Track forecast improvements up to 20 percent are possible using dropsonde data. A 20 percent reduction in track errors should reduce the average warning area by at least 10 percent (34 miles), saving the public more than $45 million over 5 years.

The 10-year Hurricane Forecasting Improvement Project (HFIP) recently proposed to Congress will address "rapid intensification" as the number one problem of hurricane forecasting.

Learn More:

www.aoml.noaa.gov/themes/Hurricanes/hurricanes.html

uas.noaa.gov

Hurricanes: Improved Track and Intensity Predictions

Where a hurricane tracks, if it will intensify, and ultimately how hard it will hit are main concerns of NOAA hurricane forecasters and researchers. OAR models, data collection, and analyses contribute to the National Weather Service's improved average hurricane track forecasts. In fact, today's average 5-day track forecast is as good as the 3-day track forecast was ten years ago.
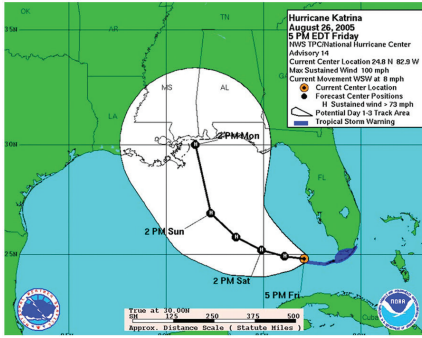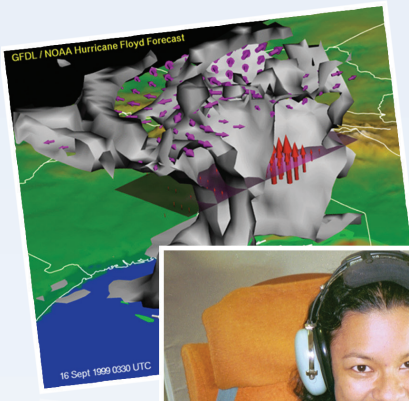
Impact
More timely and reliable forecasts for improved community outcomes

NOAA's hurricane forecast accuracy is tied to improvements in computer-based numerical weather prediction models. The National Hurricane Center uses many models, including those developed by OAR's Geophysical Fluid Dynamics Laboratory (GFDL) and the Atlantic Oceanographic and Meteorological Laboratory (AOML).

AOML researchers on NOAA "Hurricane Hunter" aircraft fly into the eye of these dangerous storms to collect and analyze data. Global Positioning System (GPS) dropsondes, an innovative technology developed by AOML, provide key data in real time to the National Hurricane Center and are crucial for studying the wind structure in the eyewall region of hurricanes.

During the 2007 Hurricane Season, AOML and NASA successfully flew an Aerosonde® Unmanned Aircraft System (UAS) through hurricane-force winds and at record low altitudes into Tropical Cyclone Noel. Using UAS to monitor tropical storms and hurricanes is important because UAS thermodynamic and wind observations can be obtained at altitudes unsafe for manned aircraft. In NOAA, the UAS program is managed by OAR's Earth System Research Laboratory (ESRL).

In spite of this progress, rapid intensification remains the number one challenge of hurricane forecasting. The 10-year Hurricane Forecast Improvement Project (HFIP), managed by OAR and the National Weather Service, will improve hurricane forecasts so emergency management officials can make informed decisions in advance of storms with more confidence. HFIP planning began after the 2005 hurricane season – the most active on record – which produced several monster storms, including Hurricane Katrina. OAR research efforts in the next decade will target HFIP objectives to reduce track and intensity errors by 50 percent, and improve prediction of rapid intensification events.

Images, top to bottom: Three-dimensional depiction of GFDL Hurricane model; OAR hurricane research scientist Shirley Murillo; National Hurricane Center's 3-day forecast for Hurricane Katrina, Aug. 26, 2005.