HAFS v0.1J: HAFS-SAR on Extended Schmidt Gnomonic (ESG) grids

2020 HAFS v0.1J real-time experiments workflow (00, 06, 12, 18Z)

+4:10
GFS Data received from FTP/WCOSS

→

+4:15
Launch/IC+BC
IC: 4 node 15 min.
BC: 3 nodes for each grib2 in 3 min.

→

+5:00
HAFS_FCST
78 nodes 285 min.

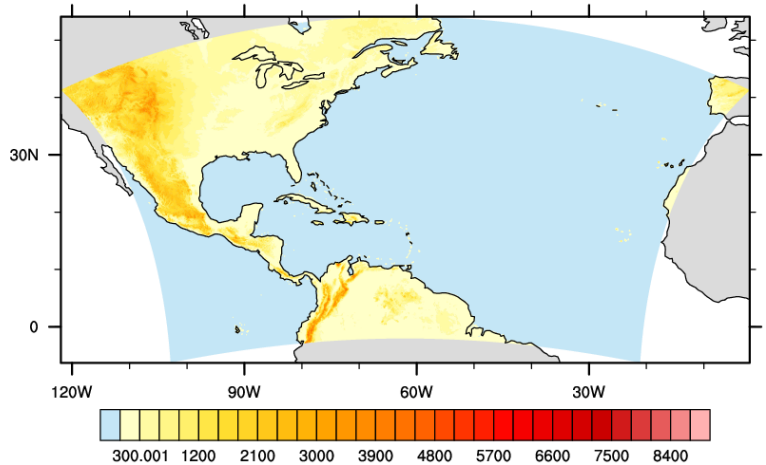
HAFS_POST
3 nodes 285 min.

HAFS_PRODUCT
1 nodes 285 min.

→

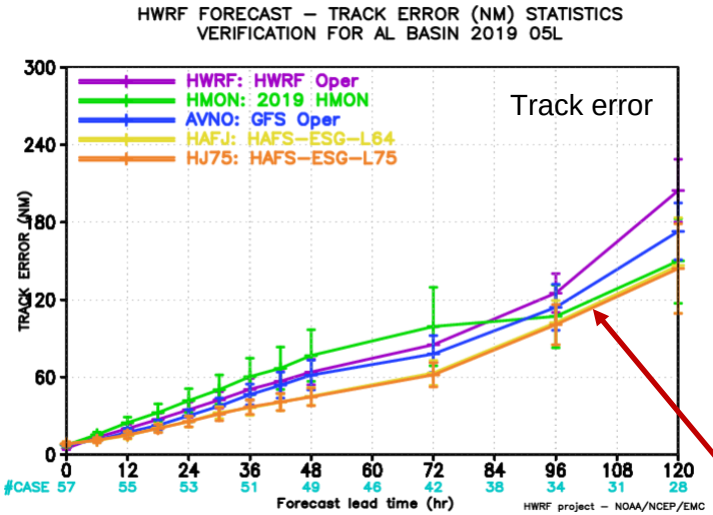
+10:00
Deliver

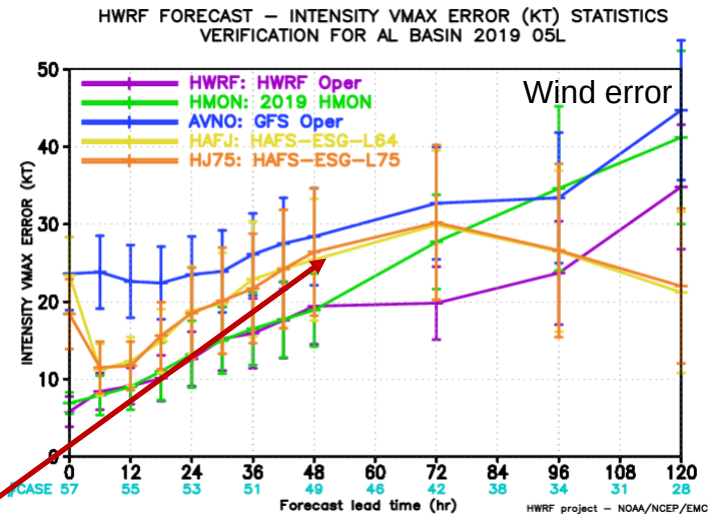
2020 Real-time experiments HAFS v0.1J domain

