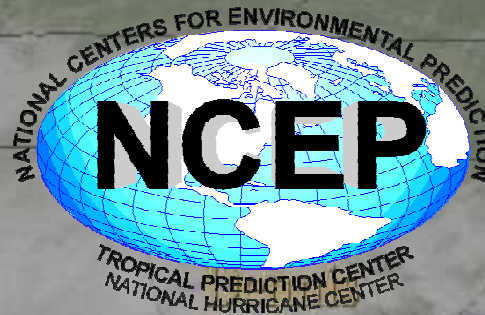


2005



Rita
10 July

The Joint Hurricane Testbed (JHT): Progress and Future Plans

1 February, 2006

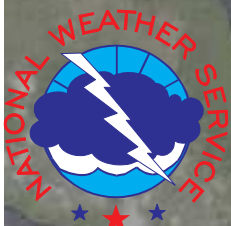
IOAS-AOLS

Chris Landsea

National Hurricane Center, Miami

Katrina
28 August

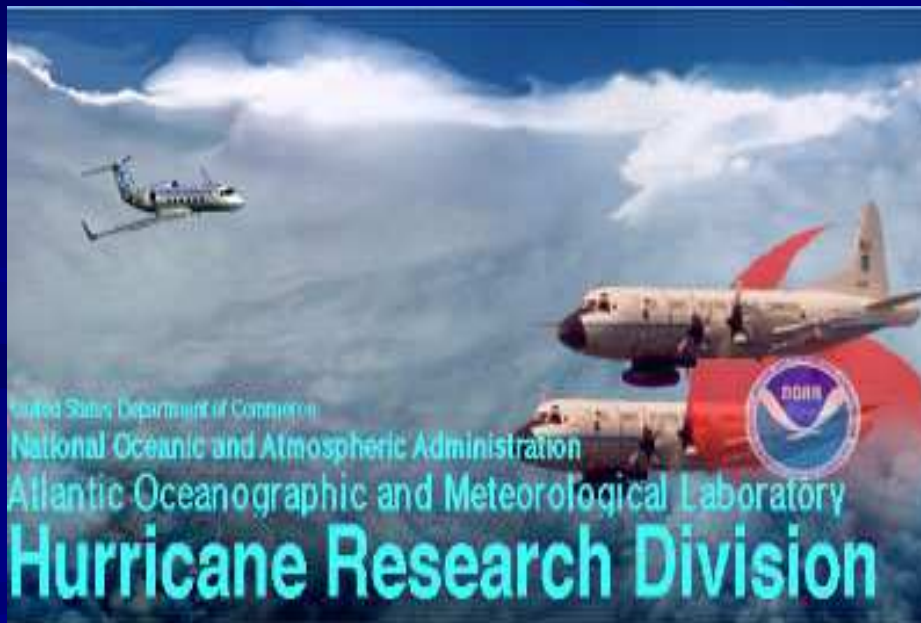
Wilma
21 October



The Forecasters (us):

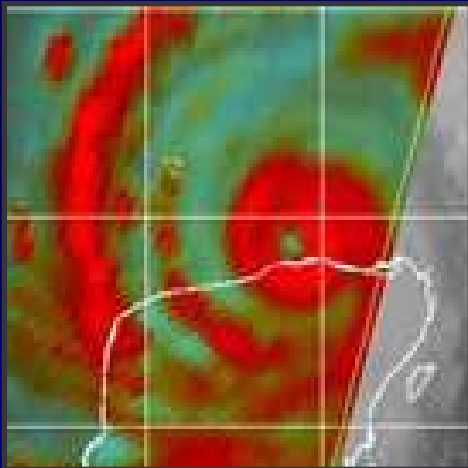


The Researchers (them):

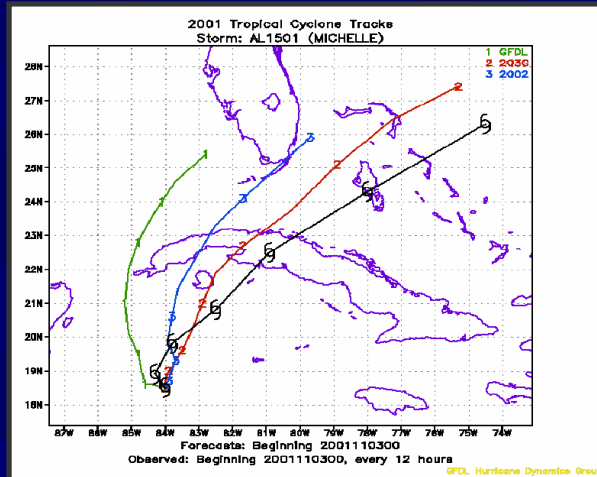


How to
bridge
the
“valley
of
death”?

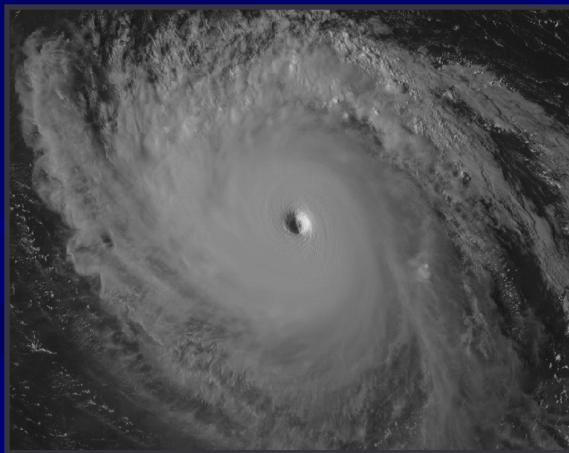
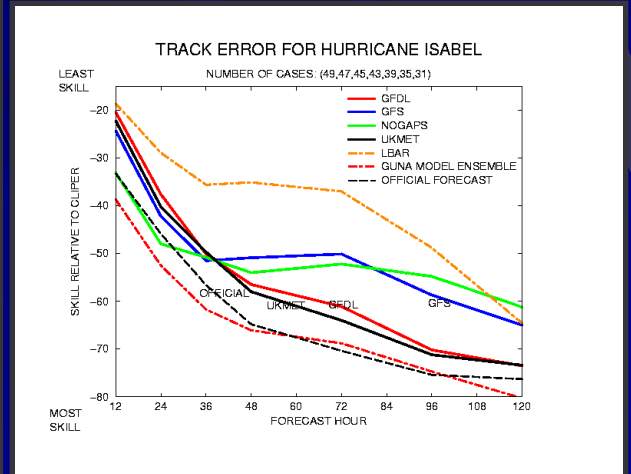
JHT 1st Round Implemented Projects



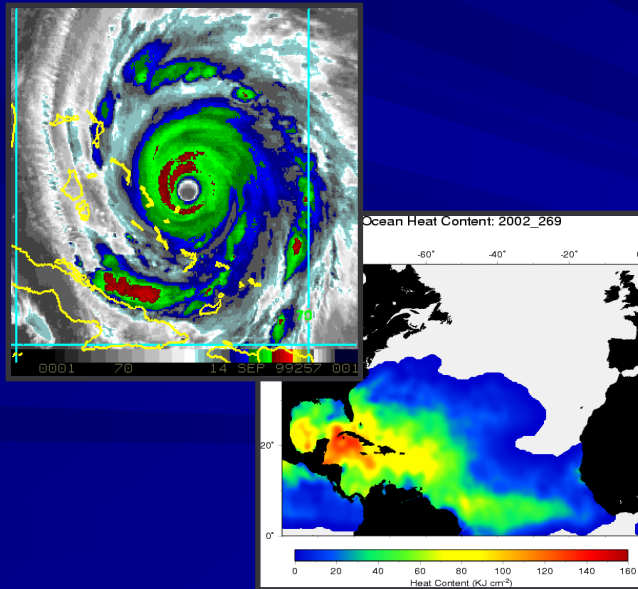
Satellite intensity and size estimates
(Velden/Brueske/DeMaria)



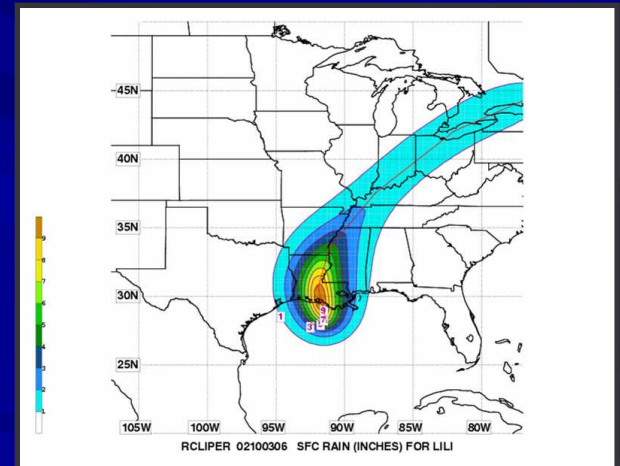
GFDL Hurricane Model upgrades (Bender; Tuleya)



