



# Improving Forecast Guidance through the Joint Hurricane Testbed

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**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

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74<sup>th</sup> Interdepartmental Hurricane Conference

# Joint Hurricane Testbed (JHT)

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- Bridges gap between hurricane research & operations
- Began in 2001 under the USWRP
  - Currently in 10<sup>th</sup> 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

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- 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

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- 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

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- 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

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- **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

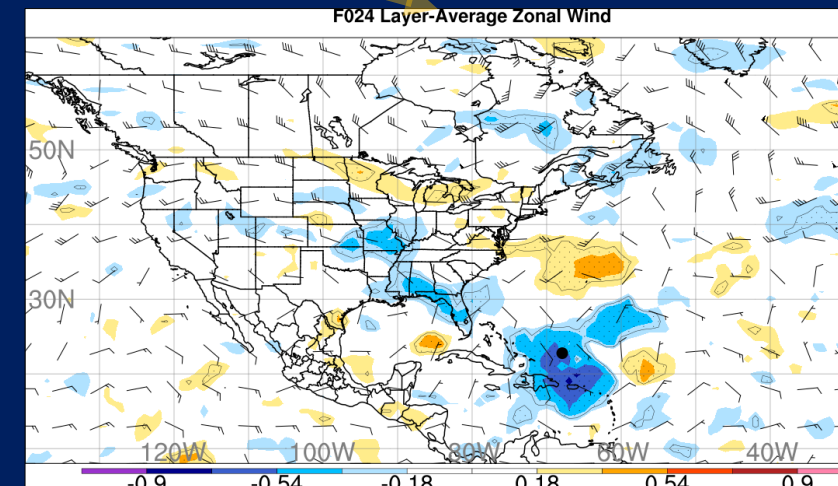
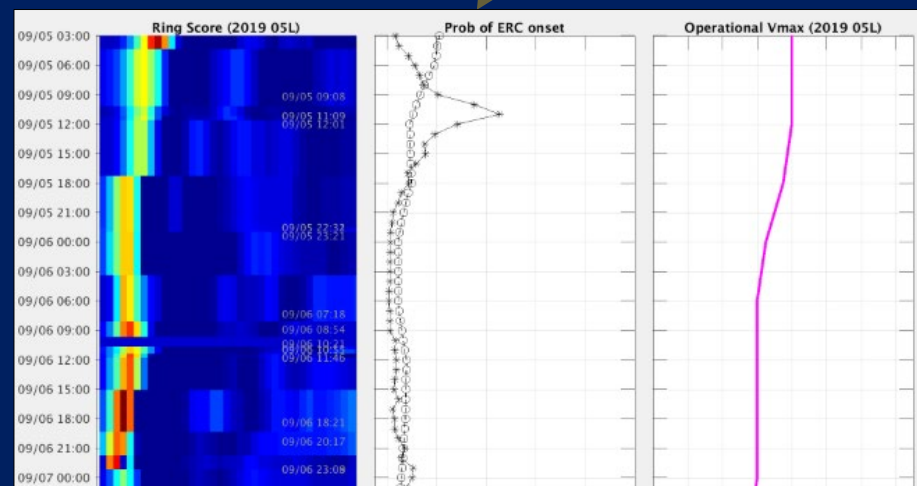
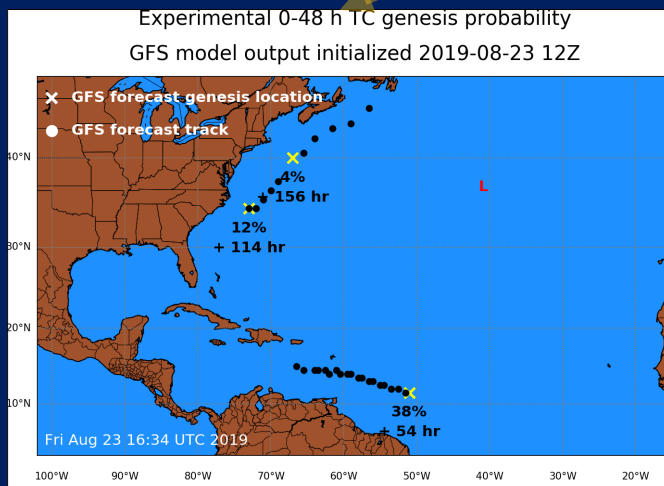
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- 98 projects supported in 10 funding rounds
  - 59 accepted for operational implementation
  - 24 not accepted
  - 6 deferred
  - 8 projects ongoing (3 new and 5 NCE)

