

# Forecasts for weak systems & Invests

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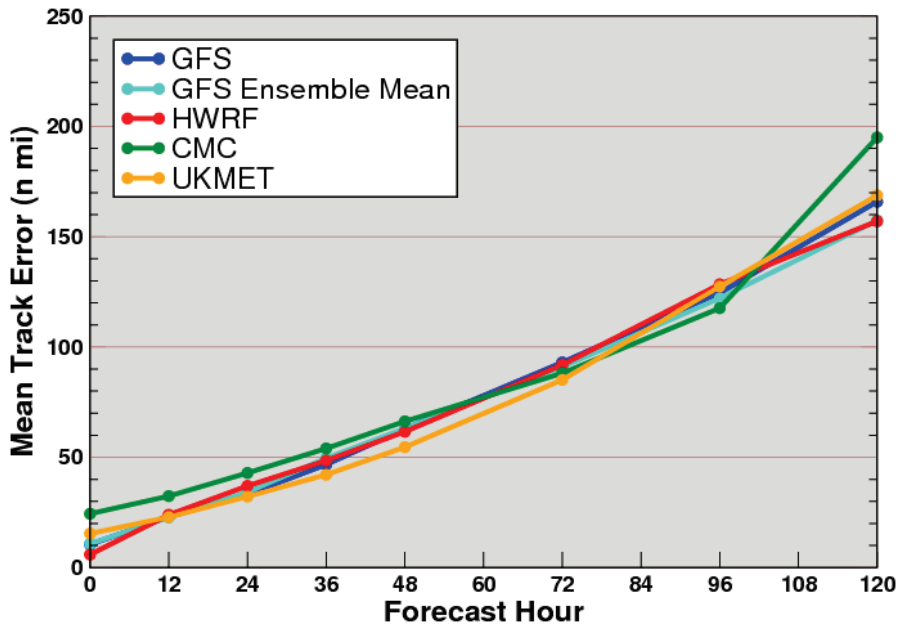
Tim Marchok  
NOAA / GFDL

- Forecasting for potential TCs (pTCs) became operational at NHC in 2017.
- 7 pTCs in Atlantic in 2017: All but one (AL10) became TCs.
- Atlantic 2017: ~400 forecasts for TCs, ~240 for Invests and pTCs.
- Invests and pTCs are systems for which 90-level TC vitals are issued.