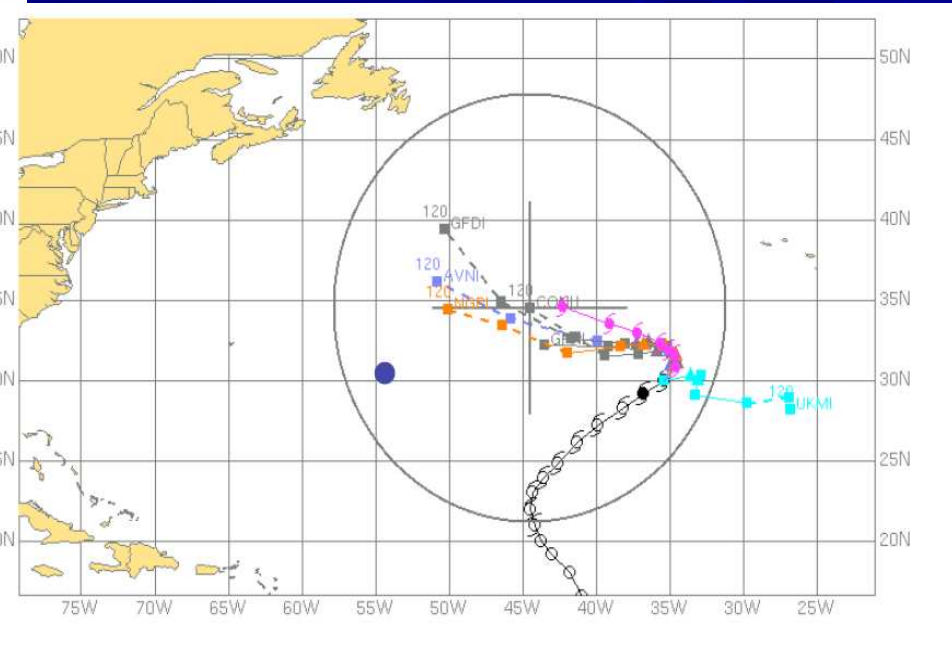
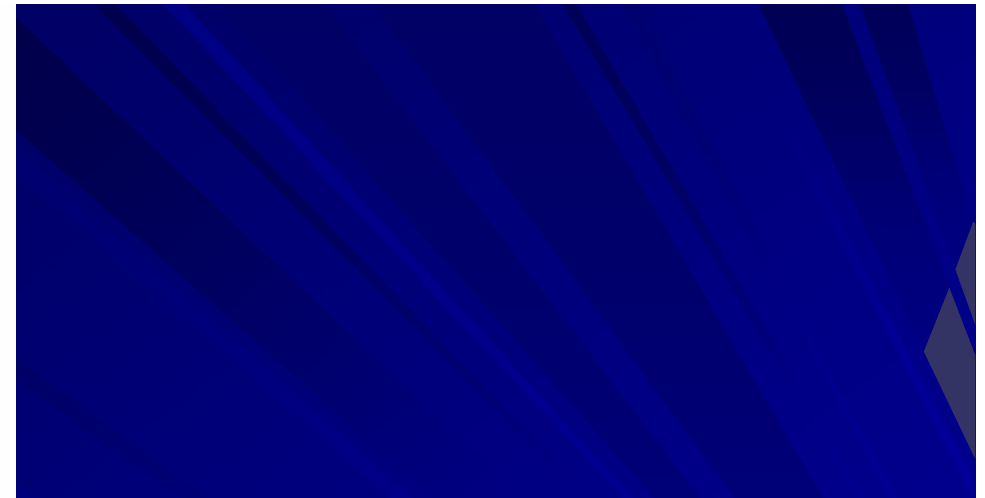
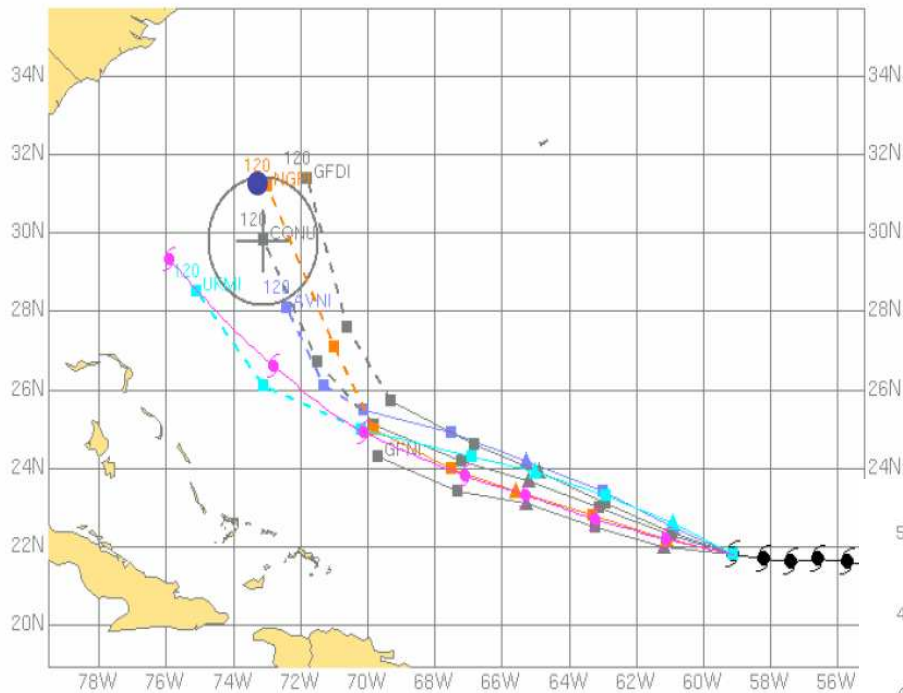
Probability of rapid intensification
(Kaplan)



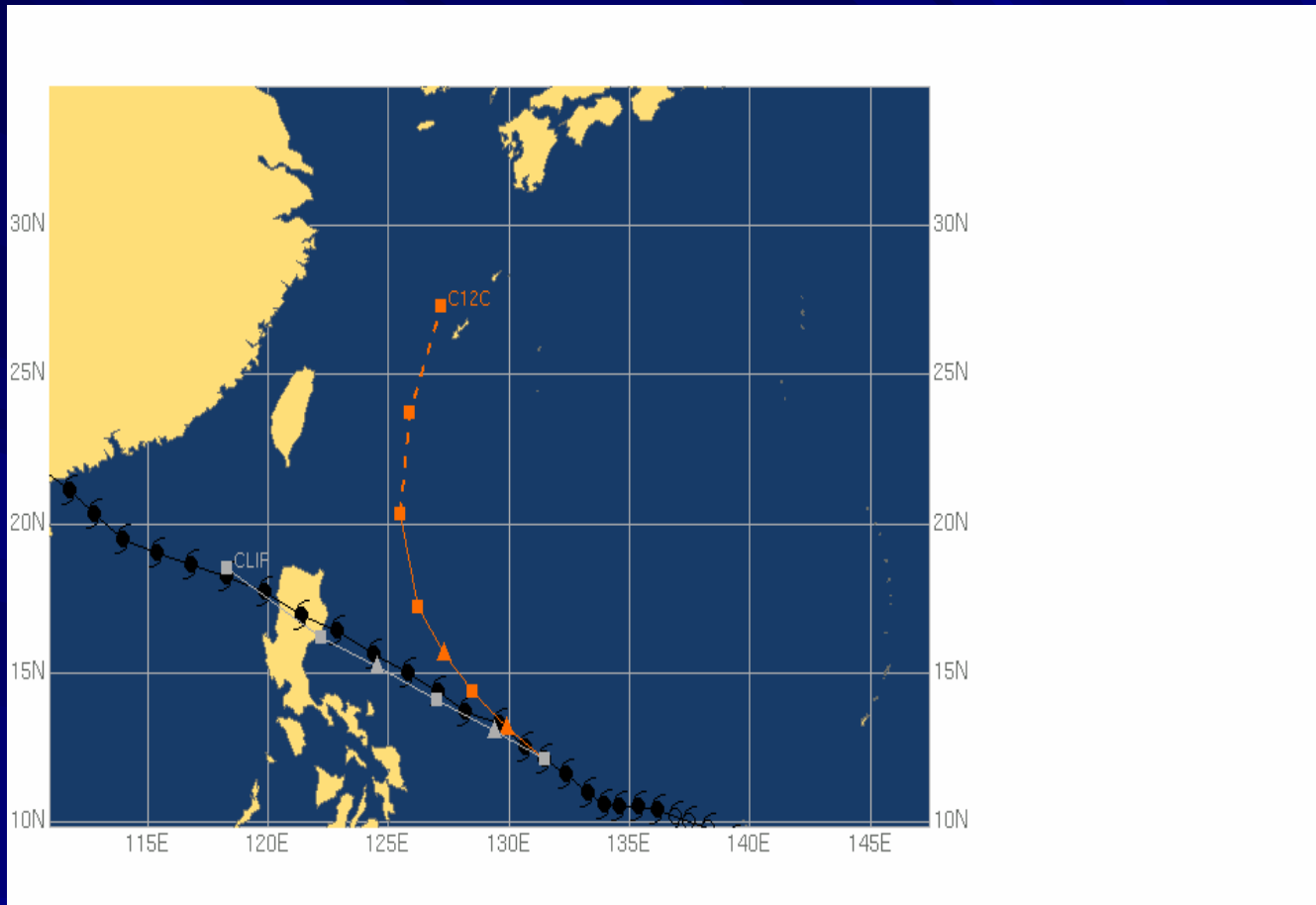
New wind prediction scheme (DeMaria/Knaff)



