

Taking On Mother Nature

Is Science Ready to Change the Weather?

By Amanda Onion



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— As residents near the Gulf Coast brace for the possible oncoming blast of the storm called Isidore, researchers are busy finding ways of attacking hurricanes, rather than fleeing them.

Sometime in early October, nine massive jets will take to the skies over southern Florida. Each will carry 16,000-330,000 pounds of an unusual arsenal: cloud-busting powder.

Peter Cordani, chief executive of the Riviera Beach, Fla.-based company, Dyn-o-Mat, says that once sprayed into a wet, hovering cloud, the special powder should combine with the moisture and transform into a heavy gel. The gel will then fall harmlessly to the surface and effectively shake out moisture from the cloud.

The hope is that tons of the powder might someday be used to steal strength from an ongoing hurricane.

"Mother Nature is fooled in so many different ways every day," says Cordani, referring to other ways humans alter the planet, such as global warming and deforestation. "This is just a more obvious way. We just want to take a punch out of a storm so it doesn't level your house."

If at First You Don't Succeed...

Altering weather is something people have tried for centuries. Native Americans performed rain dances to encourage downfalls for their crops. Several governments, including the United States and Russia, began "seeding clouds" a half-century ago with silver iodide to increase local rainfall. The U.S. government even used cloud seeding to try and flood out critical paths in the Ho Chi Minh trail during the Vietnam war.

But the U.S. government mostly abandoned the concept of changing the weather in the 1970s amid criticism and when a group of prominent scientists concluded it is an impossible task or at least one whose success was impossible to prove.

"The problem is the weather changes you try and achieve by cloud seeding or other methods happen naturally all the time," says Hugh Willoughby, hurricane research director at NOAA and lead author of the report that more or less halted weather modification efforts in the 1970s. "And you can't know the difference."

Others feel we may be ready to try again.

Seeding Clouds With Fat

The Dyn-o-Mat powder consists of a polymer that's also found in fast-food french fries and as a base for pesticides in agricultural fields. It's made in cornflake-shaped flakes so it floats and lingers longer in the air to combine with a cloud's moisture. In a hurricane, the hope is the powder could be spread in cloud layers just outside the eye of the storm. By precipitating moisture out of these outer layers, moisture and energy might be sucked from the eye of the storm and weaken its overall power.

Last year, a smaller scale test indicated it made a small cloud disappear from a Doppler radar screen after jets had sprayed the substance in the vicinity.

"We know it can dissipate a cloud," says Peter Ray, a meteorologist at Florida State University who is helping test the product. "But we don't know what it will do to ice, freezing water and all the other kinds of things you might encounter in a large storm."

October's test may provide some answers since the nine, powder-stocked jets will be pursuing large storm clouds.

Besides the Dyn-o-Mat effort, researchers at the Massachusetts Institute of Technology have proposed spreading a thin layer of vegetable oil on the surface of the ocean. This slick patch would hamper the exchange of air and sea, reducing evaporation and basically cutting the engine of a developing hurricane. Others have suggested that massive mirrors in space might be used to redirect sunlight and alter weather patterns by heating cool pockets.

Planting Butterflies

Such proposals may seem farfetched, but Ross Hoffman concluded in a recent bulletin of the American Meteorological Society that the dream of controlling the weather "is in fact a possibility."

The key, says the Atmospheric and Environmental Research meteorologist, is perfecting the science of weather prediction and modeling and then taking advantage of the so-called butterfly effect. The butterfly effect refers to the chaotic nature of weather and how the simple fluttering of a butterfly's wings in, say Singapore, can trigger a chain of events to change the weather thousands of miles away in New York City.

Hoffman's idea is to place an artificial butterfly effect — instigating a small change in say temperature or humidity — in strategic locations to alter the weather even great distances away.

"Small changes can result in large changes as a storm evolves. We can use that intelligently if we can predict the evolution of a storm. But we're not there yet," says Hoffman, who believes that effective weather changing techniques may be 30 years to 50 years away.

Even if stopping a hurricane in its tracks may remain a dim prospect, more humble efforts of altering the weather appear to have had true impact.

The state of North Dakota and the Canadian province of Alberta have repeatedly use cloud seeding to make hail storms less destructive. By releasing silver iodide into carefully studied clouds, meteorologists have caused ice droplets to form more quickly — and in smaller pea-sized pebbles. Weak evidence has suggested that cloud seeding projects in Florida and Texas — as well as Moscow — have worked to squeeze water out of lingering clouds, triggering more rain.

And researchers at the University of Utah say they have used similar methods to successfully clear fog around municipal and military airports.

Still, until weather forecasters get it right every time, there's no guarantee that weather-changing efforts are really working or if it's simply a quirk in the complex workings of Mother Nature. Some argue that means tinkering with powerful weather events like hurricanes remains a risky endeavor.

"If you do nothing and there's a horrible weather event, it's an act of God," says Hoffman. "But if you do something and even make matters a little better, someone may still bear a loss and they're sure to blame you." ■

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