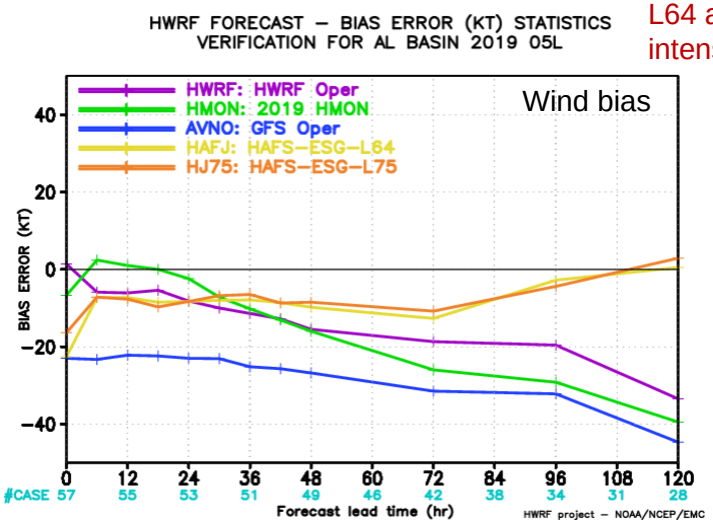


- 2880x1920
- Cumulus convection off
- GWD off

HAFS v0.1J: vertical level test (L64 vs. L75)---Hurricane Dorian

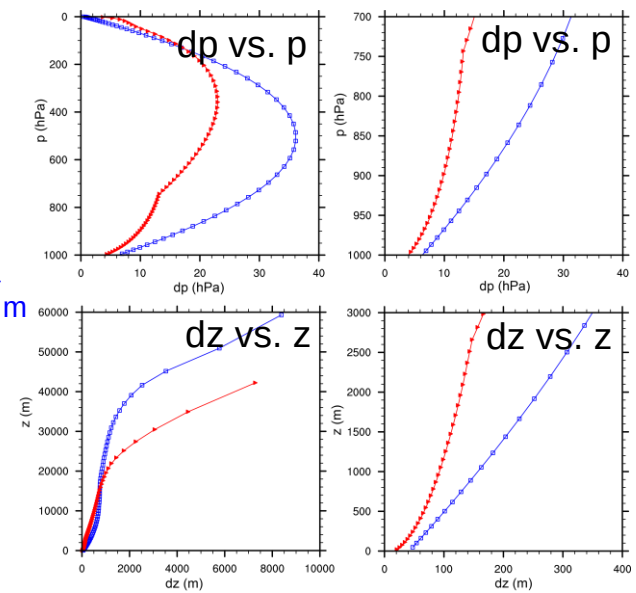






L64 and L75: close track and intensity forecasts

