



The Joint Hurricane Testbed

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**The Joint Hurricane Testbed is funded by the US
Weather Research Program in NOAA/OAR's
Office of Weather and Air Quality**

The Forecasters (Us)



How to bridge the "valley of death"?

The Researchers (Them)



Joint Hurricane Testbed (JHT)

- Bridge hurricane research and operations
- Began in 2001 under the USWRP
- **Our Mission:** successfully transfer new technology, research results & observational advances from research groups to operational centers
- Testing is done at National Hurricane Center or Environmental Modeling center

JHT: The Process

- Call for Proposals - drafted and disseminated (bi-annually)
- Principal Investigators apply for funding through NOAA
- 7 member Steering Committee rates all proposals
- Funded projects are tested during 1 or 2 hurricane seasons in conjunction with NHC/EMC points of contact
- At the project's end, each are evaluated by NHC/EMC staff
- Implementation of successful projects are then carried out by NHC/EMC staff/PIs

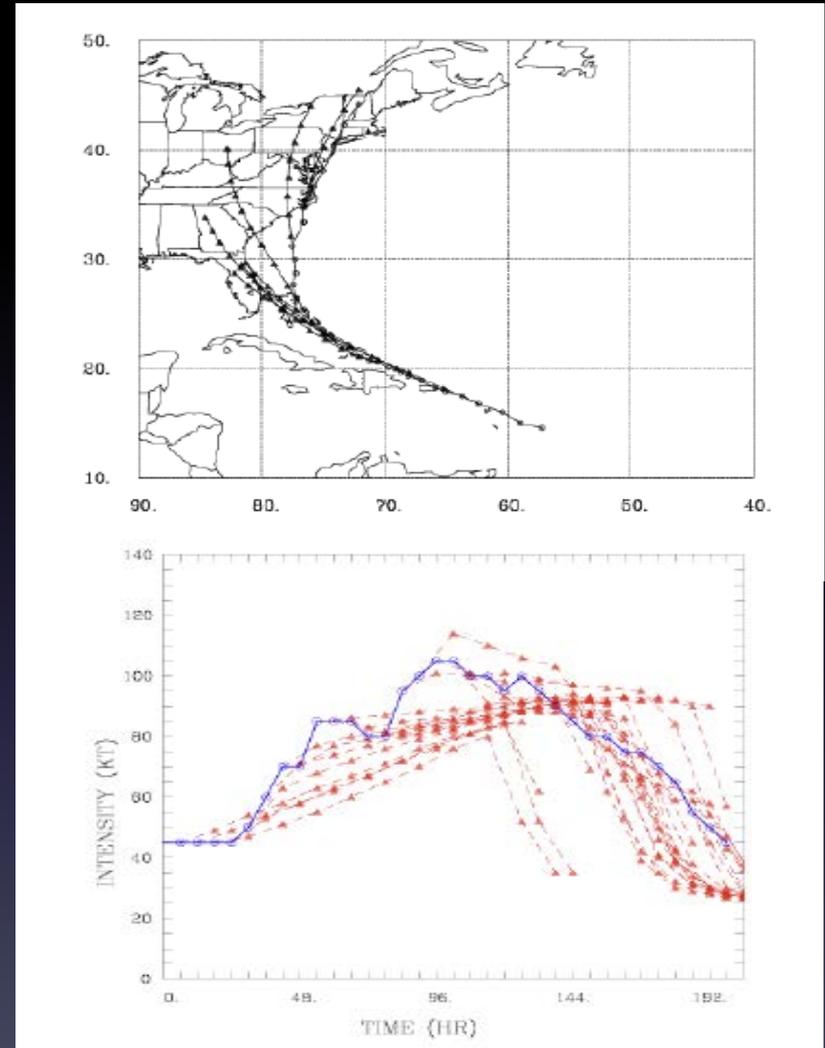
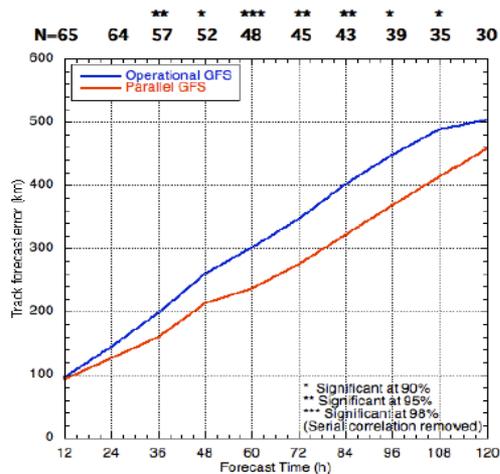
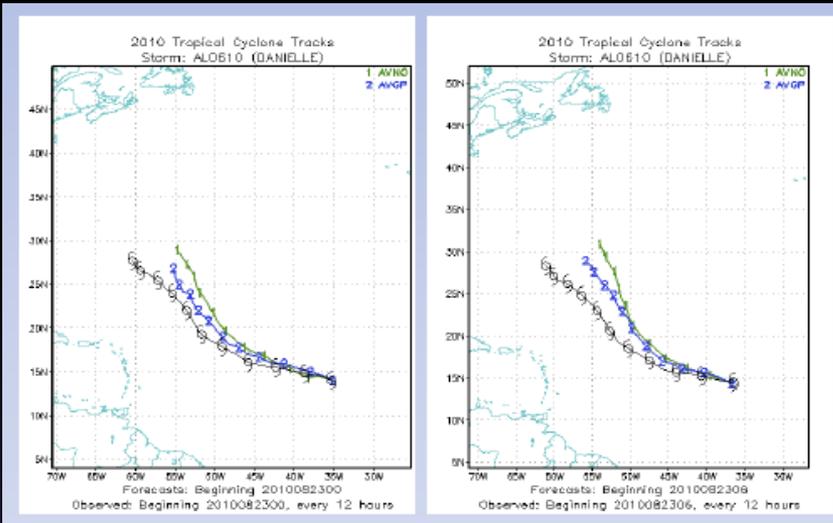
JHT: The statistics

