Improving Forecast Guidance through the Joint Hurricane Testbed

Brian Zachry / Mark DeMaria– NOAA/NWS/NCEP/National Hurricane Center

Jason Sippel – NOAA/OAR/AOML Hurricane Research Division

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

74th Interdepartmental Hurricane Conference

Joint Hurricane Testbed (JHT)

- Bridges gap between hurricane research & operations
- Began in 2001 under the USWRP
  - Currently in 10th round of projects
- Our Mission: successfully **transfer** new technology, research results & observational advances from research groups to operational centers
- Testing is done at the National Hurricane Center, Central Pacific Hurricane Center or at their institutions

JHT Staff and Funding

- Brian Zachry: JHT Director and NHC Science and Operations Officer
- Jason Sippel: JHT Assistant Director and HRD Meteorologist
- Alan Brammer: JHT Facilitator/Programmer
- Current funding:
  - Roughly 600K for current projects
  - ½ time support for JHT Facilitator/Programmer
  - 0.2 FTE support and HRD for admin support
  - 15K for JTTI project support (real-time demonstration and evaluation)

JHT Project Overview

- Round 8 (FY15-17): 8 projects completed
  - 5 accepted for operational implementation
  - 1 deferred until additional evaluation can be conducted
  - 2 not accepted for operational implementation
- Round 9 (FY17-19): 6 projects in total
  - 5 projects in no-cost extension
  - 1 project completed (awaiting decision letter)
- Round 10 (FY19-22): 3 new projects in progress

NHC Procedure for Operational Decision

- JHT staff receive final project reports from PI(s)
- Distribute interim and final project reports to NHC forecaster points of contact (POCs), TSB Chief, HSU Chief, and JHT Director for comments and feedback
- Collect feedback from project POCs from real-time demonstrations
- Author official NHC recommendation letters for each project
- Brief NHC Director on each project and JHT staff recommendation
- NHC Director makes final decision and signs recommendation letter
- Send final decision letters to PI(s)
- NHC/TSB adds JHT transitions to annual development priorities

Metrics for Operational Implementation

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

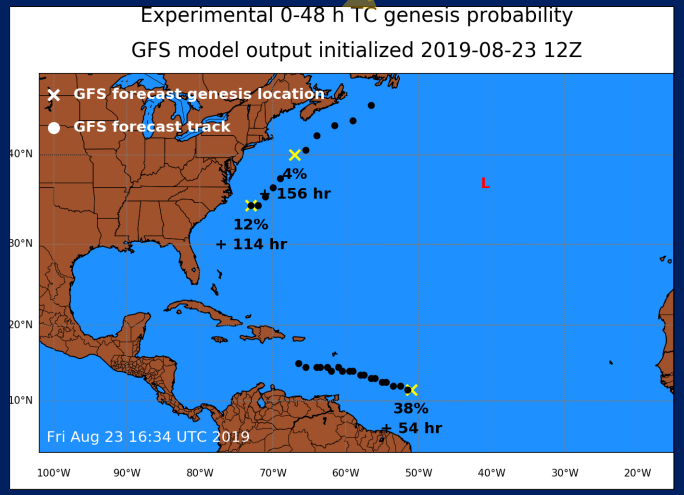
JHT Operational Implementation Summary

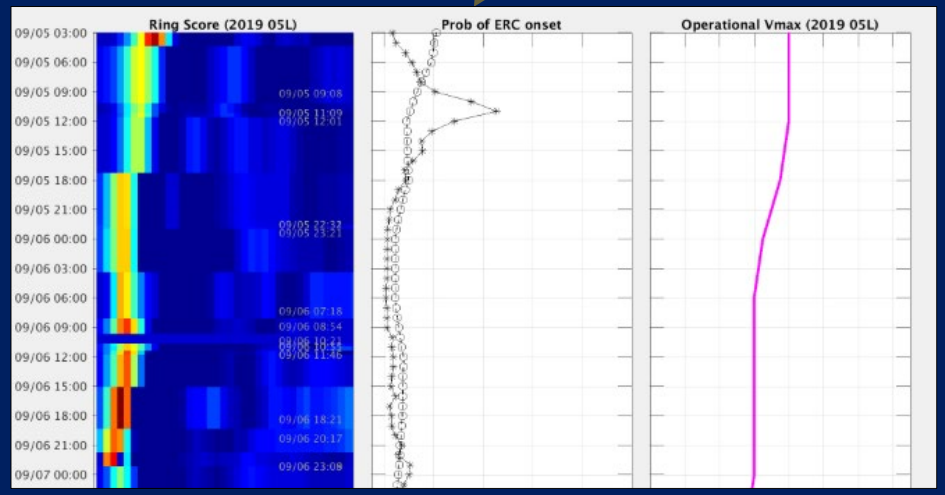
- 98 projects supported in 10 funding rounds
  - 59 accepted for operational implementation
  - 24 not accepted
  - 6 deferred
  - 8 projects ongoing (3 new and 5 NCE)