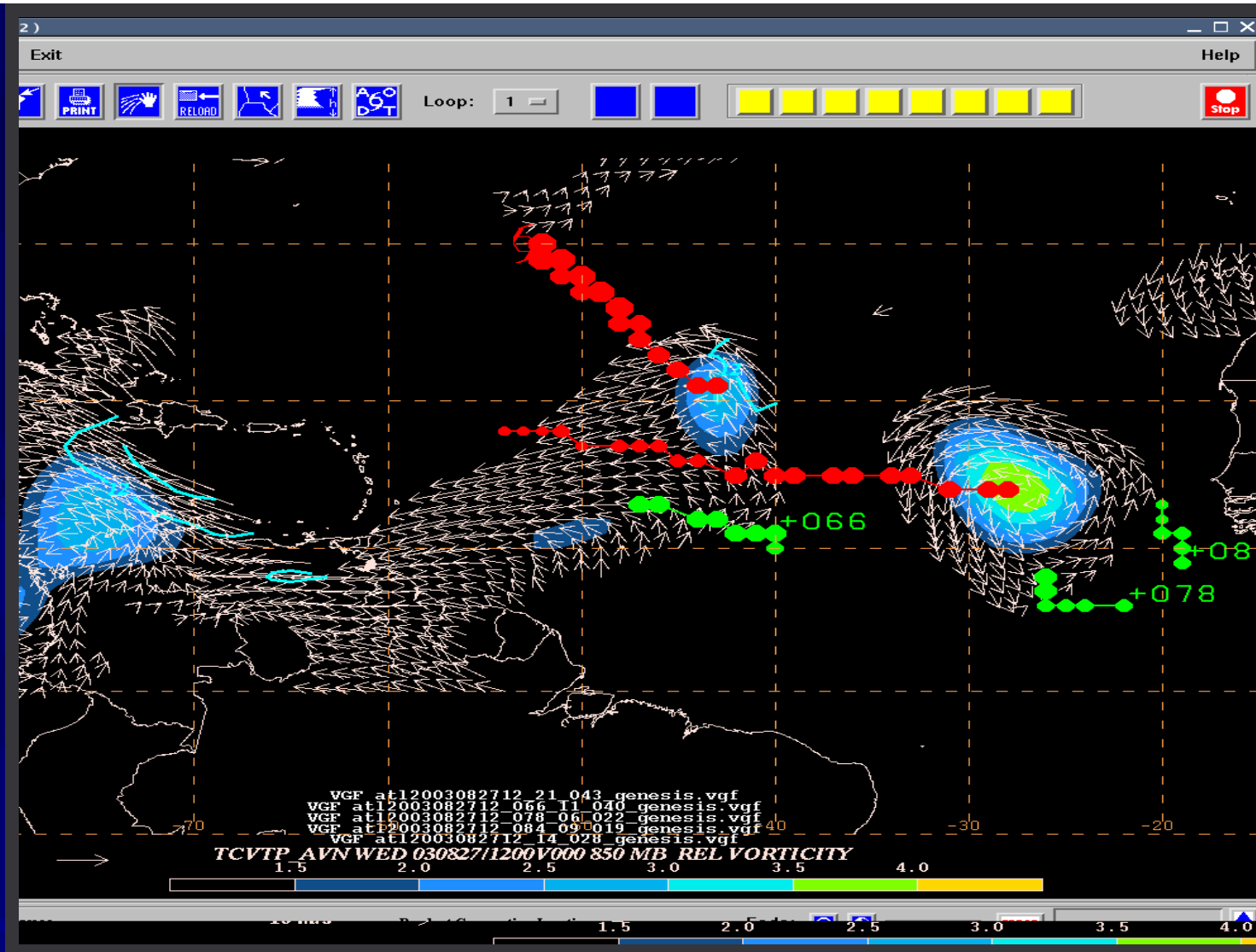
Improved Rainfall Forecasts (Marks)



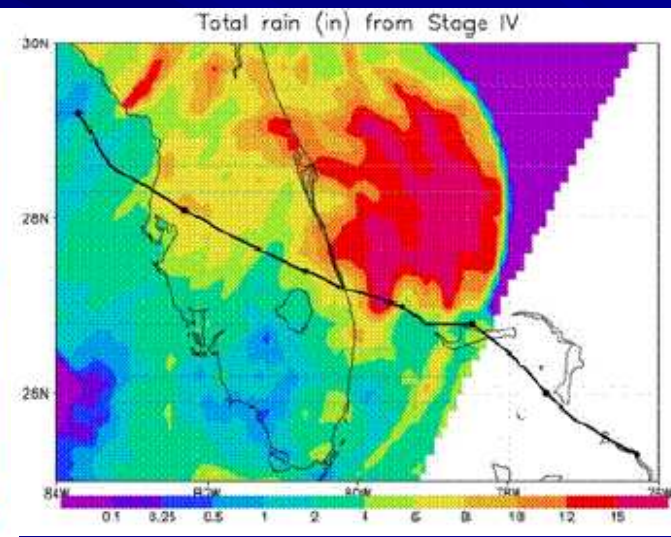
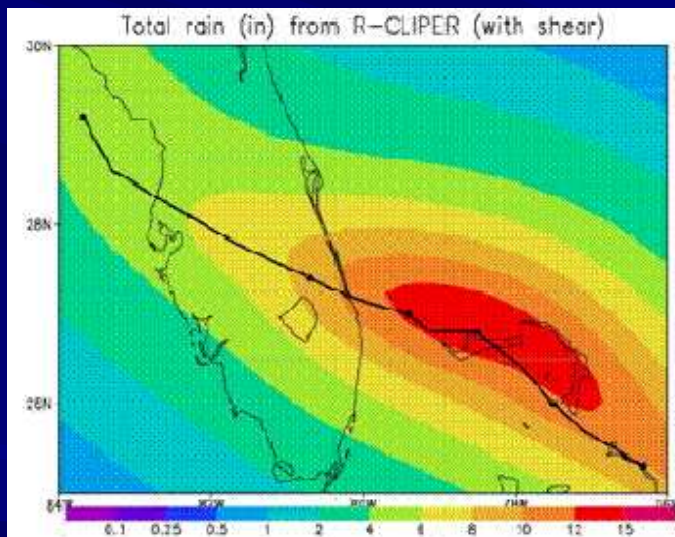
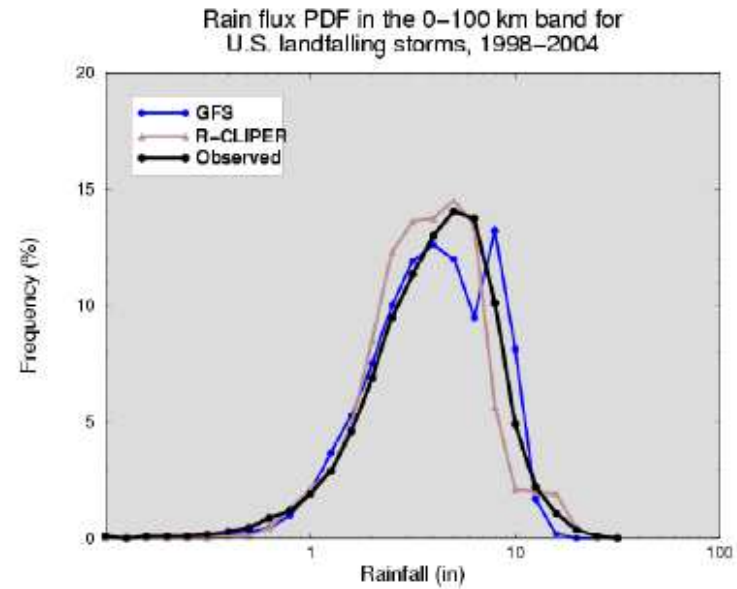
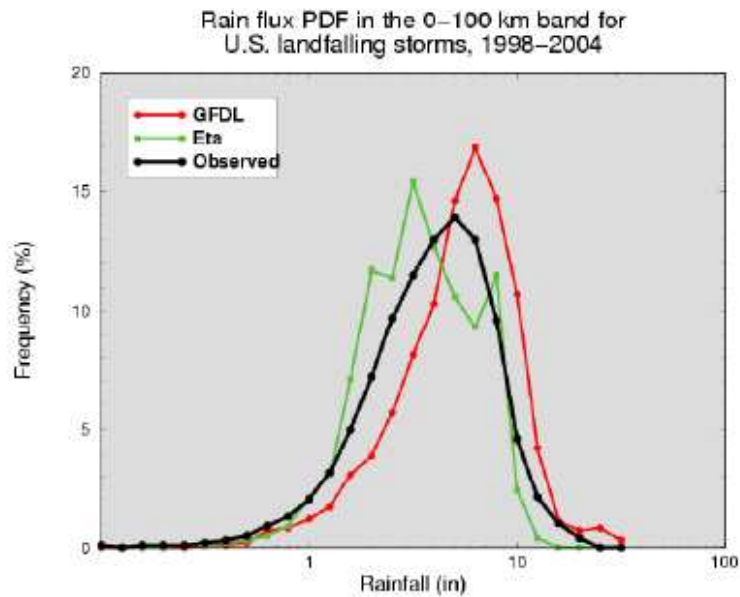
Quantifying tropical cyclone track forecast uncertainty and improving extended-range tropical cyclone track forecasts using an ensemble of dynamical models - Goerss (NRL)