- Number of projects supported: 81
 - 74 completed
 - 52 accepted for operational implementation
 - 18 projects completed but rejected
 - 4 projects completed, deferred pending further investigation
 - 2 projects with decisions soon forthcoming
 - 7 projects started in fall 2013
- Implementation
 - 45 projects implemented:
 - 14 numerical modeling projects implemented by EMC/NCO
 - 31 projects implemented by NHC
 - 5 projects accepted but not yet fully implemented by NHC
 - 2 projects unable to be implemented after acceptance ⁵

On-going JHT Activities

- **6th Round Projects**
 - All 12 completed after the 2013 hurricane season
 - Implementation decisions being finalized
- **7th Round Projects**
 - 7 projects begun September 2013
 - On-going testing during 2014/2015 hurricane seasons
 - Implementation decisions to be made in 2015/2016
- **8th Round Projects**
 - New projects to begin September 2015

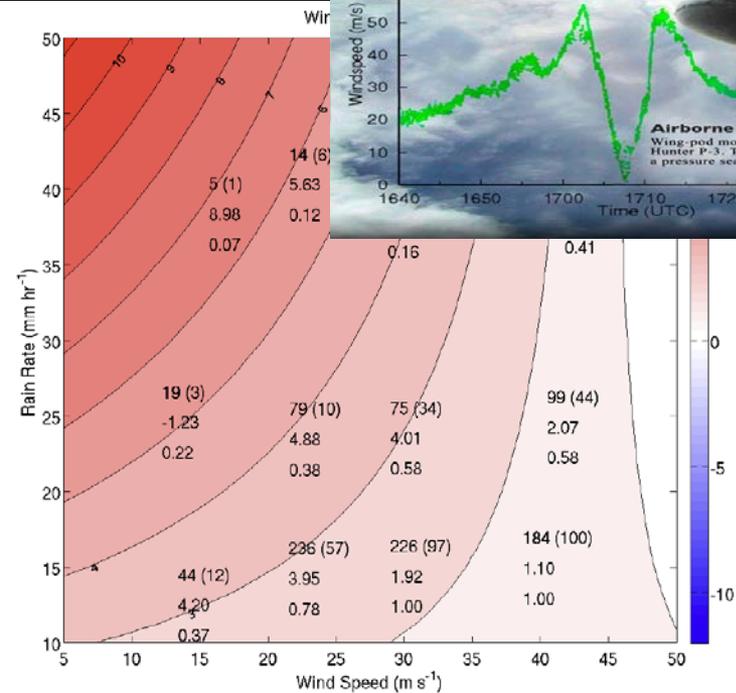
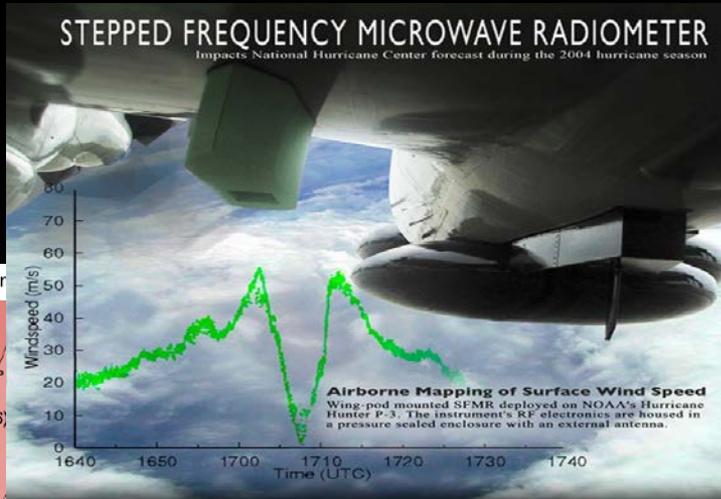
Projects Accepted for Operational Implementation - 6th round