# 2017 Atlantic track errors: All TC cases vs. Invests & pTCs

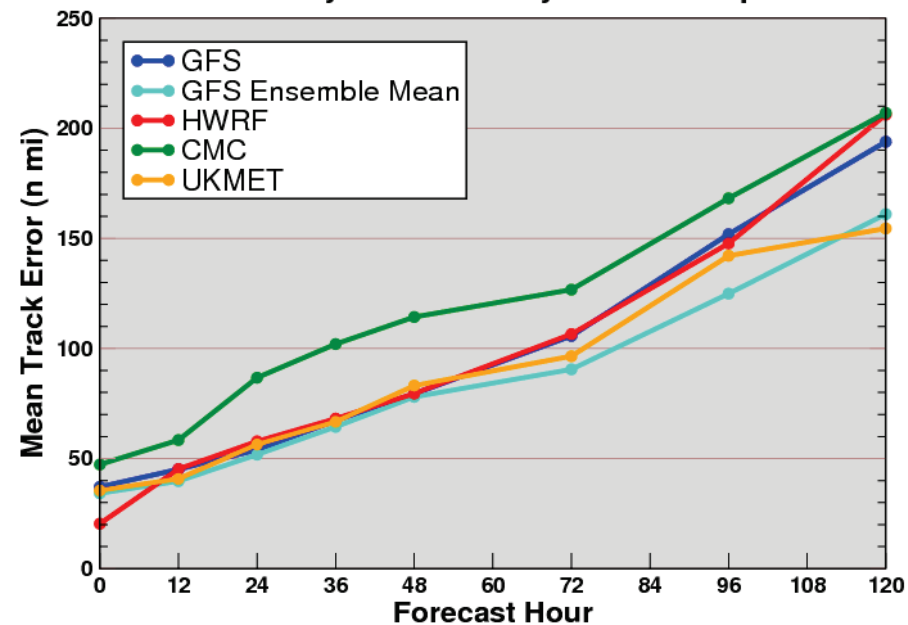
## All TCs

2017 Atlantic Track Forecast Errors  
Includes all TC cases



