

PRELIMINARY ANALYSIS OF REPORTED WEATHER
MODIFICATION ACTIVITIES IN THE U.S. FOR CY 1979
AND COMPARISON WITH DATA FOR CY 1973-1978

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INTRODUCTION

Under Public Law 92-205, all non-federally sponsored attempts to modify the weather must be reported to the Secretary of Commerce. Responsibility for administering a reporting program on behalf of the Secretary was delegated to the National Oceanic and Atmospheric Administration (NOAA) in 1972. A year later, Federal agencies agreed to report their weather modification activities to NOAA. Thus, the reporting program has become the single, authoritative repository of information on weather modification projects carried out in the United States and its territories.

The reporting procedures include the submittal of Initial, Interim, and Final Reports covering weather modification activities for individual target areas. Initial reports are to be submitted 10 days or more prior to actual modification activities. Interim Reports are required for those projects active on January 1 of each year and must be filed within 45 days. A project may be carried out intermittently at one location for one or more years, or a project may begin and end within a year. Often, projects are completed early in a year and restarted near the end of that year at the same location with the same techniques. In this case, only one project at the one location would be used in summarizing the number of projects for the calendar year.

Since all the Interim Reports had not been filed at the time of preparing this paper, only a partial analysis of reported activities is possible for CY 1979. A complete report will be published later by NOAA and will be available from the author.

This paper includes a preliminary analysis of reported weather modification activities for CY 1979 and a limited comparison of the results with previously published data for 6 prior years (National Oceanic and Atmospheric Administration, 1979).

ANALYSIS

Table 1 provides information on activities performed in CY 1979. Although 59 reports were received, there were only 45 separate locations where attempts to modify the weather were carried out during the year.

Table 1. -- Weather Modification Activities in the United States During CY 1979

Total reported activities	59
Nonduplicative activities	45
Nonfederal	35
Federal (all or in part)	10

Table 2 shows the various types of operators and sponsors of weather modification activities in CY 1979. The "Private" category covers individuals such as a ranch owner or farmer. A group of farmers and others in a county (or counties) would qualify as a community association. Federal sponsors were the Air Force, Bureau of Reclamation, National Oceanic and Atmospheric Administration, and the National Science Foundation. The total number of sponsored activities is greater than 45 (the number of separate locations with activities) because several projects had more than one sponsor.

Table 2. -- Operators and Sponsors of Weather Modification Activities for CY 1979

	<u>Operators/Activities</u>		<u>Sponsors/Activities</u>	
Federal	2	3	4	10
Nonfederal	19	42	43	41
Commercial	11	30	0	0
Water Districts	5	6	11	11
Universities	2	4	2	2
Utilities	1	2	3	4
States	0	0	7	12
Cities	0	0	2	2
Airlines	0	0	10	2
Private	0	0	1	1
Resorts	0	0	3	3
Community Associations	0	0	4	4

Table 3 summarizes the number of weather modification activities and the target areas for each State during the year. The total target area for the 18 states divided by the area of the United States was 3.3 percent. Ninety-two percent of the activities were located west of the Mississippi River.

Table 3. -- Activities and Cumulative Target Area, By State

	CY 1979	
	<u>Activities</u>	<u>Area (mi²)</u>
Alaska	2	3
California	12	8,464
Colorado	3	5,960
Delaware	1	1,800
Florida	1	4,800
Idaho	3	2,250
Illinois	2	3,200
Kansas	1	10,400
Montana	1	25,520
Nebraska	1	1,152
Nevada	5	6,743
North Dakota	3	15,578
Oklahoma	2	340
South Dakota	1	2,682
Texas	3	12,650
Utah	4	21,060
Washington	2	595
Wyoming	3	670
	<u>50*</u>	<u>123,867</u>

*Some projects were conducted in adjoining States and crossed State boundaries.

Table 4 shows that the preponderance of weather modification activities were to increase precipitation. Seven activities had two purposes -- rain increase and hail alleviation.

Table 4. Purpose of Weather Modification Activities

Purpose	CY 1979
Increase precipitation	33
Alleviate hail	7
Clear fog	5
Research/testing	7

Table 5 shows that ground-based AgI burners were used in 47 percent of the activities in CY 1979. Aircraft were used in 67 percent of the projects during the year.

Table 5. -- Weather Modification Apparatus, Seeding Agents and Activities in CY 1979

<u>Apparatus and Agent</u>	<u>Activities</u>
Only ground-based AgI generators (burners)	13
Ground-based AgI generators and aircraft AgI pyrotechnics	8
Ground-based propane dispensers	2
AgI burners and pyrotechnics on aircraft	8
AgI pyrotechnics only on aircraft	7
Aircraft with CO ₂ dispensers	5
Aircraft with pyrotechnics and CO ₂ dispensers	1
Aircraft with AgI generators and CO ₂ dispensers	1

COMPARISON OF DATA REPORTED SINCE 1973

Table 6 presents weather modification activity data for CY 1979 and for CY 1973-1978. The data for CY 1973-1978 were extracted from a previous report (National Oceanic and Atmospheric Administration, 1979). A comparison of the data shows that weather modification activity in 1979 was the lowest since the reporting program began in 1973. Using CY 1977 as the year with the most activity, the results for CY 1979 indicate that there were 49 percent fewer activities, 31 percent fewer commercial modifiers, 84 percent fewer community association sponsors, 22 percent fewer States with activities, and a 54 percent reduction in total target area.

REFERENCE

National Oceanic and Atmospheric Administration, Weather Modification Reporting Program, 1973-1978, National Oceanic and Atmospheric Administration, Rockville, Maryland, June 1979, 75 pp.

Table 6. -- Comparison of Weather Modification Activity Data
for Calendar Years 1973-1979

	<u>CY 1973</u>	<u>CY 1974</u>	<u>CY 1975</u>	<u>CY 1976</u>	<u>CY 1977</u>	<u>CY 1978</u>	<u>CY 1979</u>
Reports received	65	85	85	73	101	71	59
Nonduplicative activities	57	71	72	61	89	59	45
Nonfederal activities	55	62	58	52	78	46	35
Federally sponsored projects	-	9	14	9	11	13	10
Commercial modifiers	19	19	15	16	16	12	11
University operators	1	5	5	2	2	2	2
Federal operators	-	2	5	4	2	2	2
Community sponsors	14	23	22	18	25	11	4
Municipal sponsors	9	9	8	7	7	6	11
Utility sponsors	3	2	3	4	3	4	3
State sponsors	1	2	2	5	6	8	7
States with activities	18	20	25	24	23	18	18
Total target area (mi ²)	132,685	153,039	163,194	198,390	270,689	235,508	123,867
- Data incomplete							