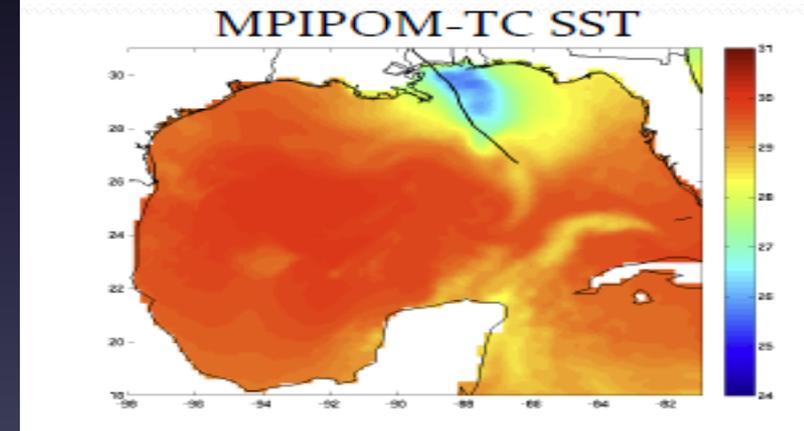
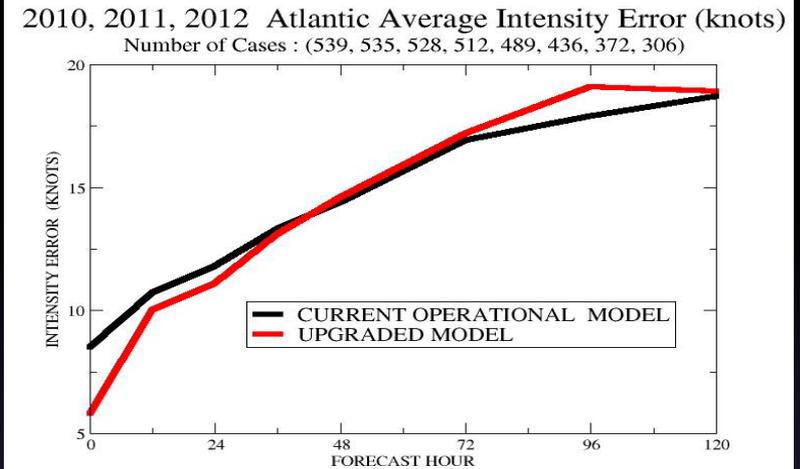
Assimilation of Non-NOAA and Non-AF GPS Dropwindsonde Data into NOAA Numerical Models - Abernson

Improvements in Statistical Tropical Cyclone Forecast Models - DeMařia

Projects Accepted for Operational Implementation - 6th round



Improved Stepped Frequency Microwave Radiometer Surface Wind Measurements in Intense Rain conditions - Uhlhorn

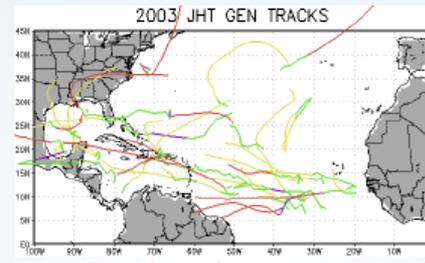
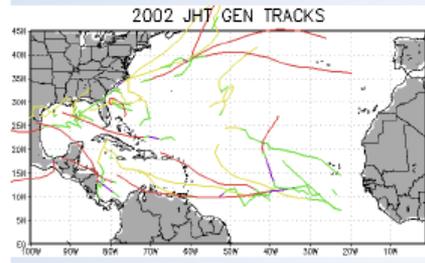