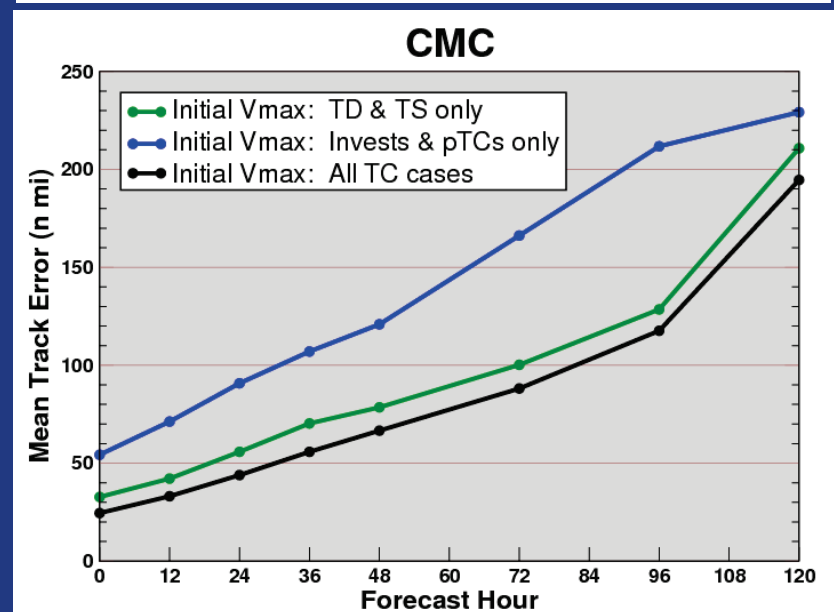
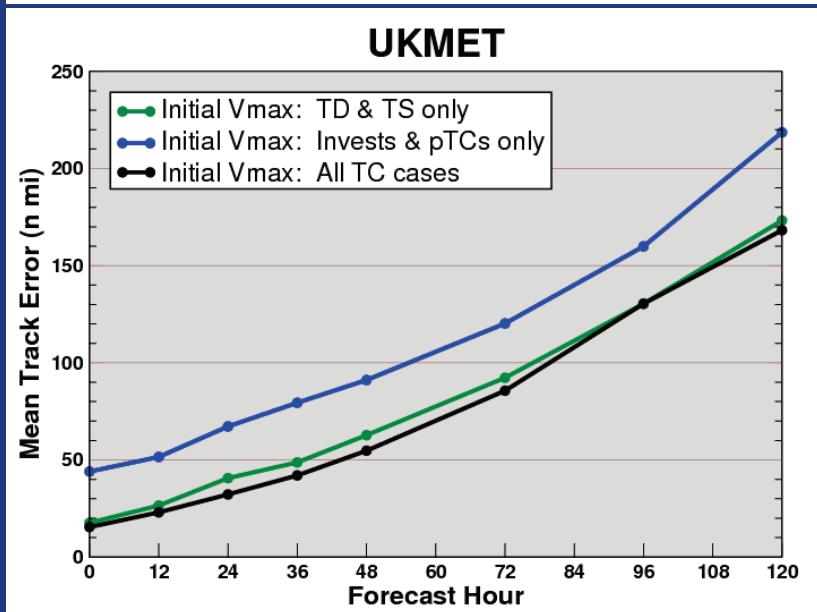
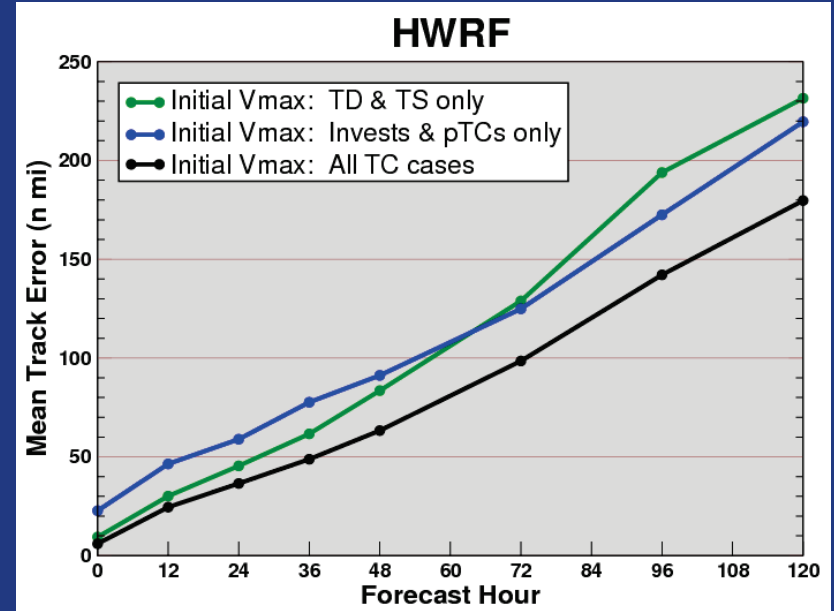
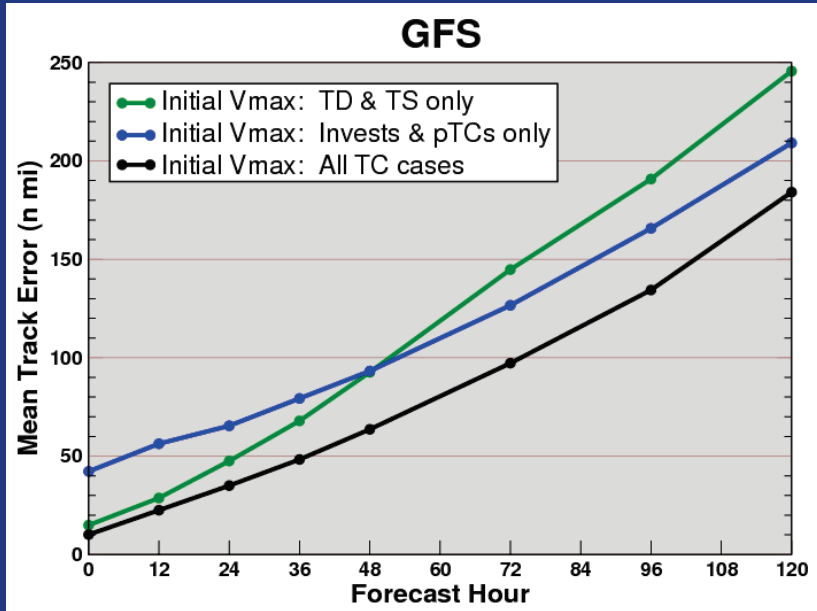
## Invests & pTCs

