

Joint Hurricane Testbed (JHT) 2012 Update

Transition from Research to Operations

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Joint Hurricane Testbed Mission Statement

The mission of the Joint Hurricane Test Bed is to transfer more rapidly and smoothly new technology, research results, and observational advances of the United States Weather Research (USWRP), its sponsoring agencies, the academic community and other groups into improved tropical cyclone analysis and prediction at operational centers.

JHT Process

- Announcement of funding opportunity
- Principal Investigators apply for funding through NOAA
- 7 member Steering Committee rates all proposals
- Funded projects are tested during one or two hurricane seasons in conjunction with NHC/EMC points of contact
- Final evaluations by PIs and NHC/EMC staff
- Implementation of successful projects are then carried out by NHC/EMC/NCO staff/PIs

Summary of JHT projects 2001-2011

- **1) Number of projects supported: 74**
 - 62 completed
 - 35.5 accepted for operational implementation
 - Number of projects completed but rejected: 6
 - Number of projects completed but pending further investigation (decisions deferred): 9.5
 - 11 fifth round projects are being evaluated for operational acceptance
 - 12 new projects started in 2011
- **2) Implementation**
 - Number of projects implemented: **35.5** (including 4 5th round projects)
 - Number of numerical modeling related projects implemented by EMC/NCO: 10
 - Number of projects implemented by NHC: **24.5**
 - Number of projects accepted but not yet fully implemented by NHC: 4

Note:

- 1) Implementation is defined when a project is completed, accepted, and the technique installed on NCEP/NCO or NHC operational systems and runs on operational time frame.
- Some techniques were “implemented” on JHT platform for testing.

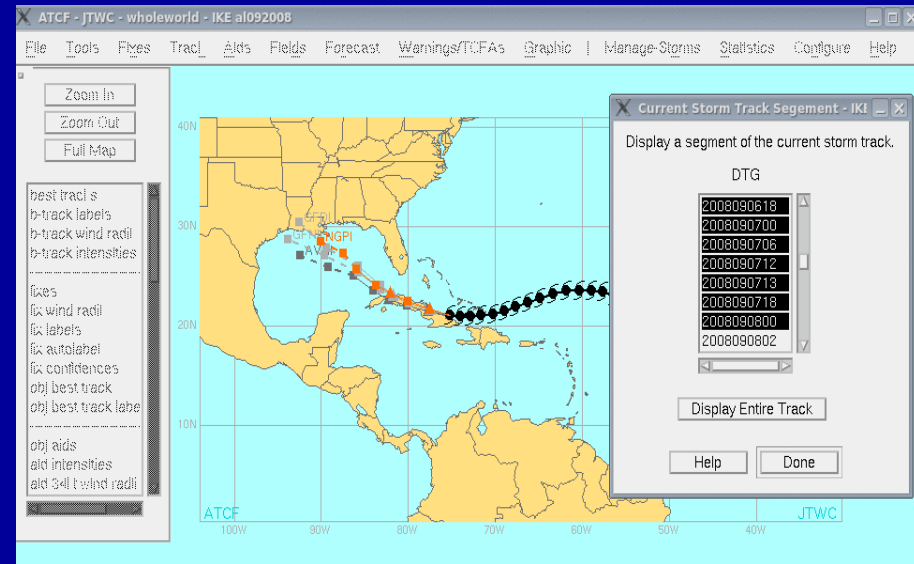
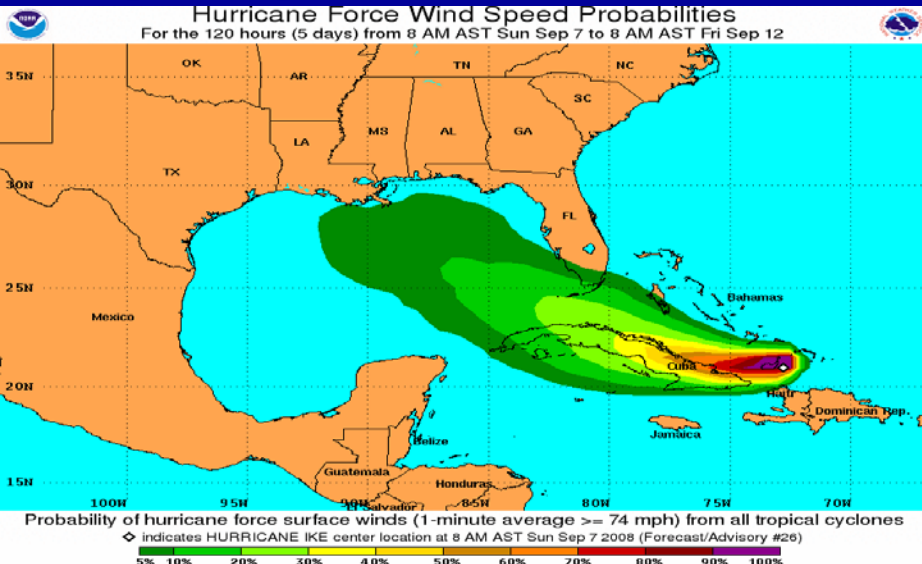
2011-2012 Major JHT Activities - 5th round