Low level zoom in

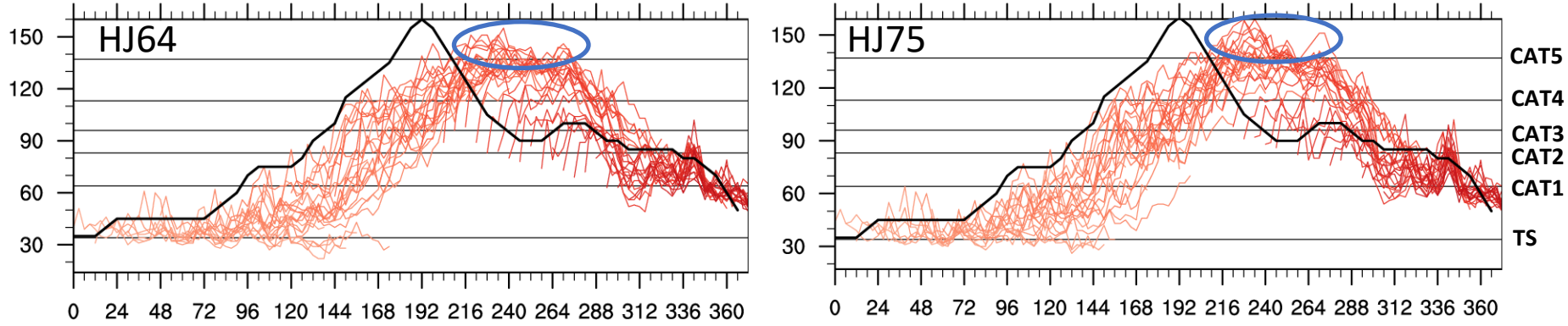


L75 vs. L64

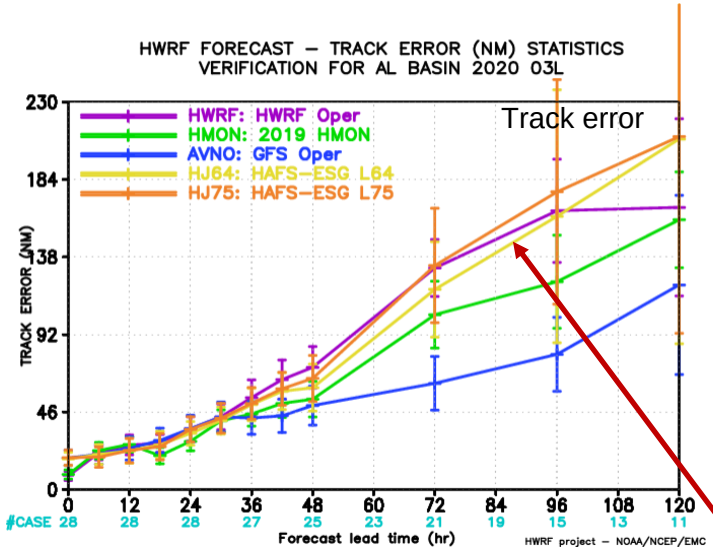
Top: 2 vs. 0.2 hpa
Lowest: 10 vs. 23 m

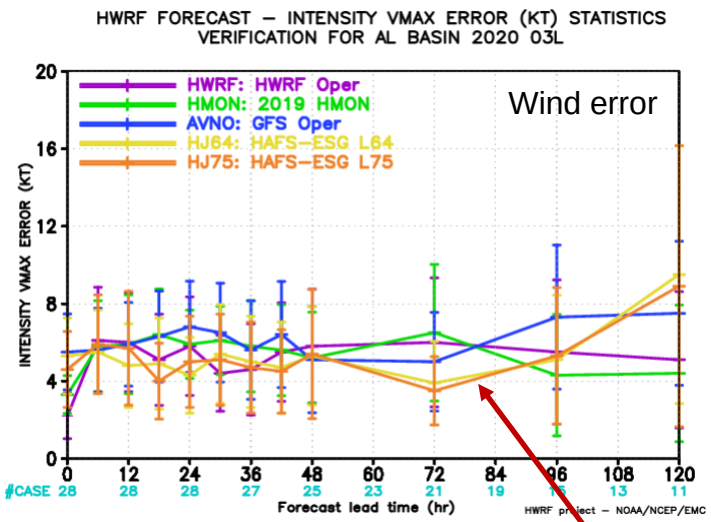
HAFS v0.1J: vertical level test (L64 vs. L75)---Hurricane Dorian