**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)

## NHC Internal Webpage

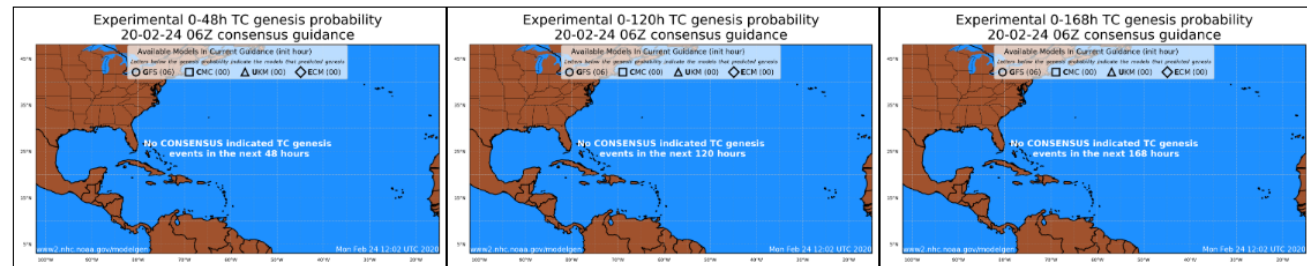
Home Graphics Text About

## Experimental Tropical Cyclone Genesis Guidance

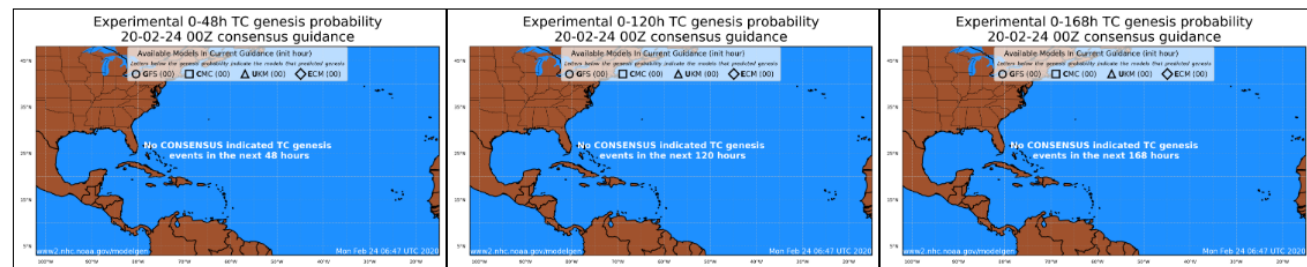
### OVERVIEW

This website provides **experimental** 48 h, 120 h, and 168 h tropical cyclone (TC) genesis probabilities based on genesis forecasts from global numerical models. The genesis probabilities are based on logistic regression models that were developed for each global model and each basin. Genesis probabilities based on forecasts from the CMC, GFS, NAVGEM, and UKMET are available.

Eastern and Central Pacific | [North Atlantic](#)



### Images from previous guidance cycle



For internal use only. Contact [alan.brammer@noaa.gov](mailto:alan.brammer@noaa.gov) for information.  
Based on original JHT supported project by FSU **Bob Hart and Dan Halperin**

## FSU Webpage

The screenshot shows the FSU Webpage interface. The navigation menu includes Home, Graphics, Text, Archive, Verification, About, and Latest Guidance Version. The main heading is "Experimental Tropical Cyclone Genesis Guidance" with sub-links for "Dvorak-based Genesis Potential", "Model-indicated Genesis Potential", and "YCGENGIFS Model Output". A message states: "New products are available! Click here for more details. Click here for the legacy version of this guidance." Below this, there are two rows of maps. The top row is labeled "[Eastern and Central Pacific | North Atlantic]" and contains three maps for 0-48h, 0-120h, and 0-168h TC genesis probability for 20-02-24 06Z consensus guidance. The bottom row is labeled "Images from previous guidance cycle" and contains three maps for 0-48h, 0-120h, and 0-168h TC genesis probability for 20-02-24 00Z consensus guidance. All maps indicate "No CON indicated TC genesis events in the next [time period]".

# Possible Testbed Expansion at NHC

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- 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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