- **February – August 2011**
 - Testing of 5th round (2009-2011) projects
- **August 2011**
 - 9 Projects completed (5th Rd)
 - JHT final evaluation/report on 5th round projects (through December)
 - Decision on acceptance for implementation (NHC and EMC Directors)
 - **4 criteria for acceptance**
 - *Forecast or Analysis Benefit*
 - *Efficiency*
 - *Compatibility*
 - *Sustainability*
- **March 2012**
 - Final decision made

5th Round Project Focus Areas

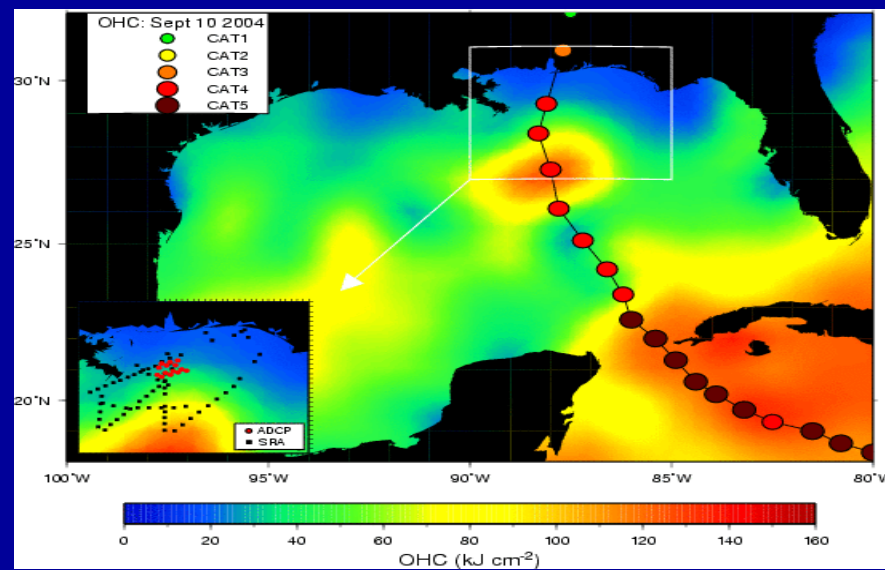
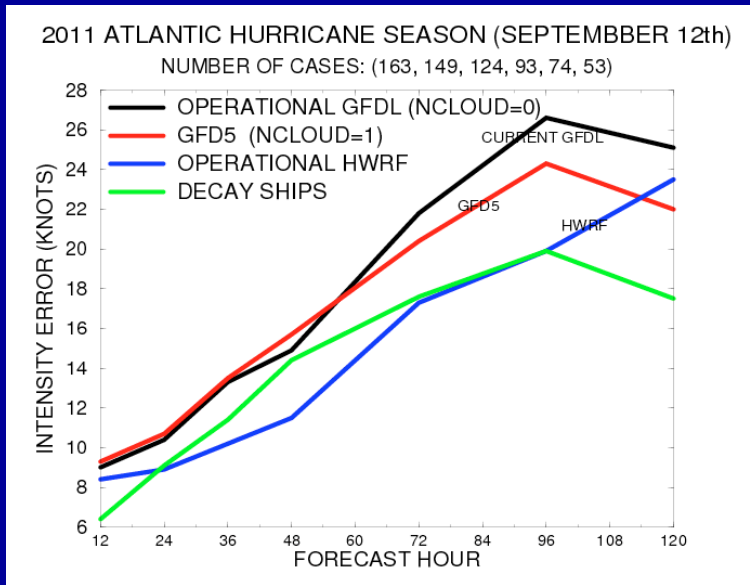
Primary Area of Focus	# of Projects
Improvements to dynamical models (for track, intensity, and precipitation forecasts)	5
Statistical intensity forecast guidance	3
Enhancements to observed data, assimilation	1
Tropical cyclone structure/wind/wave distribution	1
Enhancements to operational environment	1
Total	11