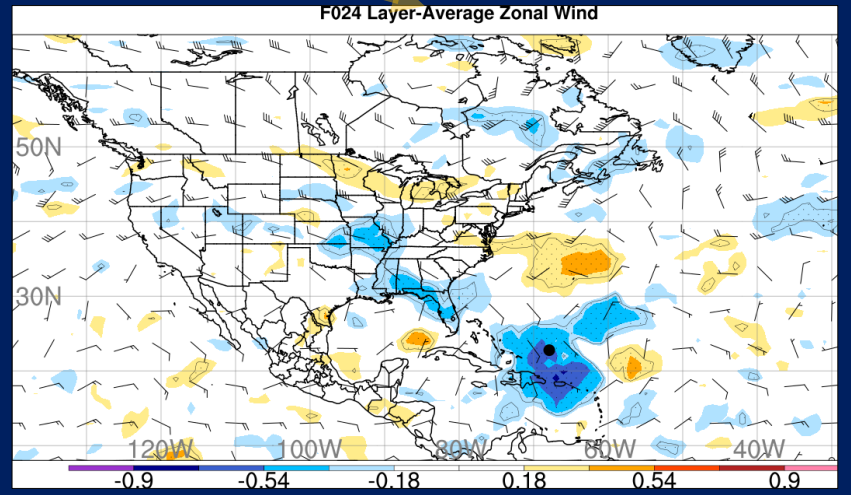
5 FY15-17 Projects Accepted for NHC Operational Implementation

New FY19-22 Projects

Project Title (FY19-22)	Principal Investigator(s)
Further improvements and extensions to the tropical cyclone logistical guidance for genesis (TCLOGG)	Robert Hart (FSU) Dan Halperin (Embry-Riddle)
Upgrades to the M-PERC and PERC Models to Improve Short Term Tropical Cyclone Intensity Forecasts	Derrick Herndon (UW Madison)
Transitioning Ensemble-based TC Track and Intensity Sensitivity to Operations	Ryan Torn (Albany)

