

## GLOBAL WARMING

# Hurricanes Won't Go Wild, According to Climate Models

If you put much faith in the world's most sophisticated climate models, there's good news about how hurricanes will react to global warming. Two new model studies project a modest increase or even a decrease in the frequency and intensity of Atlantic tropical cyclones. "The Atlantic isn't going to be swallowed by repeats of the [disastrous] 2005 hurricane season," concludes hurricane researcher Hugh Willoughby of Florida International University in Miami, who did not take part in the work.

But even some of those involved in the studies urge caution in interpreting the results. "I'm much less sanguine about models solving the problem," says Kerry Emanuel, lead author of one of the papers and a hurricane researcher at the Massachusetts Institute of Technology (MIT) in Cambridge. There's still too much messiness beneath the surface of all such studies, he says.

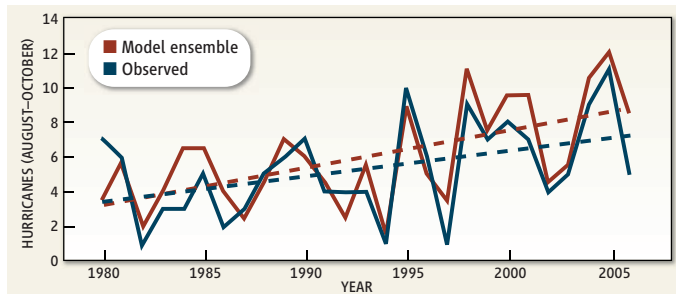
Using two different approaches, both model studies tweak the big global climate models to simulate tropical cyclones. Global climate models can't form tropical cyclones because their picture of the atmosphere is too fuzzy. So, as they report in this week's issue of *Nature Geoscience*, climate

modeler Thomas Knutson and colleagues at the National Oceanic and Atmospheric Administration's Geophysical Fluid Dynamics Laboratory (GFDL) in Princeton, New Jersey, put extra computing power into simulating the tropical Atlantic in enough detail to form storms while embedded in a fuzzy global model. And Emanuel and his MIT colleagues randomly "seeded" seven different global models with incipient storms that grew or died depending on whether conditions favored them, as they reported in the March *Bulletin of the American Meteorological Society*.

On average, the two approaches yielded much the same results for the Atlantic, where actual hurricane numbers have doubled in the past 25 years. The GFDL model produced a modest 18% decrease in the frequency of Atlantic hurricanes by the end of this century under global warming and a few

percent increase in the intensity of storms. The MIT group reported just a couple of percent increase in frequency and a 7.5% increase in intensity.

Broader interpretations, however, differ. Pointing to their model's striking ability to reproduce variations in hurricane frequency during the past 25 years, Knutson concludes that his group's work "does not support the notion that increasing greenhouse gases will support large increases in hurricane or tropical storm frequency." In contrast, Emanuel finds his "results to be very different when you [run] different models and very different in different ocean basins." For example, using the MIT approach, the GFDL model produces a 23% increase in storm frequency rather than a decrease of 8%, he says. The models do predict a smaller increase in Atlantic hurricane activity than has been seen in the past few



**Hindsight.** A Geophysical Fluid Dynamics Laboratory model (red) does well at simulating the actual (blue) year-to-year and long-term variations in hurricane number. The model predicts modest changes under global warming.

decades, Emanuel concludes. That implies that global warming was not the prime driver behind the recent burst of activity.

On the other hand, Emanuel adds, the models may not be properly handling global warming and its effects on tropical cyclones. Other studies have statistically linked the tropical Atlantic warming both to the greenhouse and to the jump in storm activity, many researchers note. What's more, the MIT group's seven different models yield a disturbing variety of predictions—from a 23% increase in frequency to a 29% decrease. And most researchers are concerned that the GFDL group generated input for its Atlantic storm model by averaging together a large range of predicted conditions from global climate models. As might be expected, researchers say bigger and better models are needed to make the message clear.

—RICHARD A. KERR

## Paying for Medical School

An Ohio medical school hopes to encourage budding physician-scientists to stick with research by paying for a big chunk of their education. The Cleveland Clinic Lerner College of Medicine, which opened in 2004, accepts 32 students a year into a 5-year program—one more than the norm—specializing in clinical research. Last week, it announced that tuition, worth \$43,500 a year, will be free. Current students will get back 50% of what they have already paid.

"We really wanted to remove debt as a potential obstacle to pursuing careers in academic medicine," says spokesperson Raquel Santiago. The scholarships, which are meant to put students on a par with their peers in graduate school, will be financed by endowment funds and clinical income. —JOCELYN KAISER

## Help for Mystery Illnesses

The U.S. National Institutes of Health (NIH) has begun a new service for patients with undiagnosed diseases. Some two dozen specialists at its renowned clinical center in Bethesda, Maryland, will be part of a team that will tackle such baffling cases.

These patients often "hit a brick wall," says William Gahl, clinical director of the National Human Genome Research Institute, who will direct the effort. Advances in genetics have led to "more and more ... manifestations of new diseases," said NIH Director Elias Zerhouni in announcing the initiative this week.

The new program expects to treat up to 100 patients a year. For more information, call 1-866-444-8806. —JENNIFER COUZIN

## A Larger STEM Profile

The U.S. Congress is being asked to elevate the status of science and math education, coordinate \$3 billion in current federal programs, and prod states to adopt common K–12 science and math standards. Legislation introduced this week by Representative Michael Honda (D–CA) would create a Science, Technology, Engineering, and Mathematics (STEM) Education Committee within the White House and an Office of STEM Education at the Department of Education. The bill also requires federal STEM programs to share results.

"Having a dedicated office for STEM in the White House should raise its visibility," says Jodi Peterson of the National Science Teachers Association in Arlington, Virginia. A parallel Senate measure was introduced by Democratic presidential hopeful Senator Barack Obama (IL).

—YUDHIJIT BHATTACHARJEE