Search: Encounters with Science: Help for Hail Alley, 1973
Transcript

00:05

Ever since I can remember we've had hailstorms. Some years we get by without them, but we've had, oh, one, two, three, as high as five storms in a year. Our hail damage would vary from no damage up to 100 percent crop loss.

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In fact, hailstorms pretty near run me out of the farming business back there in the 60s.

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I”m very optimistic about the hail research program that we've got going for us in this area. A lot of people are radical against it, and a few are radical for it, but most of the fellows have a wait and see attitude, I think.

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[Music]

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Each year hailstorm damage to the nation's agricultural industry amounts to two to three hundred million dollars. The most frequent hailstorms occur in the Great Plains area east of the Rockies, and the worst spot of all is called Hail Alley, at the intersection of Wyoming, Colorado and Nebraska, which gets smacked with dozens of hailstorms every season.

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Here a 600 square mile test area is set up.

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We here at the National Center for Atmospheric Research are studying the severe convective storms that produce hail with two principal objectives in mind. The first is to learn as much as we can about the physical mechanisms that control the natural behavior of such storms. This we do by observation of all aspects of the storm and analysis of these observations. The second objective is to develop, if we can, a technique to ameliorate these storms to suppress the occurrence of damaging hail at the ground.

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They're the two objectives and in order to pursue them we are carrying out a five-year program of work. This program is sponsored by the National Science Foundation, and it is a cooperative project involving a number of universities, government agencies and private institutions.

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We begin by looking visually for an interesting looking cloud. Once we spot one, this cloud is then tracked by radar. The radar is able to give us information about the water content of the cloud and its potential to produce hail.

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In addition to the radar, we have four meteorological stations from which balloons are periodically released. These are sent high into the atmosphere, carrying instruments to measure temperature, humidity and wind speed.

03:05

We have in addition a number of aircraft equipped with instrumentation. The airplanes circumnavigate the cloud at different levels [and] provide us with information which is vital to an understanding of the behavior of the cloud.

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We have used this method for a year now and have had considerable success with it. We're very pleased with the reliability of the process and will be watching very closely over the next four years to determine whether or not the system is as reliable as we think it is. In the first year of the program we seeded thunderstorms by burning silver iodide flares at the base of the thunderstorm in the maximum updraft. We feel that it's very important that the silver iodide material be placed well up into the thunderstorm.

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To accomplish this we have developed a rocket of this type that will be fired vertically from the base of the cloud into the thunderstorm, to an altitude of about 7,500 feet above the airplane. The rocket will dispense the silver iodide by burning it inside the rocket at the top of the trajectory. In the 1960s, Russian scientists were making claims of remarkable success in suppressing hail. Their methods of evaluation were essentially based on crop damage statistics.

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We are using a different method of evaluation based on measurements of hail incidents at the ground and on the behavior of the cloud in the air.

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Nevertheless, the Russian claims for success were a principal stimulus in the establishment of this present project. The five-year hail research program is an experiment, and this part of Hail Alley is a test site. But experimenting and testing has always proven to be the forerunner of man's progress and may do so again by bringing help to Hail Alley and to the farmers and the growers of our nation.

05:12

[Music]