An updated baseline for track forecast skill through five days for the Atlantic and Northeastern and Northwestern Pacific basins - Aberson (HRD)

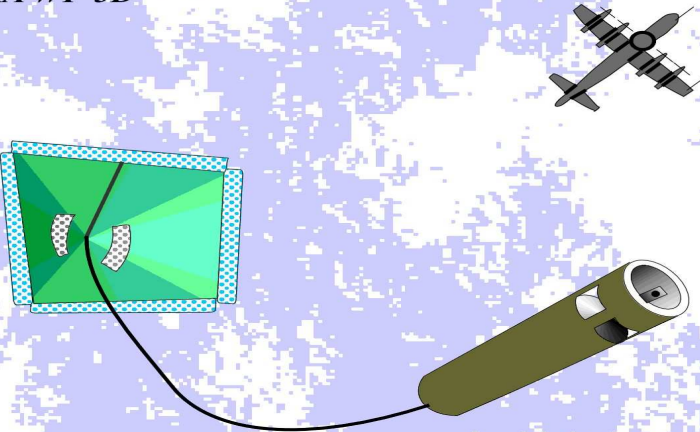


Objective and automated assessment of operational global forecast model predictions of tropical cyclone formation and life cycle - Harr (NPS)



Improving the validation and prediction of tropical cyclone rainfall – Rogers (HRD)/Pan (EMC) /Black (HRD)/Marchok (GFDL)

GPS dropsonde deployed from a NOAA WP-3D



Blue Shading: Averaged ETKF signal variance in storm area, due to adaptive obs at each grid point.
Emily_071500: Obs. time: 2005071700 Verif. time: 2005072000; Verif. var.: uv
Orange (Red) symbol: Ensemble mean track forecast at targeting (verification) time.

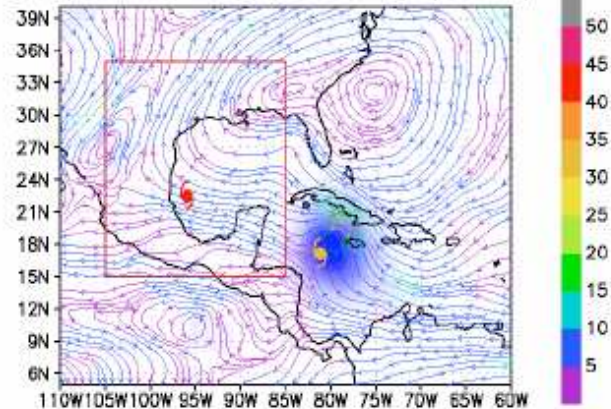
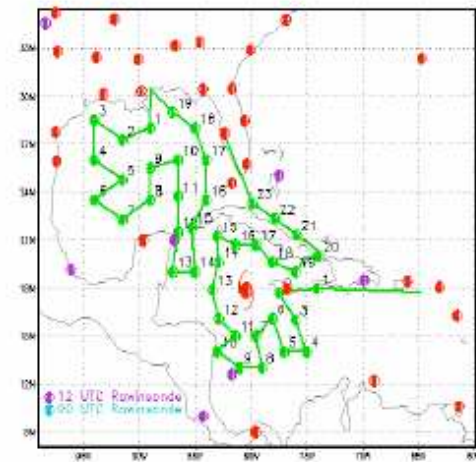


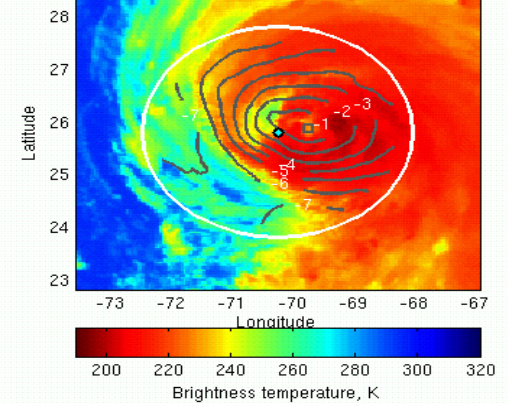
FIGURE 1. (a) ETKF summary map of 850-250hPa wind signal variance (shaded), for a 3-day forecast of Hurricane Emily.



(b) 2 concurrent Synoptic Surveillance flight tracks for Hurricane Emily, centered on 00 UTC 17 July 2005.

Targeting strategies to improve hurricane track forecasts - Majumdar(UM)/Aberson (HRD)/Toth (EMC)

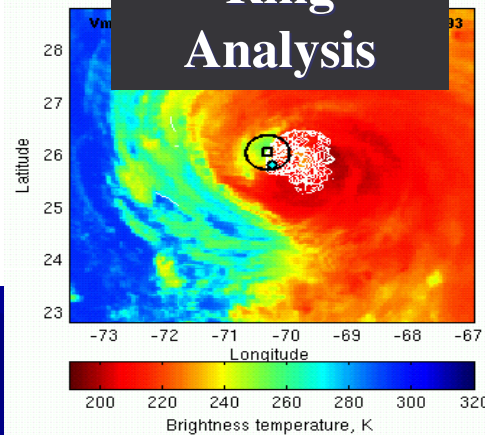
Spiral Analysis



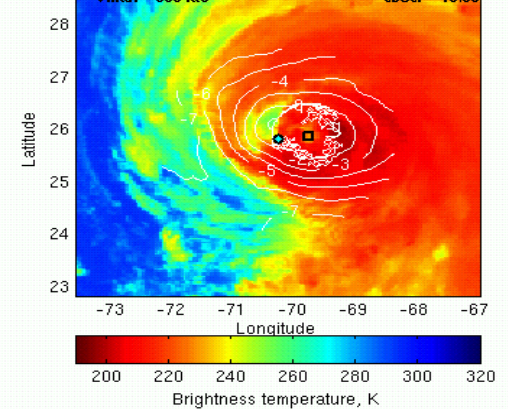
Hurricane Isabel

16 Sept 2003
00:15UTC

Ring Analysis

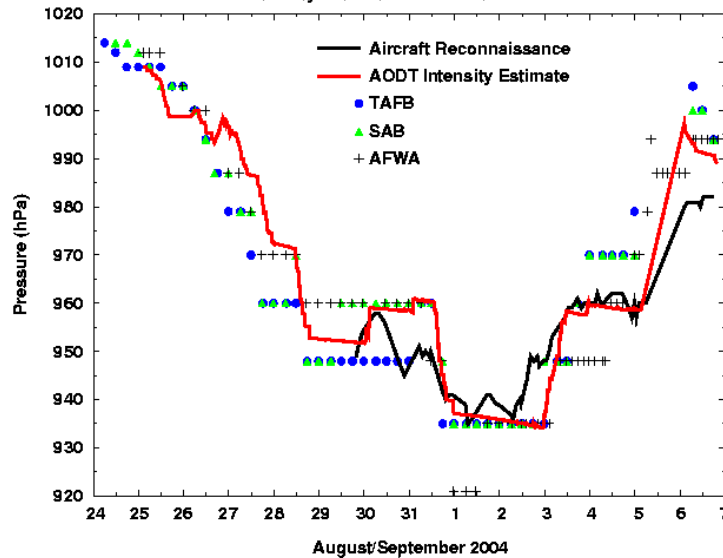


Combo Analysis

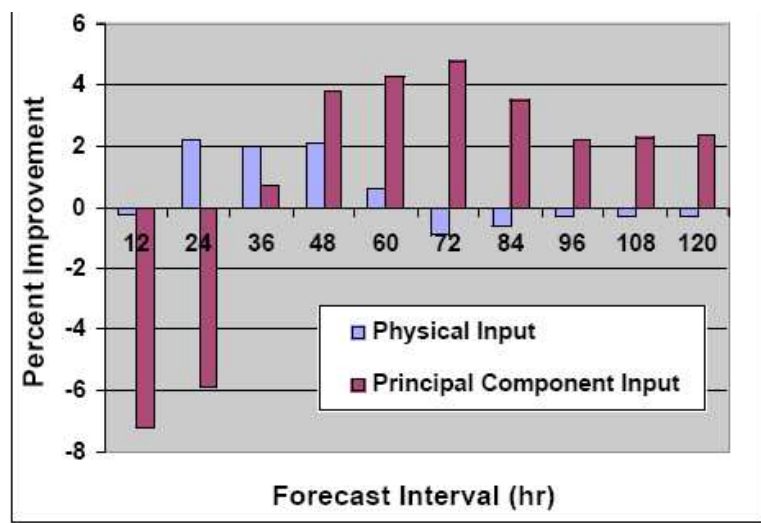
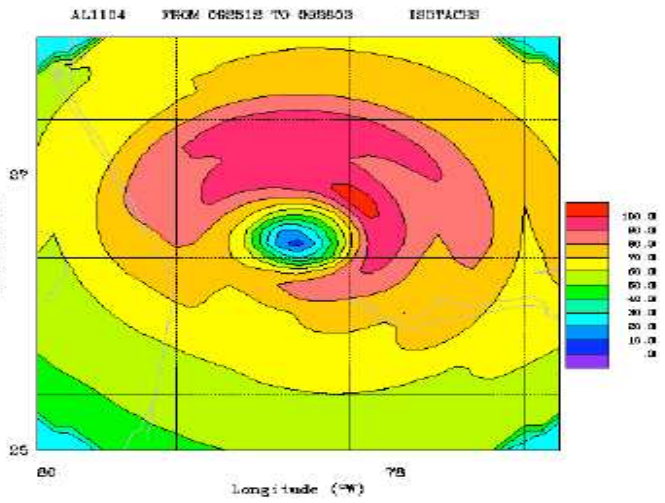
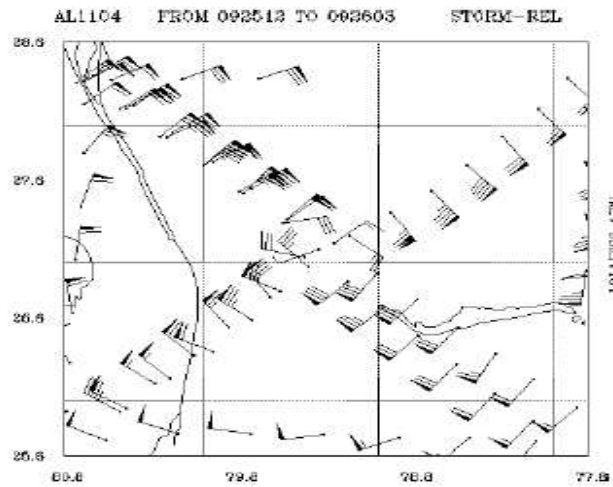


