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Flying into the eye of the storm

By Roger Highfield, Science Editor
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By flying aircraft into the eye of a hurricane, researchers have obtained new insights that will enable them to predict more accurately how devastating the storm will be.

Scientists have collected radar data from flying into the 'eye' of hurricanes to help predict how powerful the winds will be

Scientific minds have been much more focused on the problem of forecasting in the wake of Hurricane Katrina — which killed around 1,800 people, cost £75 billion and submerged New Orleans.

Although predictions of hurricane tracks and landfall have improved in recent decades, forecasting of how strong the wind will be at landfall has not.

Hurricanes can gain or lose intensity with startling speed, a phenomenon never more obvious than during the 2005 hurricane season that spawned the remarkably destructive Katrina and Rita, among the six most intense Atlantic hurricanes ever recorded in terms of the barometric pressure within the core of the storm.

In the case of Rita, the storm grew from a category one, the least powerful hurricane, to a category five, the most powerful, in less than a day, and went on to cause around £5 billion worth of damage to the US Gulf Coast.

Today's study, which marks a major advance in understanding these destructive events, has come from a detailed examination of the hurricane's "eyewall," the ring of clouds around the storm's calm eye where the strongest winds occur.

Understanding the behaviour of the eyewall is critical for intensity forecasting and today Prof Robert Houze of the University of Washington and colleagues report in the journal Science how they studied this feature using radar measurements collected by three aeroplanes that flew into the centres of Hurricanes Rita, Katrina and others.

The team focused on "eyewall replacement," in which clouds outside the hurricane eyewall merge to form a new eyewall. The strongest winds temporarily decrease, then the old eyewall dies, the new one contracts, and the storm re-intensifies as the new eyewall takes shape. "We got excellent data from both Rita and Katrina. Rita showed the eyewall replacement," said Prof Houze, lead author.

By working out the complex events in the region between the new and old eyewall, they have honed computer

simulations used to help forecast hurricane intensity changes. "The implication of our findings is that new approaches to hurricane forecasting might be possible," he said.

Hurricane forecasters in recent years have developed remarkable accuracy in working out hours, even days, in advance what path a storm is most likely to follow. But they have been unable to say with much certainty how strong it will be when it hits land.

The most intense Atlantic storm recorded, Wilma, also struck in the record-setting 2005 season, which produced 15 hurricanes, including a fourth category five storm, Emily.

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