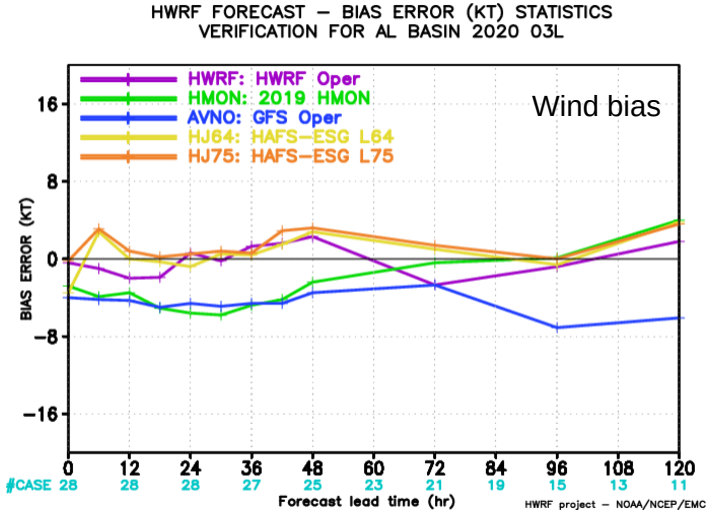
Max wind composite



HAFS v0.1J: vertical level test (L64 vs. L75)---TS Cristobal



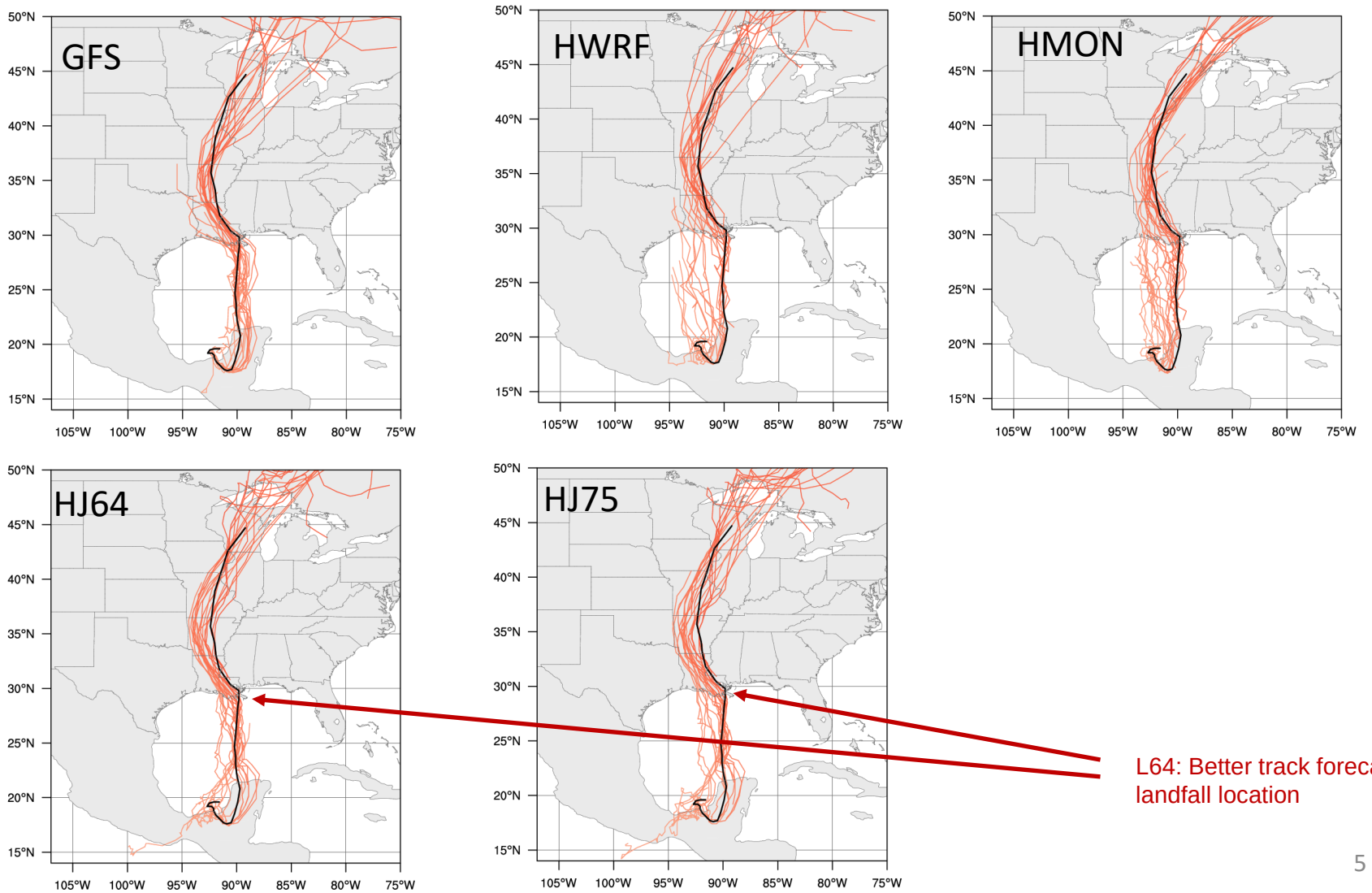




L64: Better track forecast from D2 to D4

Similar intensity stats. L75 has slightly better intensity forecasts on D3 and D5