Hurricane Frances

AODT Intensity Estimate vs. Aircraft Reconnaissance



Implementation of the Advanced Objective Dvorak Technique (AODT) and Tropical Cyclone Intensity Estimation (TIE) algorithms at TPC - Kossin (U. WI)/Velden (U. WI)



Improvements in Deterministic and Probabilistic Tropical Cyclone Surface Wind Predictions - Knaff (CSU)/DeMaria (NESDIS)

Hurricane Ivan

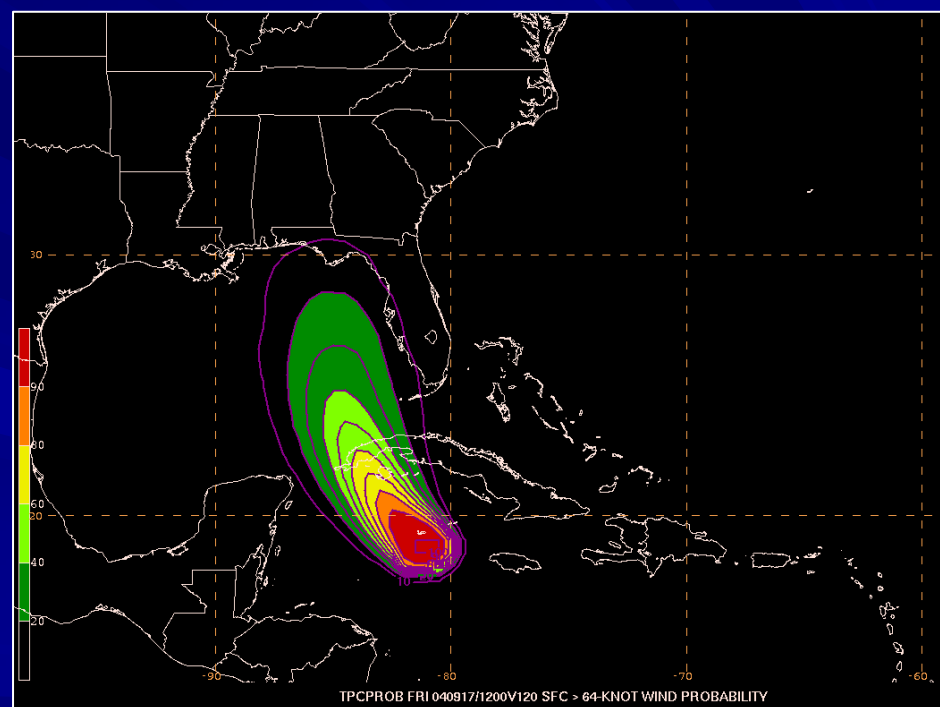
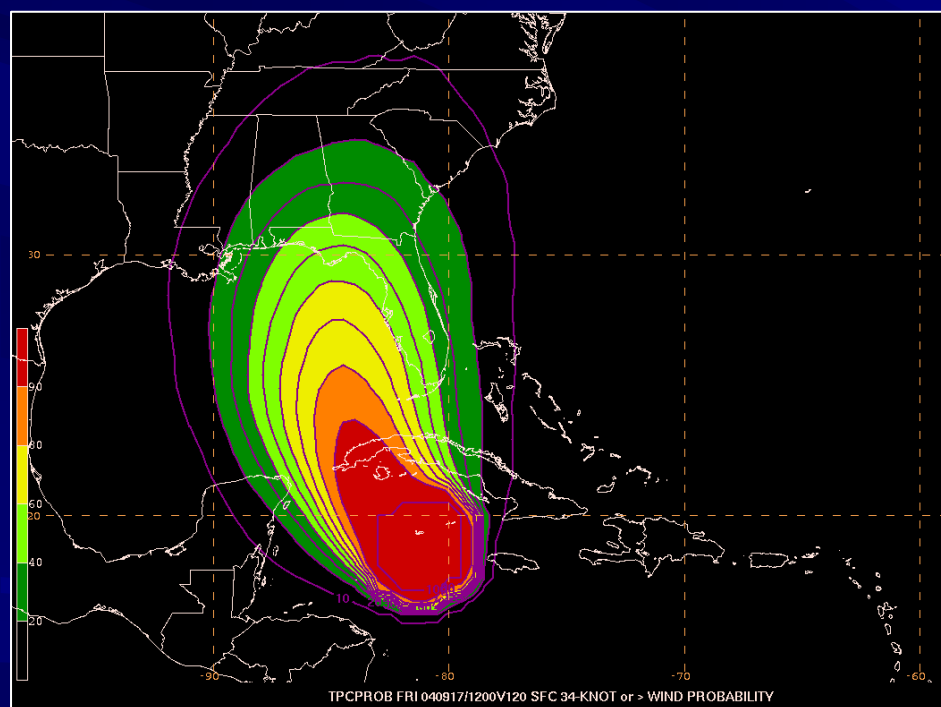
Experimental Cumulative Wind Speed Probabilities

