are not well-suited to those activities. Operators had challenges with the forms and reporting process and may also be unaware of the reporting requirement. State and local officials engaging with weather modification activities may likewise be unaware of NOAA’s reporting process, even though the reports could contain information they need to make decisions about weather modification. Improved instructions and outreach from NOAA could help ensure operators are reporting their activities and providing better-quality information to improve understanding of this emerging technology.

Implementing measures to increase the quality of the information NOAA collects from operators could help provide transparent information to the public about weather modification activities, including solar geoengineering. This could also provide more assurance that these activities are being properly overseen, and may help address increased public concern, canceled projects, or bans.

**Why GAO Did This Study**

NOAA, within the Department of Commerce, is the only federal agency with responsibilities under the Weather Modification Reporting Act of 1972 (the Act).

This report examines the extent to which NOAA is meeting its statutory responsibilities for overseeing current U.S. weather modification reporting and is prepared to oversee an emerging approach like solar geoengineering.

To conduct this review, GAO analyzed a representative sample of weather modification reports filed with NOAA and available on its website and compared reports to information from other sources. GAO reviewed 54 articles from a structured literature search, visited nine locations across two states, and held 24 interviews with agency officials, operators, and other stakeholders.

**What GAO Recommends**

GAO is making three recommendations, including that Commerce and NOAA should (1) establish written agency guidance for its review of and confirmation that all weather modification reports submitted to NOAA contain the legally required information; (2) improve NOAA’s instructions on how to complete the reporting forms for a range of weather modification activities, including emerging solar geoengineering activities; and (3) implement a process to regularly inform the operators as well as state and local agencies directly about NOAA’s role in weather modification oversight, the applicability of the Act to different activities, and where to find required reporting forms. NOAA agreed with the recommendations.