Highlights of 5th Round Completed Projects



Improved Wind Probabilities – DeMaria/Knaff

Enhanced ATCF - Sampson



HWRF-GFDN coupled model- Ginis

Ocean Model Parameterizations - Shay

2011-2012 Major JHT Activities - 6th round

- **6th round funding recommendation**
 - Steering committee review proposals – Complete Feb 2011
 - Rank and select proposals for funding
 - Work with Grants Office to fund selected projects
 - Find Point of contacts among NHC forecasters and support staff
 - Work with PIs to setup timelines for their projects
- **6th round Projects (12) began Aug-Sept 2011**

Primary Area of Focus	# of Projects
Improvements to dynamical models (for track, intensity, and precipitation forecasts)	3
Statistical intensity forecast guidance	4
Enhancements to observed data, assimilation	4
Tropical cyclone structure/wind/wave distribution	1
Total	12

6th Round Projects

Proposal Title

PIs

POC

The assimilation of non-NOAA and non-AF GPS dropwindsonde data into NOAA numerical models	Aberson (NOAA/AOML)	M. Brennan, J. Franklin, C. Landsea, V. Tallapragada(EMC)
Improving the operational TC models at NOAA/NCEP and Navy/FNMOC	Ginis (U Rhode Island) Bender (NOAA/GFDL)	D. Roberts, W. Hogsett, M. Brennan, R. Pasch, C. Landsea, V. Tallapragada (EMC)
Validation of HWRF forecasts with satellite observations and potential use in vortex initialization	Vukicevic (NOAA/AOML) Greenwald (U of Wisc./CIMSS)	J. Cangialosi, R. Pasch, C. Landsea, V. Tallapragada (EMC)
Updating the secondary eyewall formation probabilistic model, completing new climatologies of intensity and structure changes associated with eyewall replacement cycles, and construction of new forecast guidance tools based on the new climatologies	Kossin (NOAA/NCDC)	E. Blake, T. Kimberlain, C. Landsea
Development of a Probabilistic Tropical Cyclone Genesis Prediction Scheme	Jason Dunion (U of Miami/CIMAS, AOML), John Kaplan (NOAA/AOML), Andrea Schumacher (CSU/CIRA) Joshua Cossuth (FSU/COAPS)	J. Cangialosi, W. Hogsett, D. Brown, R. Berg, C. Landsea
Improved automation and performance of VORTRAC intensity guidance	Wen-Chau Lee (NCAR/EOL), Paul Harasti (DOD/Naval Research Lab.) Michael Bell (Naval Postgraduate School)	W. Hogsett, S. Stewart, C. Landsea

6th Round Projects

Proposal Title

PIs

POC

Proposal Title	PIs	POC
Improved SFMR surface wind measurements in intense rain conditions	Uhlhorn (NOAA/AOML)	D. Brown, E. Christensen, E. Blake, C. Landsea
Development of a Real-Time Automated Tropical Cyclone Surface Wind Analysis	Mark DeMaria (NOAA/NESDIS), John Knaff (NOAA/NESDIS)	W. Hogsett, J. Schauer, R. Berg, M. Brennan, C. Landsea
Improvements in Statistical Tropical Cyclone Forecast Models	John Knaff (NOAA/NESDIS) Mark DeMaria (NOAA/NESDIS)	L. Avila, R. Berg, C. Landsea
Enhancement of SHIPS-RI index using satellite 37 GHz microwave ring pattern	Haiyan Jiang (Florida Intl Univ.)	J. Beven, T. Kimberlain, D. Mundell, C. Landsea
Improvement to the SHIPS Rapid Intensification Index	John Kaplan (NOAA/AOML), Charles Sampson (NRL) Chris Rozoff (U. of Wisc./CIMSS) Jim Kossin, (NOAA/NCDC) Chris Velden (U. of Wisc./CIMSS)	S. Stewart, E. Blake, C. Landsea
Introducing diagnostic variables towards extending the SHIPS algorithm for hurricane intensity forecasts	T.N. Krishnamurti, (Florida State Univ.)	L. Avila, J. Beven, C. Landsea

Changes in Forecaster Priorities

Second Round (2003)