Initial Time 12 UTC Sun 12 Sep 2004

34 kt

0-120 hr

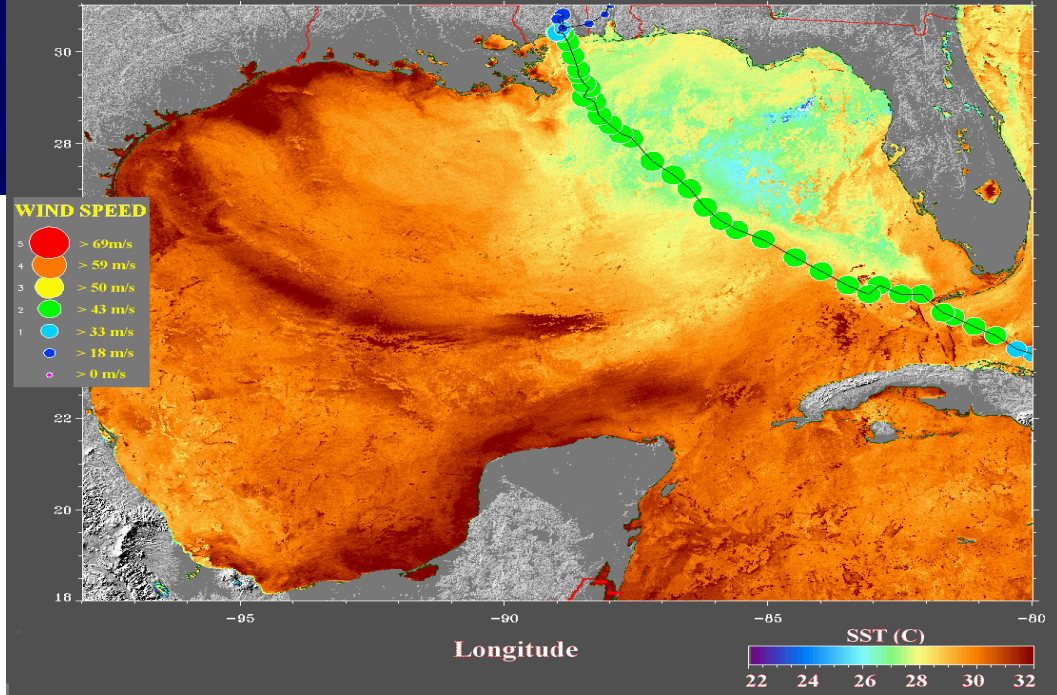
64 kt



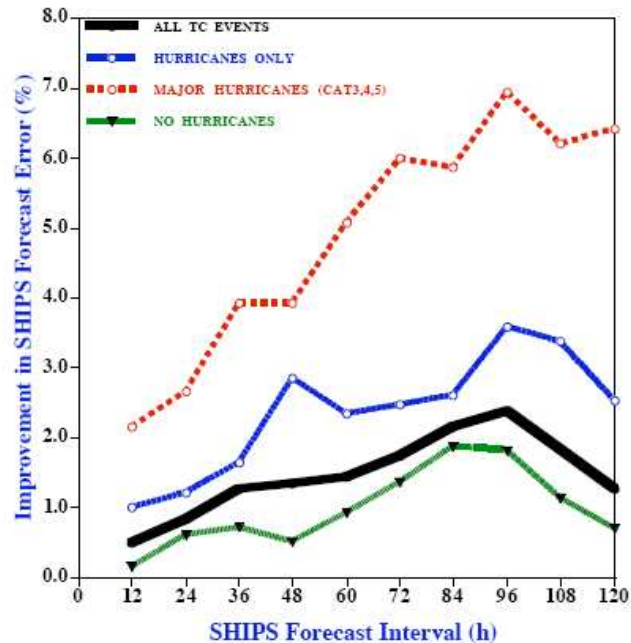
New product will be operational in 2006

Hurricane Georges

7-day mean SST ending 1998 OCT 01 23:03 UTC

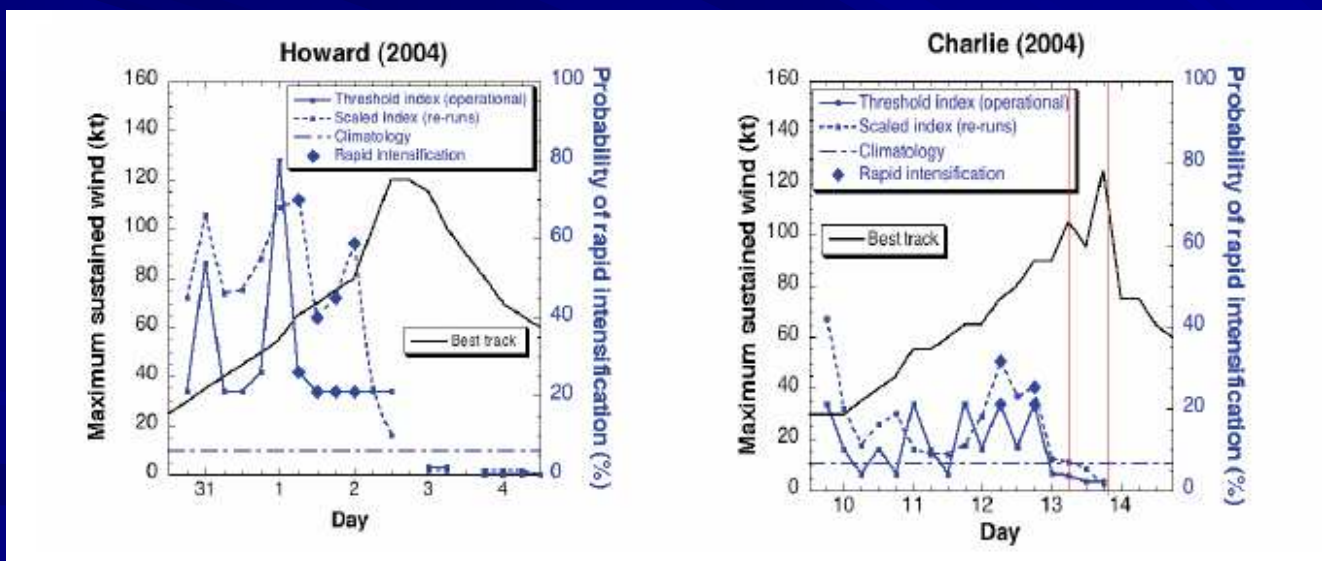
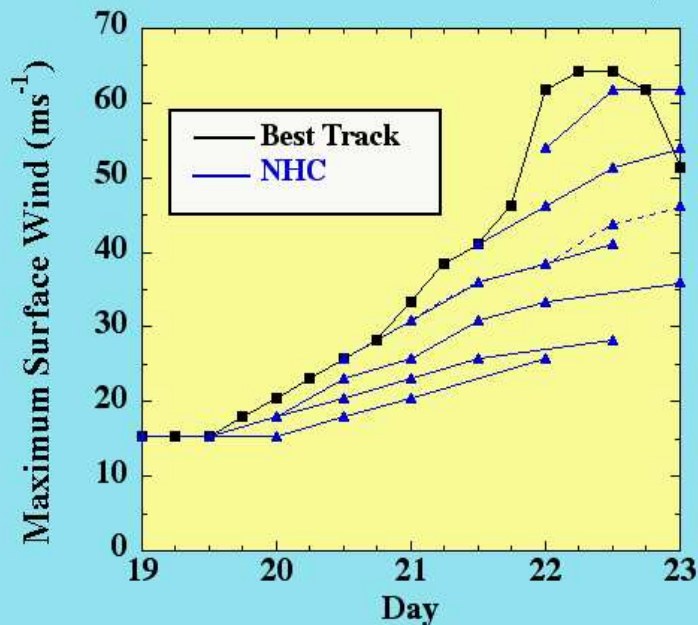


Funded JHT Project:
"TC Inner-Core Cooling Algorithm"
Atlantic Basin Stratification by Initial Intensity
1989-2004 SHIPS Dependant Sample

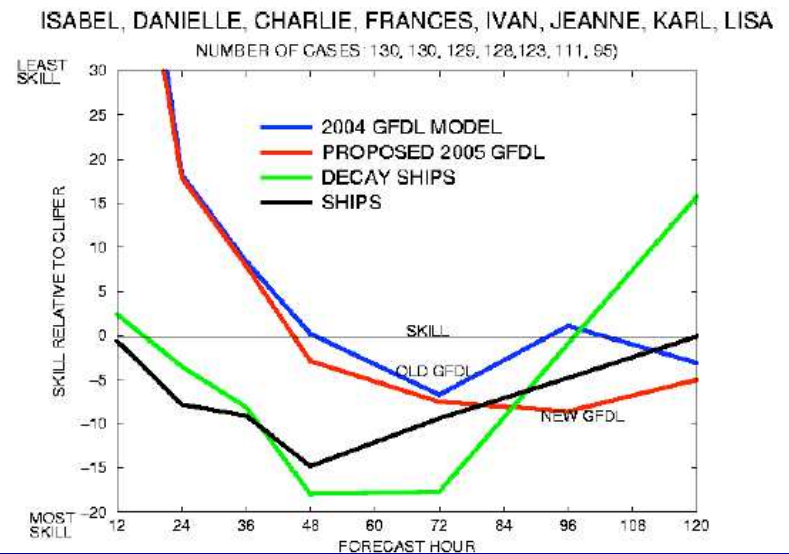
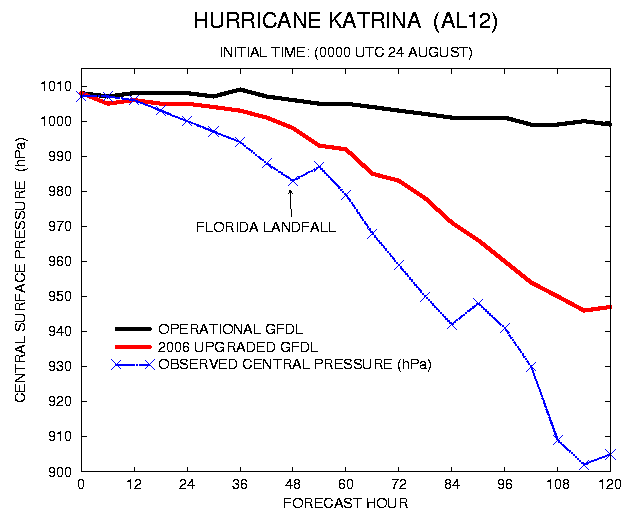
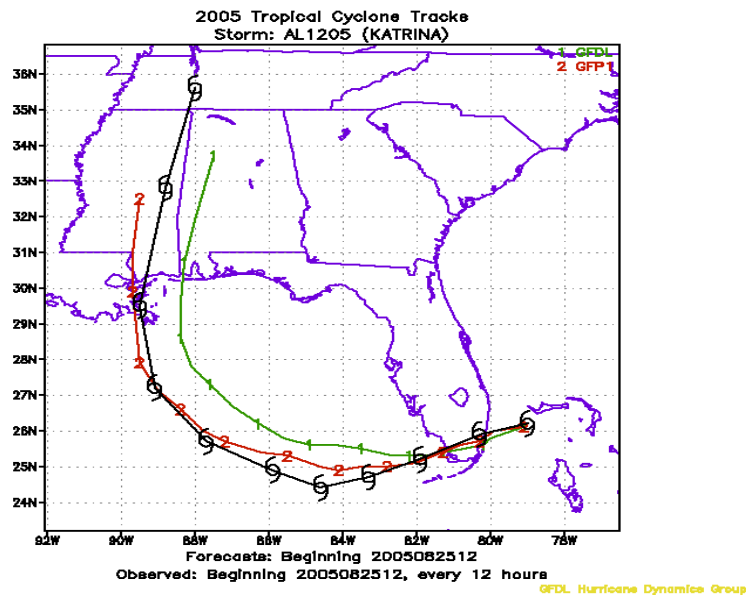


