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Houses stand destroyed following Hurricane Felix 07 September 2007 in the Miskito village of Dakura, on the Caribbean coast of Nicaragua. Seeding a hurricane with microscopic dust could sharply reduce its force, according to a study which calculated that the technique might have spared New Orleans from the devastating power of Katrina in 2005.



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## Micro-dust could tame hurricanes: study

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TRIESTE, Italy (AFP) — Seeding a hurricane with microscopic dust could sharply reduce its force, according to a study which calculated that the technique might have spared New Orleans from the devastating power of Katrina in 2005.

The findings were presented this week at the European Conference on Severe Storms in the Italian port city of Trieste.

In computer simulations, scientists showed that sowing tiny moisture-seeking particles into the lower reaches of a hurricane would prevent the formation of rain and reduce temperatures, starving the storm of its source of energy.

The process "creates clouds with a large number of small drops that fall very slowly, floating with air molecules, and are less likely to collide with each other and coalesce into rain drops," explained Daniel Rosenfeld, a scientist at The Hebrew University of Jerusalem who developed the concept with several colleagues.

Hurricanes are powerful, swirling storms up to 800 kilometres (500 miles) across that begin over tropical seas with a surface temperature greater than 26.5 C (80 F). The warm seawater evaporates and is absorbed by the surrounding air.

Rosenfeld first tested his model in a "control run" to see whether the simulation would match Katrina as it really happened, which it did.

When he factored in the effect of cloud seeding -- taking into account the impact of sea spray, which would reduce the desired effect -- the radius of hurricane-force winds shrunk by at least 25 percent, with wind speeds reduced throughout the hurricane.

Hurricane-force winds begin at 119 kilometres per hour and can reach speeds of more than 300 kilometres per hour.

"That would affect mainly the sea surge, which means less rising of the water, which might have made the difference in New Orleans," Rosenfeld told AFP.

The simulated path of the weakened storm curved north as compared to Katrina, and would have made landfall about 200 kilometres east of the city.

It would take five to 10 Lockheed C-130s cargo planes to disperse some 200 tonnes per hour of particles so small -- less than one millionth of a metre across -- that they would be emitted in the form of smoke.

The planes would be hundreds of kilometres from the eye of the hurricane, and thus out of harm's way.

Trying to extend the practice of cloud seeding -- commonly used both to make or impede precipitation -- to hurricanes is not new.

In a project called "Stormfury", the US government ran a series of experiments from 1962 to 1983 that attempted to decrease hurricane force by artificially stimulating convection -- the vertical transfer of heat and moisture -- outside the wall which encases the eye of the storm.

The idea was to expand the size of the eye, typically 15 to 65 kilometres (10 to 40 miles) in diameter, and thus slow the destructive winds that swirl around the eyewall. (Inside the eye, there are no winds or clouds.)

Tests were done on four hurricanes before the technique was abandoned.

Rosenfeld was inspired to try again after observing that a "heavy load of small aerosols" -- in other words, smoke from forest fires -- can prevent warm rain from tropical clouds.

"I tried to fix some of the problems that prevented Stormfury from working," he said.

One of the co-authors of the new study, William Woodley, flew into hurricanes during the 1970s as part of the earlier effort.

Putting his hurricane-taming concept into practice, he cautions, will take years of additional research and experimentation.

But the fact that another research team in the United States, working independently, came up with the same idea at about the same time suggests that it may just hold water.

Hurricanes can uproot trees and tear the roofs off houses, but the most dangerous effect is a rapid rise in sea level called a storm surge, which is what caused the levees protecting New Orleans to give way.

A cyclone in 1970 produced a surge that killed more than 250,000 people in the low-lying regions of what is today the Bangladesh.

Hurricanes last an average of three to 14 days, and can meander as far as 6,000 kilometres at speeds of 15 to 30 kilometres per hour.