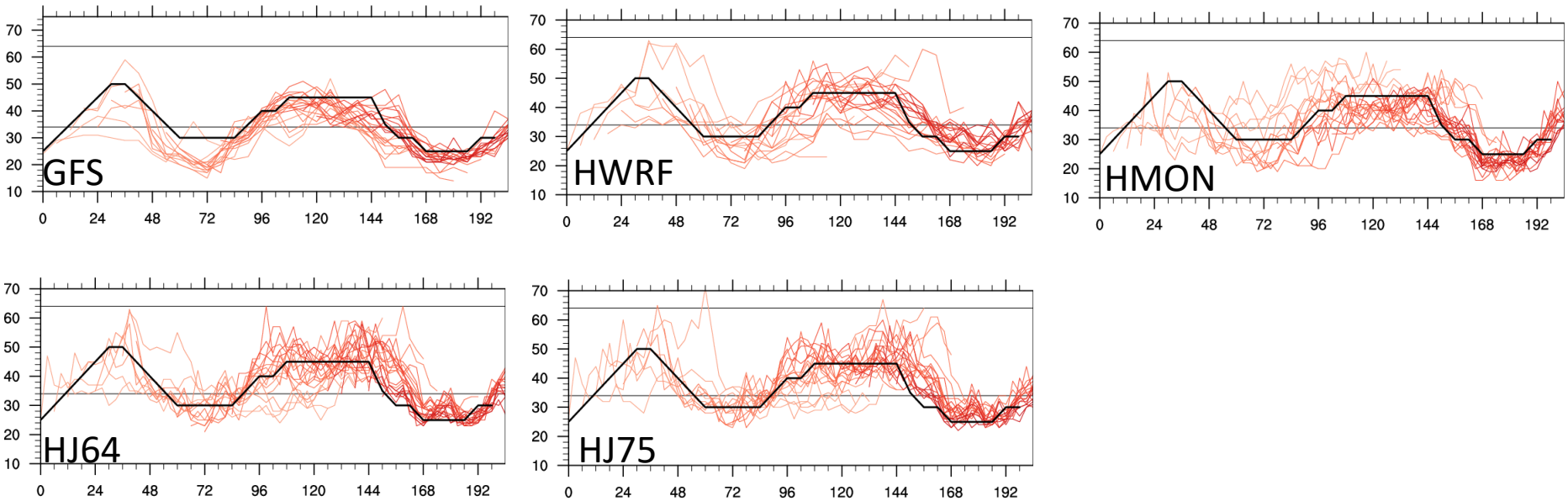
HAFS v0.1J: vertical level test (L64 vs. L75)---TS Cristobal



L64: Better track forecast on landfall location

HAFS v0.1J: vertical level test (L64 vs. L75)---TS Cristobal

Max wind composite



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Hurricane Dorian: L64 and L75 have comparable track and intensity forecasts

TS Cristobal: L64 has better track forecasts from D2 to D4; L75 slightly better in intensity forecasts at D3 and D5

Further test going on (time and resource dependent):

- Horizontal advection: hord 5 vs. 6 (LBC blending)
- Scale-aware Cumulus convection
- HWRF ccpp suite
- TKE EDMF

Dong, J.; Liu, B.; Zhang, Z.; Wang, W.; Mehra, A.; Hazelton, A.T.; Winterbottom, H.R.; Zhu, L.; Wu, K.; Zhang, C.; Tallapragada, V.; Zhang, X.; Gopalakrishnan, S.; Marks, F. The Evaluation of Real-Time Hurricane Analysis and Forecast System (HAFS) Stand-Alone Regional (SAR) Model Performance for the 2019 Atlantic Hurricane Season. Atmosphere, **2020**, 11(6), 617. https://doi.org/10.3390/atmos11060617