



## NASA's Office of Earth Science Program

### Genesis and Rapid Intensification Processes Experiment

#### Introduction:

Hurricane damages in the U.S. have risen exponentially in recent decades. Due to increased growth in coastal communities, it can cost as much as \$1 million per square mile for evacuation preparations alone, not to mention, loss of revenues, actual cost of hurricane damage, and most importantly the loss of life.

For more than a decade, NASA has conducted a series of field campaigns that have provided a wealth of new research into the genesis, intensity change, and 3-D multi-scale structure of tropical cyclones in the Atlantic, Gulf of Mexico and Eastern Pacific ocean basins. The scientific focus on intensity is particularly timely in light of the current heightened era of Atlantic storm activity and the continuing challenges of forecasting rapid tropical cyclone intensity change.

With an aim to better understand how tropical storms form and develop into major hurricanes, NASA is launching the Genesis and Rapid Intensification Processes Experiment (GRIP). The mission is scheduled for August thru September 2010, historically the busiest months for Atlantic hurricanes.

NASA will utilize a DC-8, WB-57 and a Global Hawk Unmanned Airborne System (UAS) aircraft as well as mobile radars and radiosondes to examine the structure and evolution of these convective systems. Using this unique suite of aircraft, and ground based instruments, computer models, and satellites, GRIP will collect valuable data on the hurricane's structure, dynamics, and motion that will assist in decreasing the size of coastal evacuation areas while increasing the warning time to those areas.

This large multi-agency experiment will unite six NASA centers, NOAA / Hurricane Research Division, U.S. Weather Research Program, National Weather Service, USAF 53<sup>rd</sup> "Hurricane Hunters", Universities and other government weather researchers in this well coordinated hurricane study.

#### Details:

##### Project Timeline: 2010

- Apr. - Jul. Instrument modifications and preparation
- Jul. - Aug. Instrument Integration in CA & site setup in FL
- Mid Aug. DC-8 transit to Florida
- Aug. - Sept. Science flights
- End of Sept DC-8 transit home to NASA Dryden.



DC-8 Airborne Laboratory



Global Hawk UAS



WB-57 Airborne Laboratory

##### GRIP Key points of contact:

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