2017 Atlantic Track Forecast Errors  
Includes systems initially: Invests & pTCs



- Significantly more spread in track error performance for Invests & pTCs.
- GEFS outperformed GFS for Invests & pTCs

# 2017 Atlantic season track forecast errors stratified by initial Vmax categories



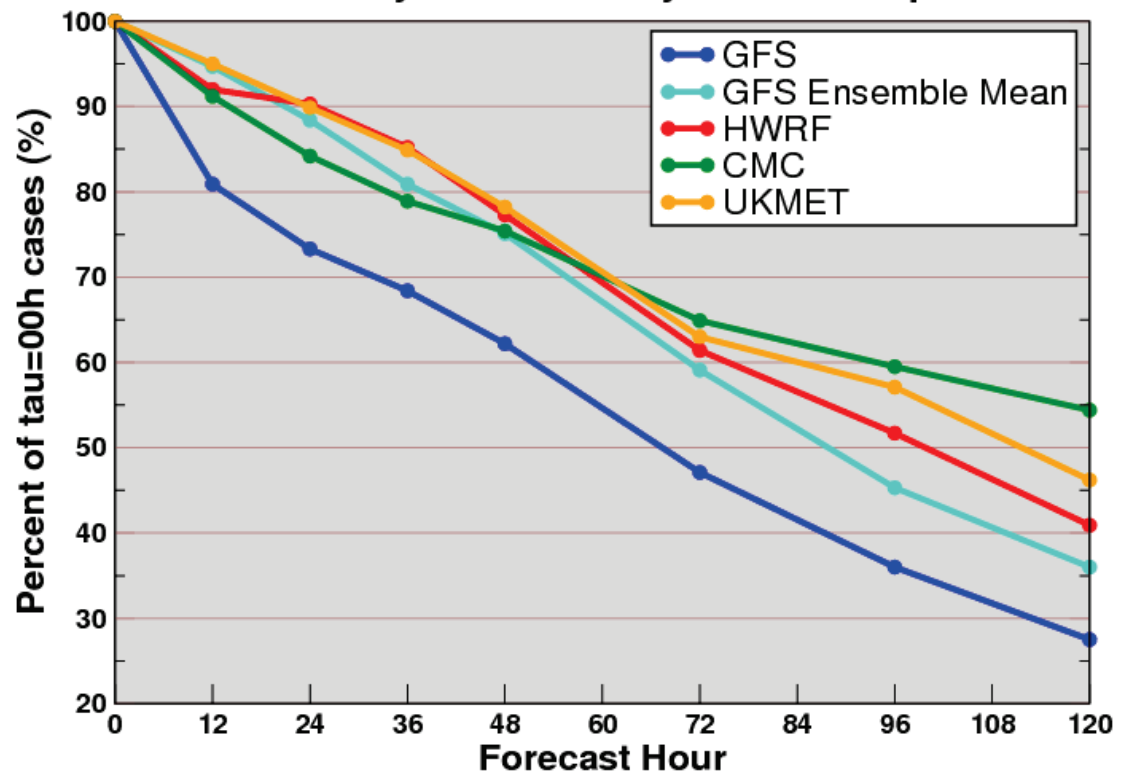
# Guidance availability

Availability of guidance is less consistent among the models for weak systems / Invests than for TCs

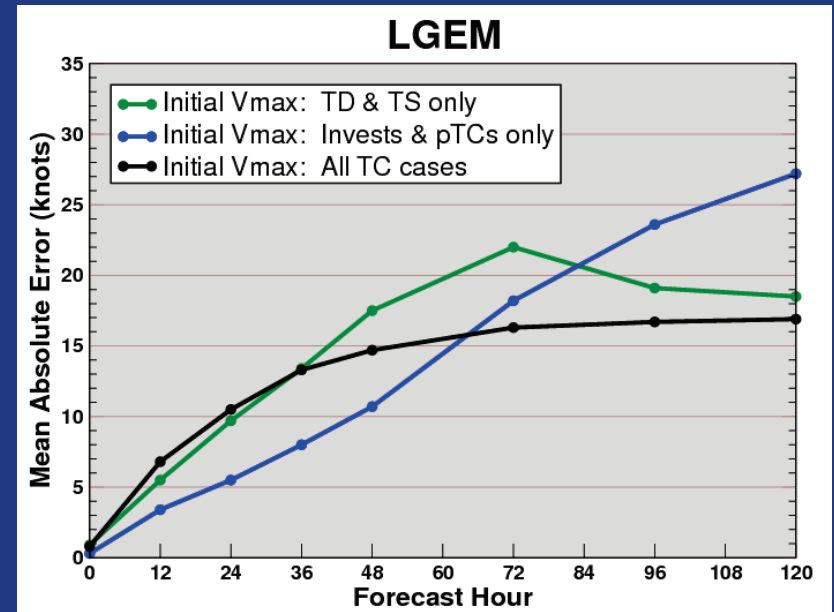
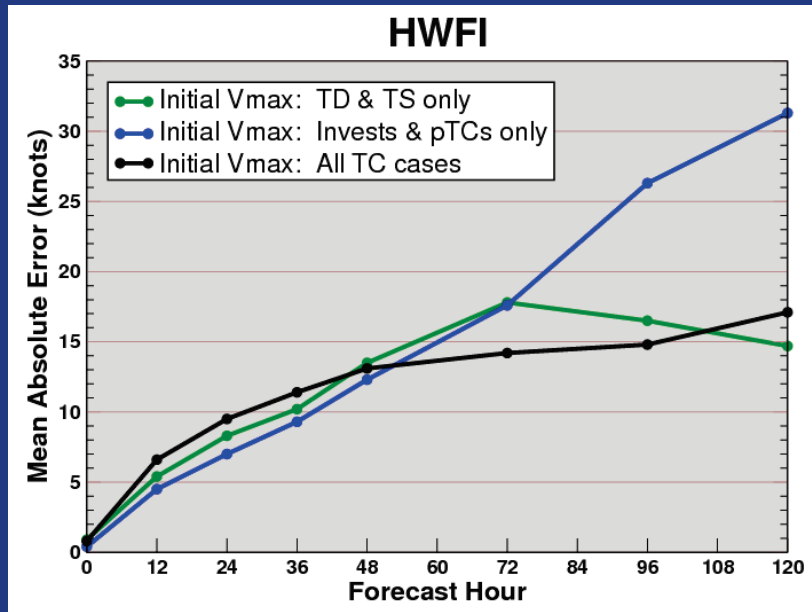
Possible reasons:

- 1) Model storm dissipates (either correctly or incorrectly)
- 2) Tracker cannot follow disorganized system

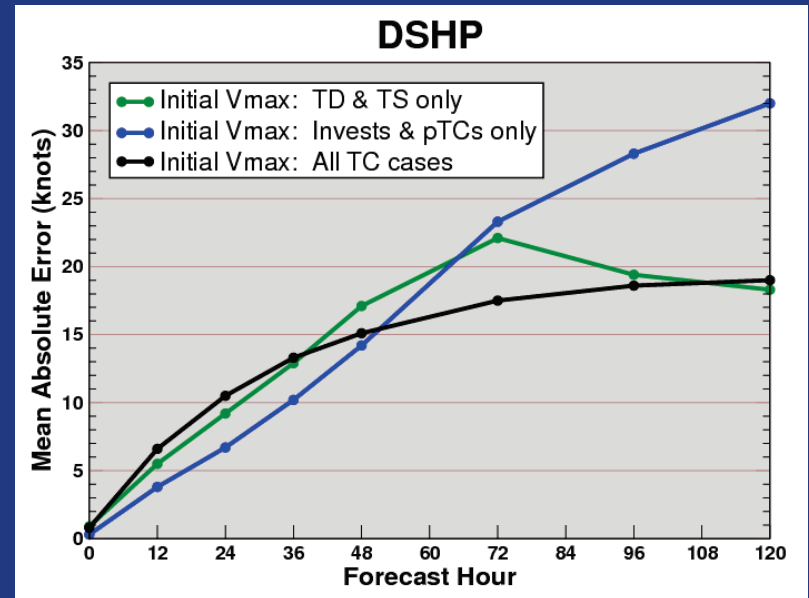
**Model verif. availability for 2017 Atlantic season forecasts**  
Includes systems initially: Invests & pTCs



# 2017 Atlantic season intensity forecast errors stratified by initial Vmax categories



- At shorter lead times ( $\leq 48$ h), Vmax forecasts for weak systems are dominated by "easier" predictions.
- High bias for Invests is greater at long lead times for DSHP... HWFI and LGEM are less biased.