Improving the Operational Tropical Cyclone Models at NOAA/NCEP and Navy/FNMOC- Bender/Ginis

Projects Accepted for Operational Implementation - 6th round

TC Genesis Index Invest Tracks (2001-2010)

- Dvorak Fixes
- Interpolation
- Best track (post-gen)
- Special BAMM

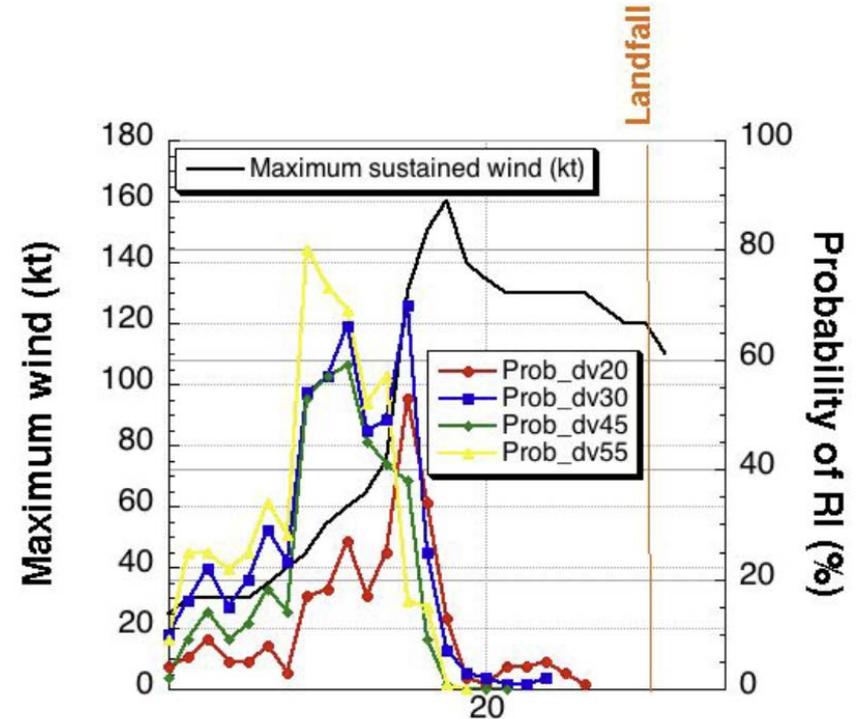


* ATLANTIC TC GENESIS INDEX *

* AL912813 07/24/13 00 UTC *

TIME (hr)	0	6	12	18	24	36	48	60	72	84	96	108	120
TCGI (%)							39.5						45.9

Development of a Probabilistic Tropical Cyclone Genesis Prediction Scheme-
Dunion



Improvement to the SHIPS Rapid Intensification Index - Kaplan

Factors Considered in NHC Decisions on Operational Implementation

- **Forecast or Analysis Benefit:** expected improvement in operational forecast and/or analysis accuracy
- **Efficiency:** adherence to forecaster time constraints and ease of use needs
- **Compatibility:** IT compatibility with operational hardware, software, data, communications, etc.
- **Sustainability:** availability of resources to operate, upgrade, and/or provide support

7th Round Timetable

- **August 2012**
 - Announcement of Opportunity released
- **October 2012**
 - 36 Letters of Intent reviewed by Steering Committee
- **December 2012 - January 2013**
 - 22 Full proposals reviewed by Steering Committee
- **February - April 2013**
 - Rank and select 7 proposals for funding
 - Point-of-contacts established among NHC/EMC staff
 - Work with PIs to setup timelines for their projects
- **September 2013 – May 2014**
 - PIs begin projects in coordination with points-of-contact
- **March 2014**
 - Present progress at Interdepartmental Hurricane Conf.

7th Round Timetable (continued)

- April 2014
 - Mid-year report and renewal proposal due
- May-June 2014
 - Steering Committee reviews progress and renewal proposals - all 7 projects are renewed for year two
- June – November 2014
 - Begin real-time testing during hurricane season
- December 2014 – April 2015
 - PI refine their projects and interact with points-of-contact
- March 2015
 - Present progress at Interdepartmental Hurricane Conf.
- June – November 2015
 - Continued real-time testing during hurricane season

7th Round Timetable (continued)

- December 2015
 - PI provide their final report
- January-May 2015
 - Operational implementation decisions made by NHC/EMC
- June 2015 – April 2016
 - Implementation of accepted projects by NHC/EMC

7th Round Timetable (continued)