Developing an inner-core SST cooling predictor for use in SHIPS - Cione (HRD)/Gentemann (RSM)/Kaplan (HRD)

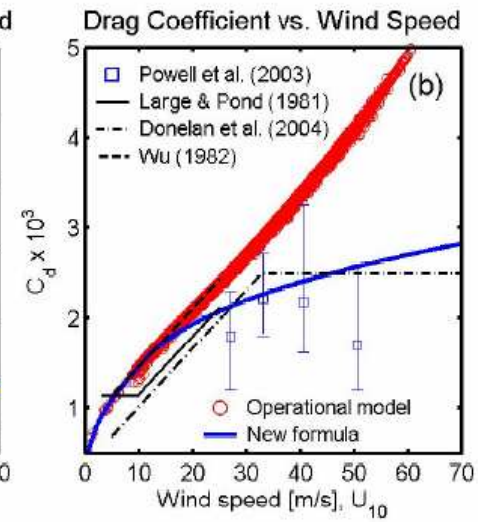
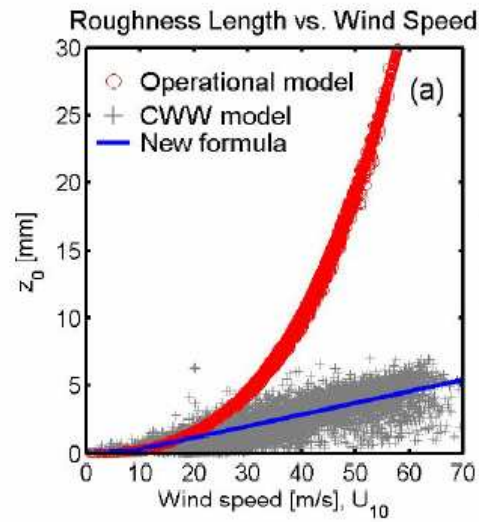
NHC official forecasts for Hurricane Bret (1999)



Development of a rapid intensification index for the eastern Pacific basin - Kaplan (HRD)



Upgrades to the operational GFDL hurricane prediction system - Bender (GFDL)



Hurricane RITA: Sea Surface Temperature and Currents: Initial time: 2005/09/22 00Z: Forecast 120h

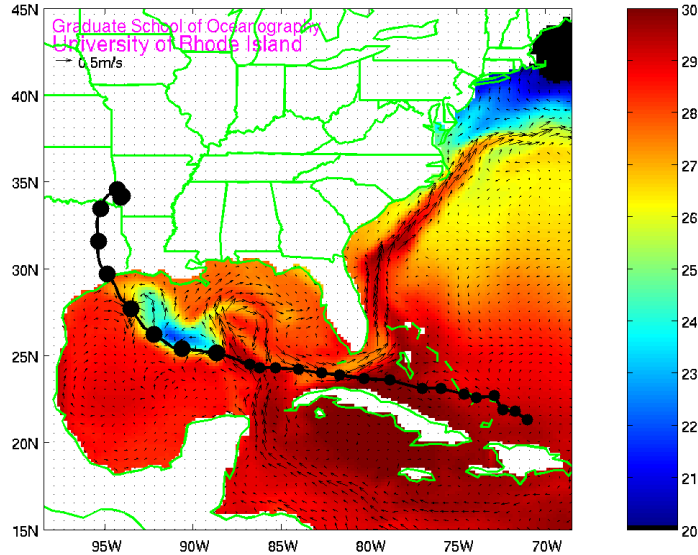
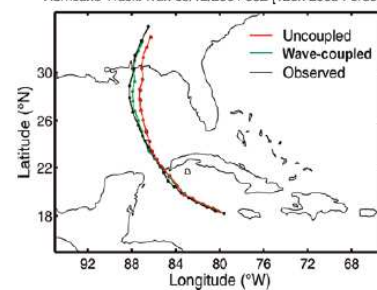
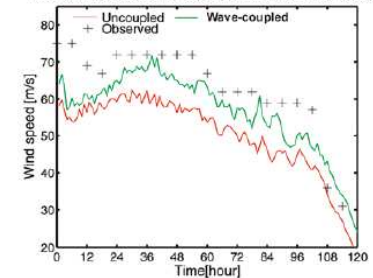


Fig. 4 Track and intensity predictions of Hurricane Ivan, initial time: Sept. 12 2004, 00Z. Red – GFDL model without wave coupling; green – GFDL hurricane-wave-ocean model; black – observations.

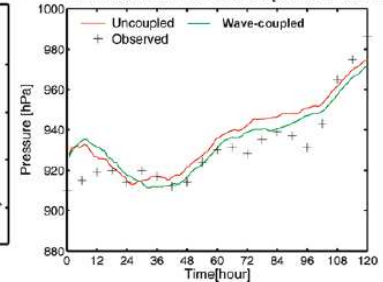
Hurricane Track: Ivan 09/12/2004 00Z [120h 2005 Forecast]



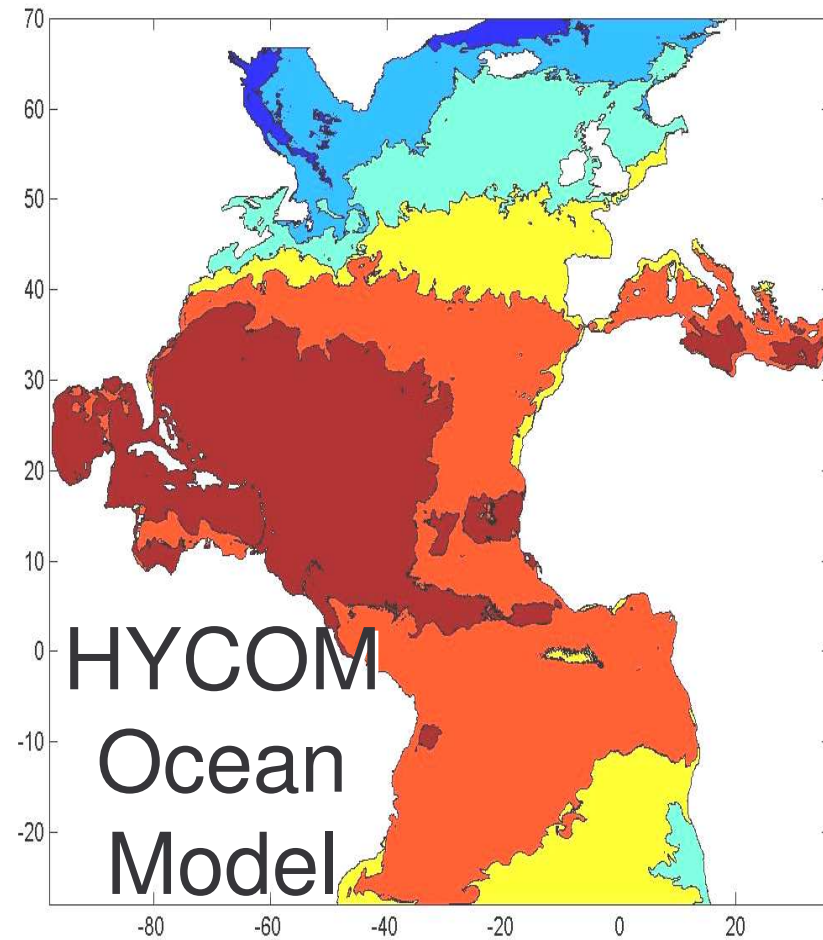
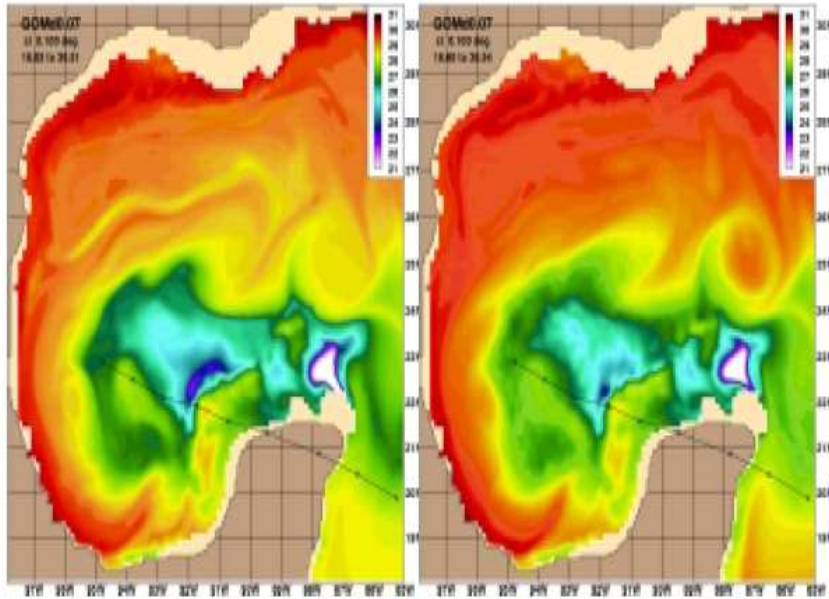
Maximum Wind Speed: Ivan 09/12/2004 00Z [120h 2005 Forecast]