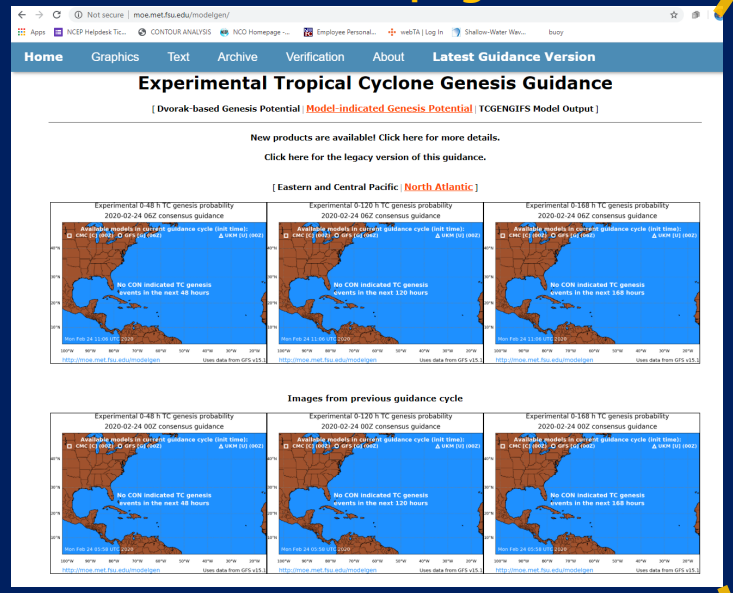




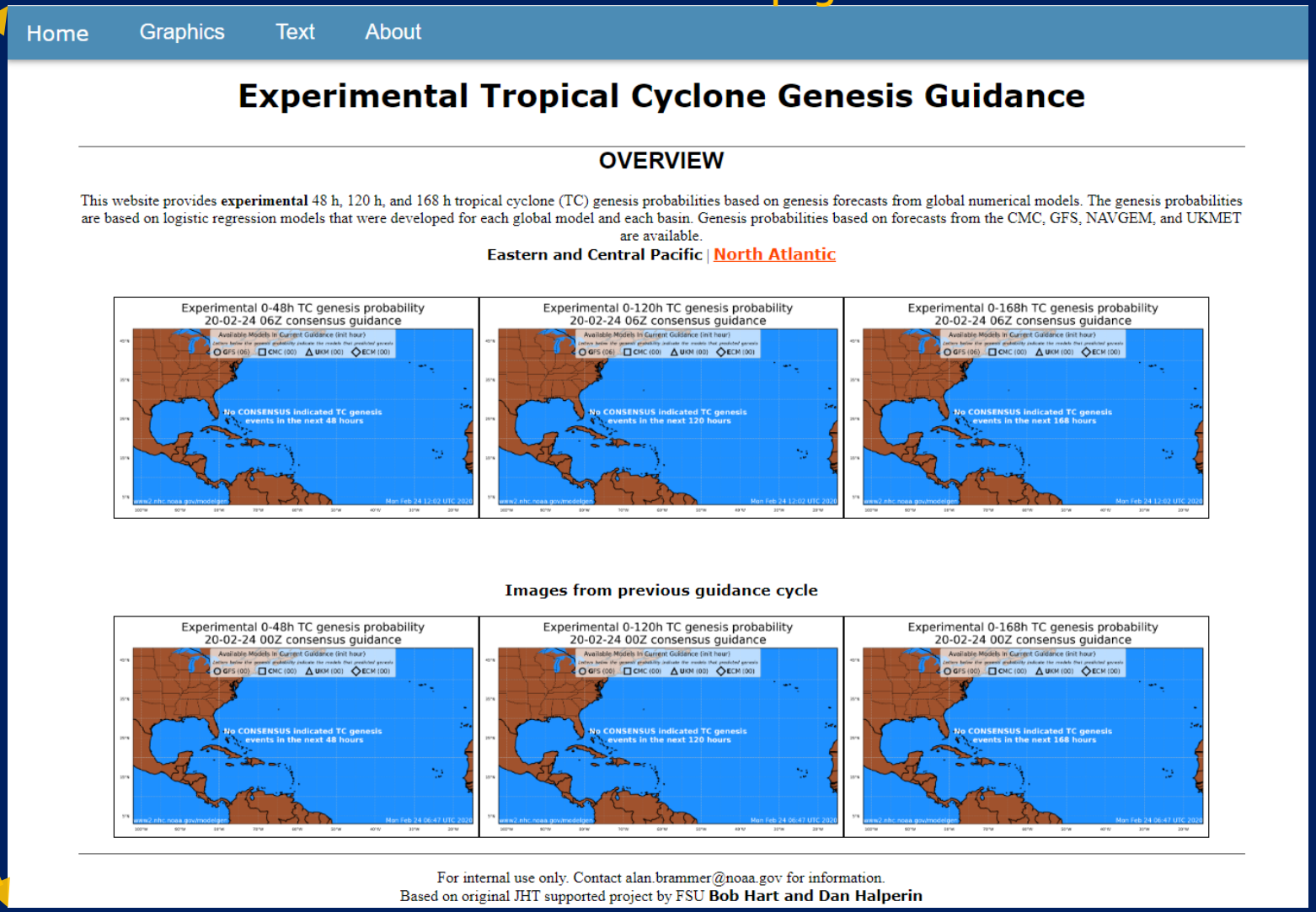


TCLOGG (Hart & Halperin)

FSU Webpage



NHC Internal Webpage



Possible Testbed Expansion at NHC

- NHC has intentions to expand the scope of the testbed in the future to support evaluation and testing of other R2O initiatives/testbeds
- Testbed will allow for real-time demonstrations and evaluation by NHC forecaster points of contact, including formal NHC decision letter
  - Testbed for JTTI and HFIP projects
  - Mimic operations and data ingest by providing a parallel AWIPS system for demonstrations
  - NHC/TSB adds project transitions to annual development priorities
- Many organizations have shown interest in participating and expanding the testbed further (e.g., social science, satellite, etc.)

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