- December 2015
 - PI provide their final report
- January-May 2016
 - Operational implementation decisions made by NHC/EMC
- June 2015 – April 2016
 - Implementation of accepted projects by NHC/EMC

**FOUR YEARS FROM ANNOUNCEMENT TO
IMPLEMENTATION**

7th Round JHT Projects - 2013 to 2015

Project Title	Principal Investigator(s)	NHC Point of Contact
A Visualization Application for Distributed ADCIRC-based Coastal Storm Surge, Inundation, and Wave Modeling	Brian Blanton, Rick Luettich (Univ. of N Carolina)	Feyen (NOS), Rhome, Berg, Schauer, Landsea
Improving the GFDL/GFDN Operational Tropical Cyclone Models at NOAA/NCEP and Navy/FNMOC	Isaac Ginis (Univ. of Rhode Island), Morris Bender (NOAA/GFDL)	Pasch, Mattocks, Tallapragada (EMC), Landsea
A Probabilistic TC Genesis Forecast Tool Utilizing an Ensemble of Global Models	Bob Hart, Henry Fuelberg (Florida State Univ.)	Pasch, Mattocks, Kimberlain, Blake, Landsea
Improvement to the Satellite-based 37 GHz Ring Rapid Intensification Index	Haiyan Jiang (Florida Intl Univ.)	Stewart, Cangialosi, Landsea
Guidance on Intensity Guidance	Dave Nolan (U of Miami/RSMAS), Andrea Schumacher (CSU/CIRA)	Avila, Blake, Landsea
Upgrades to the Operational Monte Carlo Wind Speed Probability Program	Andrea Schumacher (CSU/CIRA)	Brown, Brennan, Mattocks, Landsea
Integration of an Objective, Automated TC Center-fixing Algorithm Based on Multispectral Satellite Imagery into NHC/TAFB Operations	Tony Wimmers, Chris Velden (Univ. of Wisc./CIMSS)	Beven, Mundell, Landsea

8th Round Timetable

- **August 2014**
 - Announcement of Opportunity released
- **October 2014**
 - 35 Letters of Intent reviewed by Steering Committee
- **February 2015**
 - 20 Full Proposals reviewed by Steering Committee
- **April 2015**
 - Funding decision

Review criteria and their maximum points are:

- (1) Importance/relevance and applicability of proposal to the program goals (30 points),
- (2) Technical merit (50 points),
- (3) Overall qualifications of applicants (10 points),
- (4) Project Costs (10 points), and
- (5) Outreach and education (0 points)

Top 5 Priorities for New Funding

- NHC-1/JTWC-1. Guidance for tropical cyclone intensity change, especially for the onset, duration, and magnitude of **rapid intensification** events, as well as for over-water rapid weakening events.
- NHC-2/JTWC-2. Improved capability to **observe the tropical cyclone and its environment** to support forecaster analysis and model initialization.
- NHC-3/JTWC-8. Statistically based real-time **guidance on guidance** to assist in the determination of official track and intensity forecasts. This could include multi-model consensus approaches, provided in probabilistic and other formats.
- NHC-4/JTWC-9. Enhancements to the **operational environment** (e.g., ATCF, AWIPS-II) to increase forecaster efficiency, by expediting analysis, forecast, coordination, and/or communication activities.
- NHC-5/JTWC-11. Techniques or products to support **pre-genesis** disturbance track, intensity, size, and wind speed probability forecasts.

The Joint Hurricane Testbed

The screenshot shows the website's header with the URL www.nhc.noaa.gov/jht and the National Hurricane Center logo. The navigation menu includes Home, News, Organization, Search, NWS, and All NOAA. A local forecast section is visible on the left. The main content area features a banner for the USWRP Joint Hurricane Testbed and a 'JHT Overview' section with links to Overview, Current Projects, Past Projects, Admin Presentations, Highlights, Staff, and Committee. Below this is a 'Mission Statement' section, followed by a 'News' section with dates and project announcements, and a 'Main Activities' section with a list of bullet points.

Rappaport et. al., 2012 - *BAMS*

THE JOINT HURRICANE TEST BED

Its First Decade of Tropical Cyclone
Research-To-Operations Activities Reviewed

BY EDWARD N. RAPPAPORT, JIANN-GWO JIING, CHRISTOPHER W. LANDSEA,
SHIRLEY T. MURILLO, AND JAMES L. FRANKLIN

Collaboration between researchers, forecasters and technology specialists facilitated the development and implementation of numerous projects benefitting forecast operations.