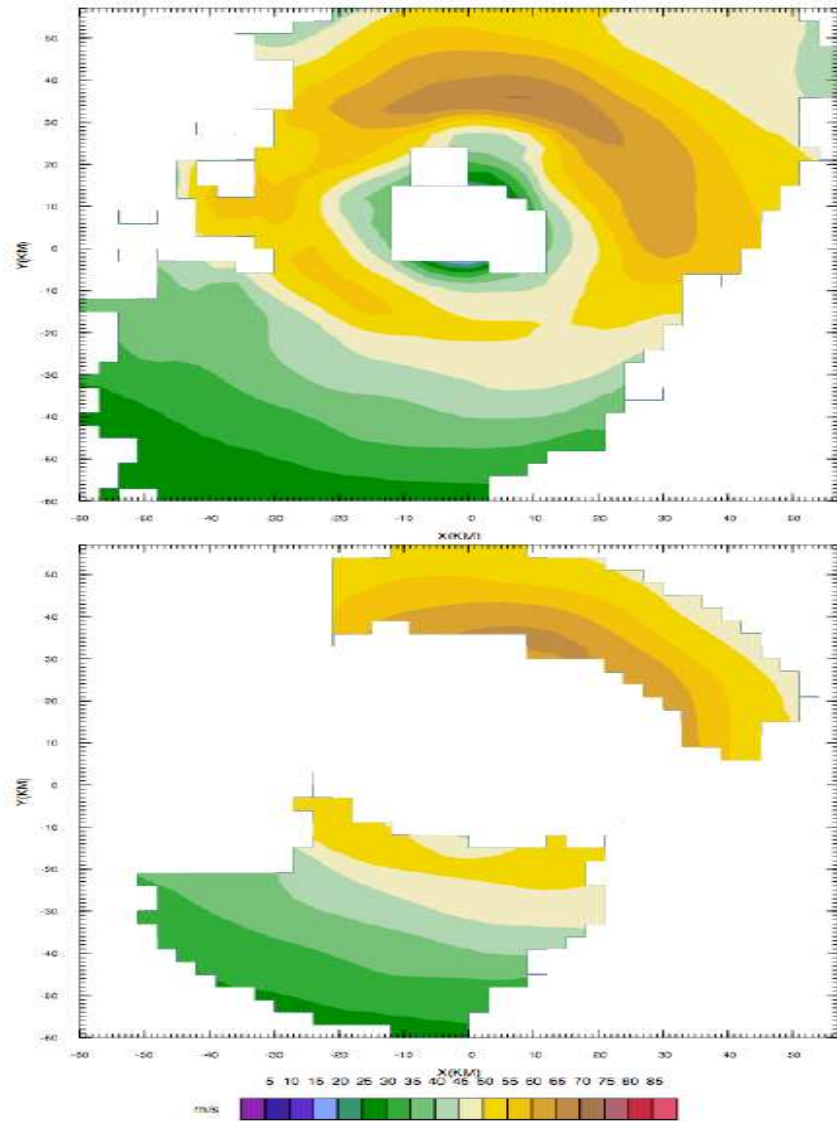
Minimum Pressure: Ivan 09/12/2004 00Z [120h 2005 Forecast]



Improving the GFDL/URI coupled hurricane-ocean model - Ginis (U. RI)

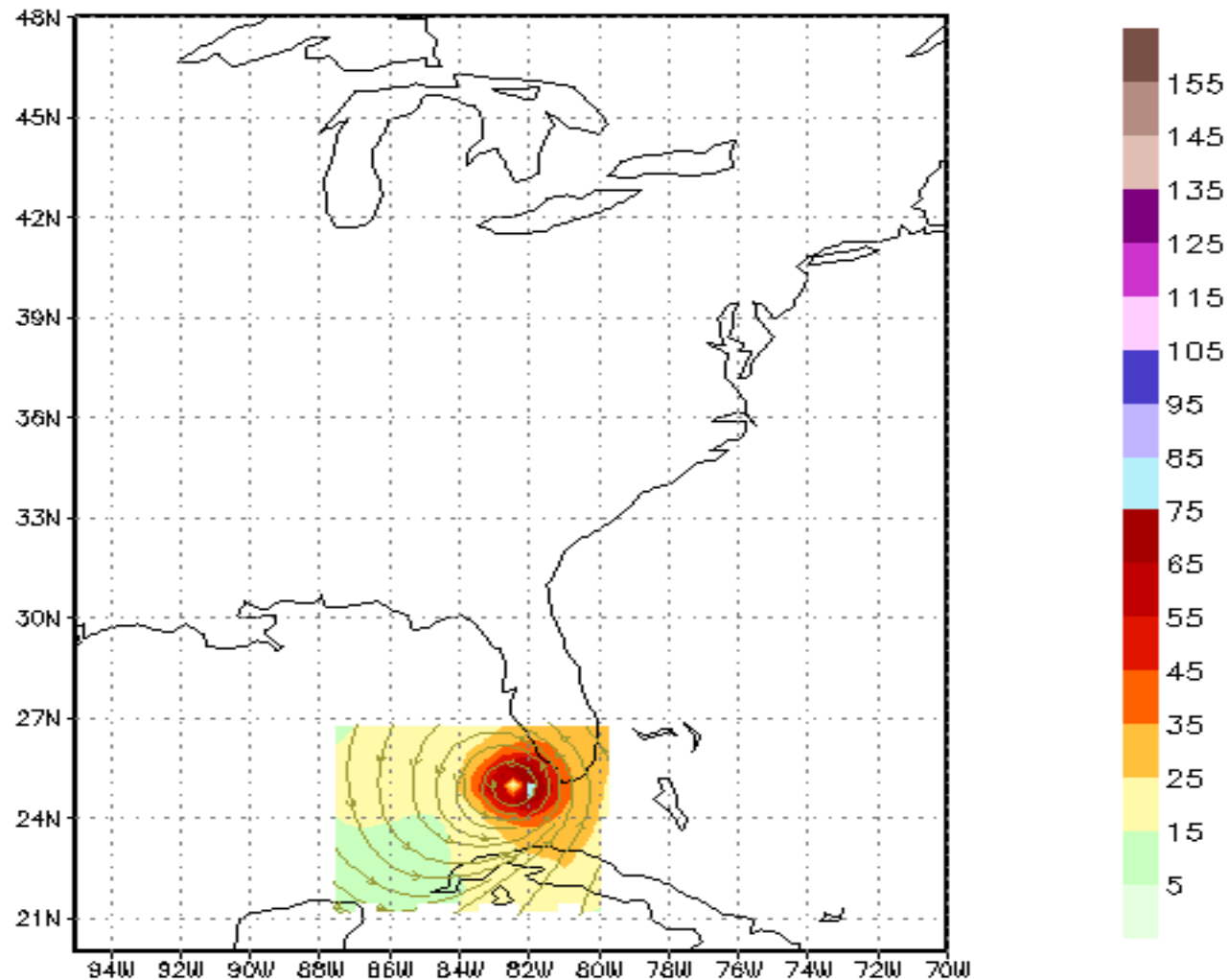


**Evaluation of upper ocean mixing
parameterizations - Jacob (U. MD)**



Real-time dissemination of hurricane wind fields determined from airborne doppler – Gamache (HRD)

AUG 26, 2005 18Z: HURRICANE KATRINA MOVING NEST FCST: 0



GrADS: COL4/IGES

2005-08-27-13:05

**Hurricane model transitions to operations at
NCEP/EMC - Pan (EMC)/Tuleya (SAIC)**

TRANSITIONING TO HURRICANE WRF



02-03

03-04

05

06

07

Mesoscale Data Assimilation for Hurricane Core



GFDL Begin Physics Upgrades

Continue upgrades

Final GFDL upgrades

HWRF T&E

MM5 →

Transition to HWRF

HWRF Operational

(9km/42?L)

HWRF Begin R&D

Prelim. Test - grid, hurricane physics

HWRF

T&E

Third Round (FY05-06) Project Focus Areas

Primary Area of Focus	# of Projects
Improvements to dynamical models (for track, intensity, and precipitation forecasts)	4
Intensity forecast guidance	4
Enhancements to observed data, assimilation	3
Tropical cyclone structure/wind distribution	2
Track forecast guidance	1
Enhancements to operational environment	1
Total	15

JHT Website

www.nhc.noaa.gov/jht/index.shtml



- [Terms of Reference \(PDF\)](#)
- [Staff](#)
- [Steering Committee](#)
- [Main Activities](#)
- [Highlights - 2001 to present](#)
- [2003-2005 Project Schedule](#)
- [2001-2003 Projects](#)
- [2003-2005 Projects](#)
- [Administrative Presentations and Information](#)

Mission Statement

The mission of the Joint (National Oceanic and Atmospheric Administration - NOAA, Navy, and National Aeronautics and Space Administration - NASA) Hurricane Test Bed is to transfer more rapidly and smoothly new technology, research results, and observational advances of the [United States Weather Research Program \(USWRP\)](#), its sponsoring agencies, the academic community and other groups into improved tropical cyclone analysis and prediction at operational centers.

WHAT'S NEW: Added July 07, 2004.

- [Fiscal Year 2005 Announcement of Federal Funding Opportunity](#)
- [Tropical Prediction Center/ Joint Hurricane Testbed Information Technology Structure](#)

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