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Decades of major hurricanes ahead

Mountainous seas cause massive damage

By BBC News Online's Damian Carrington in Washington DC

North America and the Caribbean has entered a new phase of major hurricane activity, scientists believe, and a new way of taking a mighty storm's temperature could help predict the worst effects.

The new climatic regime is a return to conditions last seen in the 1940s and 1950s, when more great storms lashed the coast of the continent. The switch also appears to make it more likely that the Gulf of Mexico will suffer, rather than the East Coast of the US.

James Elsner, a climatologist from Florida State University, has studied the records.

"The new phase of hurricane activity began in 1995," he told the annual meeting of the American Association for the Advancement of Science (AAAS).

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Florida University climatologist Dr James Elsner

"We're back to the storm intensities of the 1940s and 50s"

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Rather than expecting one or two major hurricanes per year, the average is now between three and four. Although the new regime is still young, change is statistically significant, said Professor Elsner.

Hurricane Mitch devastated Central America in 1998

Air pressure

The 1995 change corresponds with a relaxation of the North Atlantic Oscillation. This climatic phenomenon sees the air pressure rise over Iceland when it falls over the Azores and vice versa. The relaxation also correlates with more storms rising further south, towards the Gulf of Mexico.

If more major hurricanes do occur, then forecasts to help warn affected communities will become ever more crucial.

Major hurricanes per year (average)
1995-1999 - 3.4
1965-1994 - 1.7
1943-1964 - 3.6
1900-1942 - 1.7

This June, a new model will be used by the US National Weather Service to predict the intensity of hurricanes. It was created by Isaac Ginis, an oceanographer at the University of Rhode Island, to predict maximum wind speed, which can reach 240 km/h (150mph) in a major hurricane.

"We tested the model almost in real time in 1998 and 1999 and improved the accuracy of the maximum speed by 26% and then 31%, compared to the existing model," he said.

Rising vapour

This now gives an absolute accuracy of about 27km/h (17 mph).

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The improvement was achieved taking account of the temperature of the ocean just in the wake of the hurricane. This can vary by up to six degrees Celsius and the cooler it is, the less intense the storm will be.

The reason for this is that sea-surface temperature controls the rate of water evaporation and it is this rising vapour which fuels the storms.

"We need to predict intensity well to give good warnings to the public," said Professor Ginis.

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