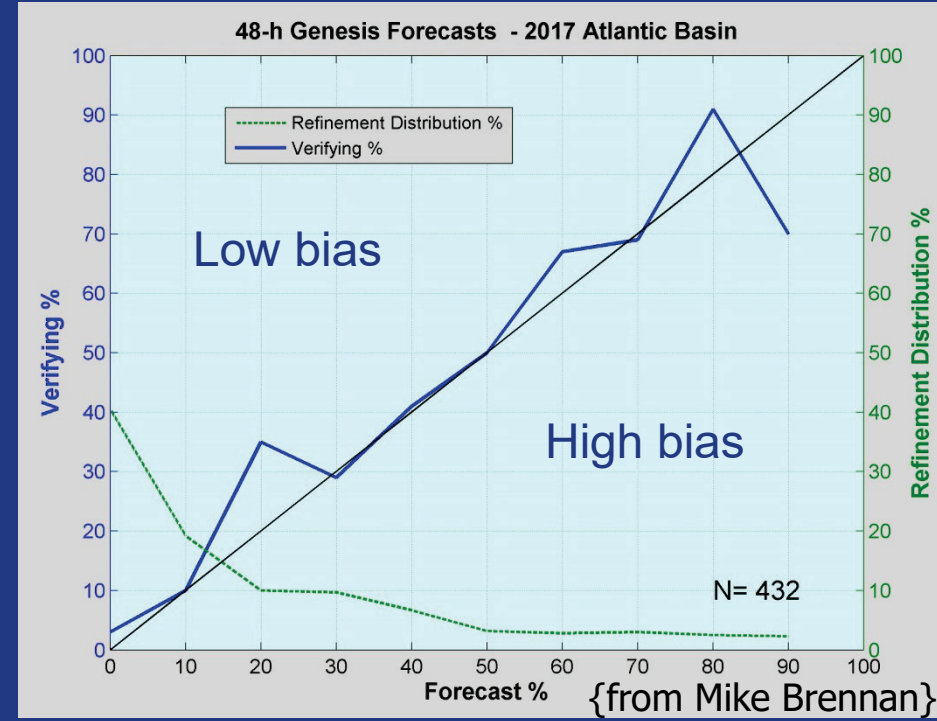
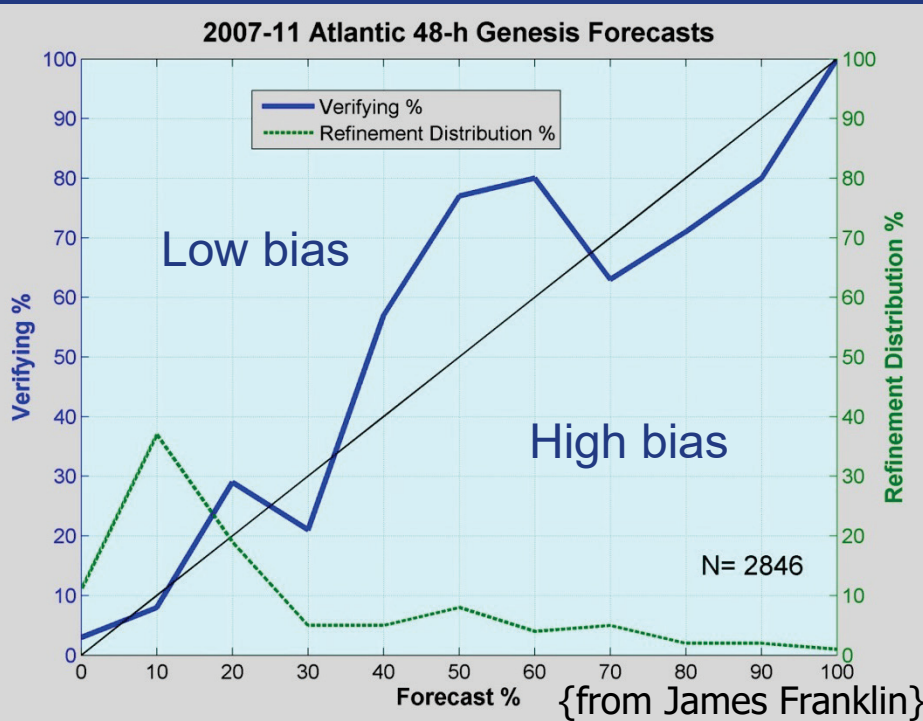


# TC Genesis: Signs of progress...

## Reliability diagrams for probabilistic NHC genesis forecasts

### 2007-2011 Atlantic

### 2017 Atlantic



- Improved physical understanding of genesis
- Improvements to global models
- Implementation of statistical post-processing methods (e.g., Dunion / TCGI, and Halpern / FSU genesis probability forecast tools)