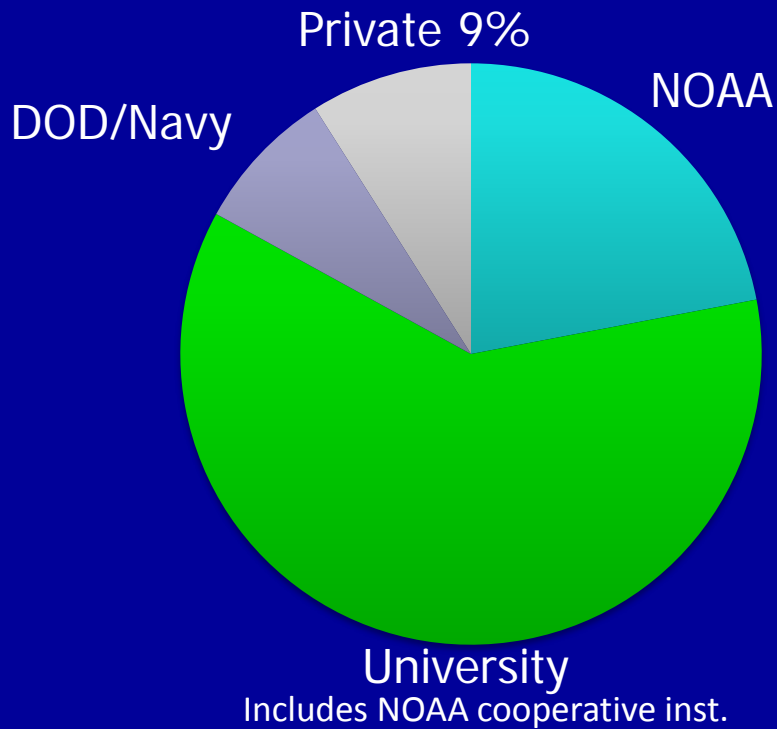
1. Intensity change, rapid intensification
2. "Guidance on guidance" for track, intensity and precipitation – probabilistic
3. Precipitation amount and distribution
4. Reduce the occurrence of guidance and official track outliers
5. Implement improved observational systems in the storm and its environment

Sixth Round (2011)

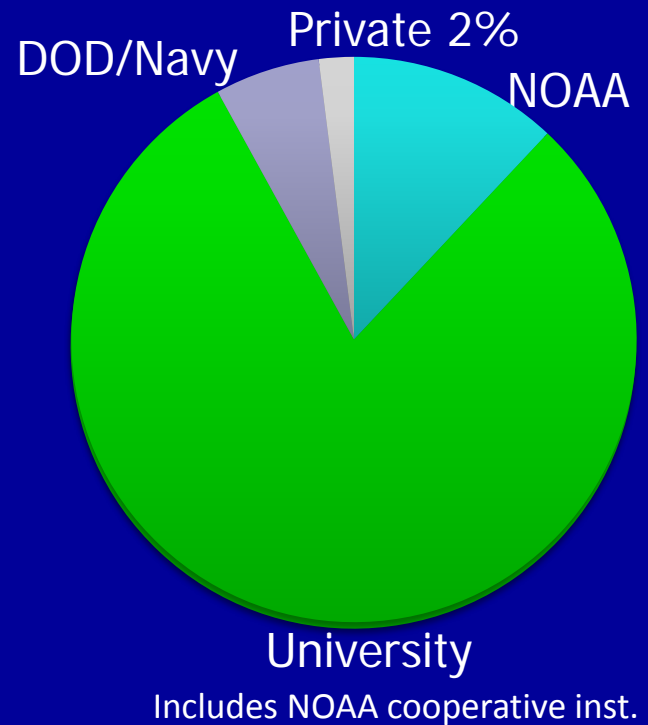
1. intensity change, rapid intensification
2. Improved observational systems in the storm and its environment
3. Guidance on guidance for track, intensity and precipitation
4. Storm surge, coastal inundation modeling/applications
5. Improved and extended track guidance) and identify and removal of outliers

Funding Distribution

5th Round (2009-2011)
(\$1.15M)



6th Round (2011-2013)
(\$1.19M)



Challenges for FY12

- **Completion of 5th round projects**
 - Final reports for 5th round projects
 - POC feedback
 - JHT final review/reports to NHC Director for acceptance
- **Test and evaluation**
 - Prepare real-time testing & evaluation for 6th round projects
 - Set up necessary software code and data flow
- **Implement newly accepted projects (NHC)**
- **Work on 7th round announcement**
- **Review and recommend pre-applications**

Acknowledgements

- USWRP
- NOAA OAR Office of Weather and Air Quality
- JHT Steering Committee
- JHT Admin. Assistants
- NHC and EMC forecaster and points of contact
- NHC Technical Support Branch, NCEP/NCO, and DOD
- JHT principal investigators and other funded participants
- NHC admin staff
- OFCM/IHC

JHT Website

Go to www.nhc.noaa.gov/jht

Joint Hurricane Testbed - Home

www.nhc.noaa.gov/jht/

USWRP
Joint Hurricane Testbed

Mission Statement

- JHT Home
- Terms of Reference (PDF)
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- Main Activities
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- Administrative Presentations and Information

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News

Updated 1 November 2011:
Press Release on new 2011 funded JHT projects

Updated 30 September 2011:
New JHT projects (Round 6, FY11-13) announced

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Thank you