

COAMPS-TC Products and Datasets During T-PARC/TCS-08

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- **COAMPS[®]-TC**
 - Nested 45/15/5 km
 - Moving nests
 - Archival of digital data at DoD AFRL MSRC
- **COAMPS-TC for genesis**
 - 45/15/5 km
 - On-demand relocation for inner grid mesh
 - Digital data not archived
- **COAMPS-TC adjoint**
 - 40 km with lead times of 72 h, 60 h, and 48 h
 - On-demand relocation for response function box
 - Archival of digital data at DoD NAVO MSRC
 - More information on targeting blogs (T-PARC site)





COAMPS – TC Products

T-PARC/TCS08

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Inputs

T-PARC/TCS08

Input

- T-PARC Invest
- Targeting Alert
- JTWC Warning Message

Routine Observations

- Satellite
- Radiosondes
- Surface
- Commercial Aircraft

T-PARC/TCS08

Observations

- Drop/Driftsondes
- Satellite
- Aircraft
- AXBTs

Models

COAMPS-TC

- Track, Structure, Intensity
- 45/15/5 km nests
- Uncoupled

Invest COAMPS-TC

- Genesis
- 45/15/5 km
- 5 km relocated on demand

Adjoint COAMPS-TC

- Targeting Genesis
- 40 km
- Response function relocated each fcst

Computers

AFRL SGI Altix 4700



NAVO IBM P5



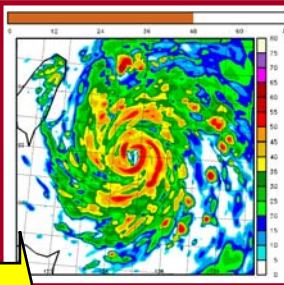
NRL LINUX Cluster



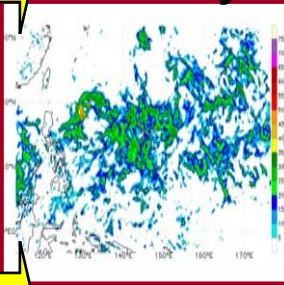
FNMOC Cluster



Products



Intensity



Genesis



Targeting

Field Campaign

Products

- Digital
- NRL www
- T-PARC catalog

Decision Making

- Forecast Discussions
- Mission Planning
- Adaptive nests, adjoint areas

Missions

- Real-time observations
- Evaluation
- Targeting

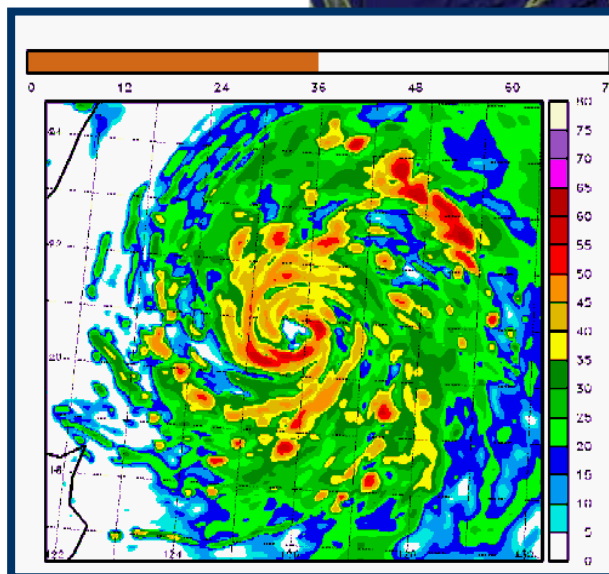
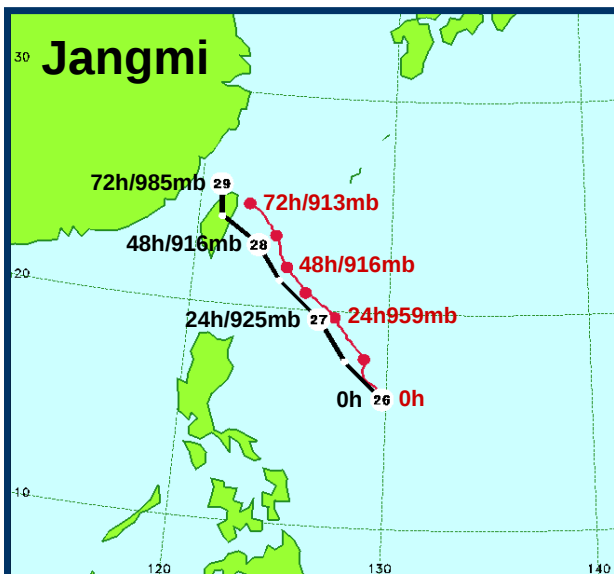
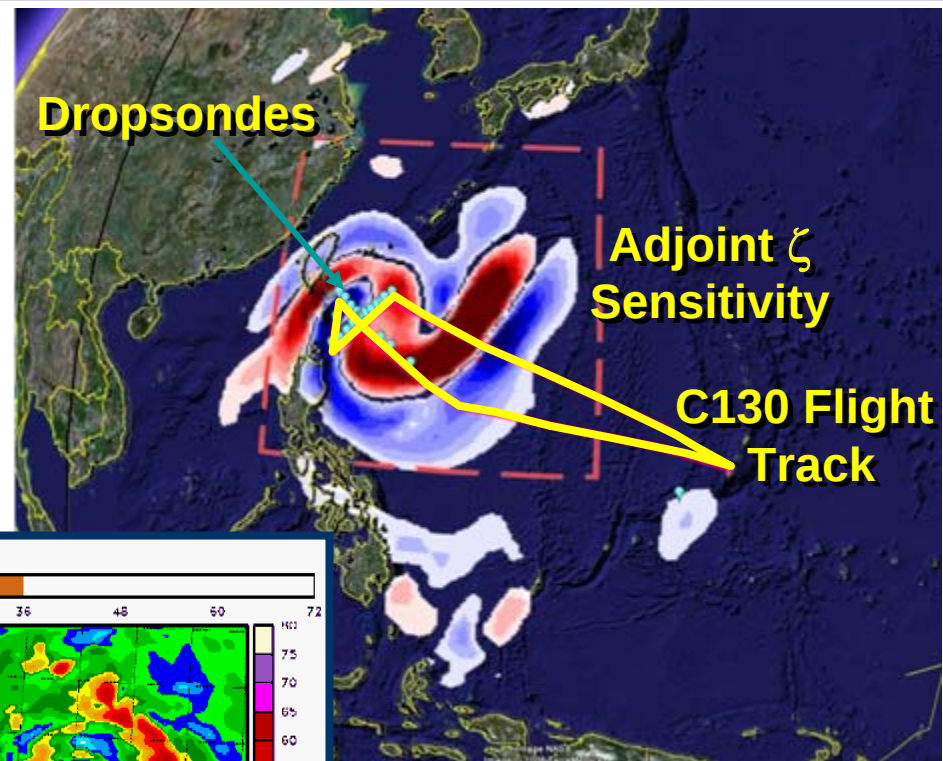


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- Real-time COAMPS adjoint for mesoscale targeting guidance.
- 40 km resolution for 24-h, 36-h, 48-h lead times.
- Adaptive response function box.



- Real-Time COAMPS-TC 72-h Forecasts with Moving Meshes.
- 45/15/5 km horizontal resolution.

COAMPS Track (red) & Official Warning Positions (black) (12 h)

COAMPS radar reflectivity every 30 minutes on 5 km moving grid



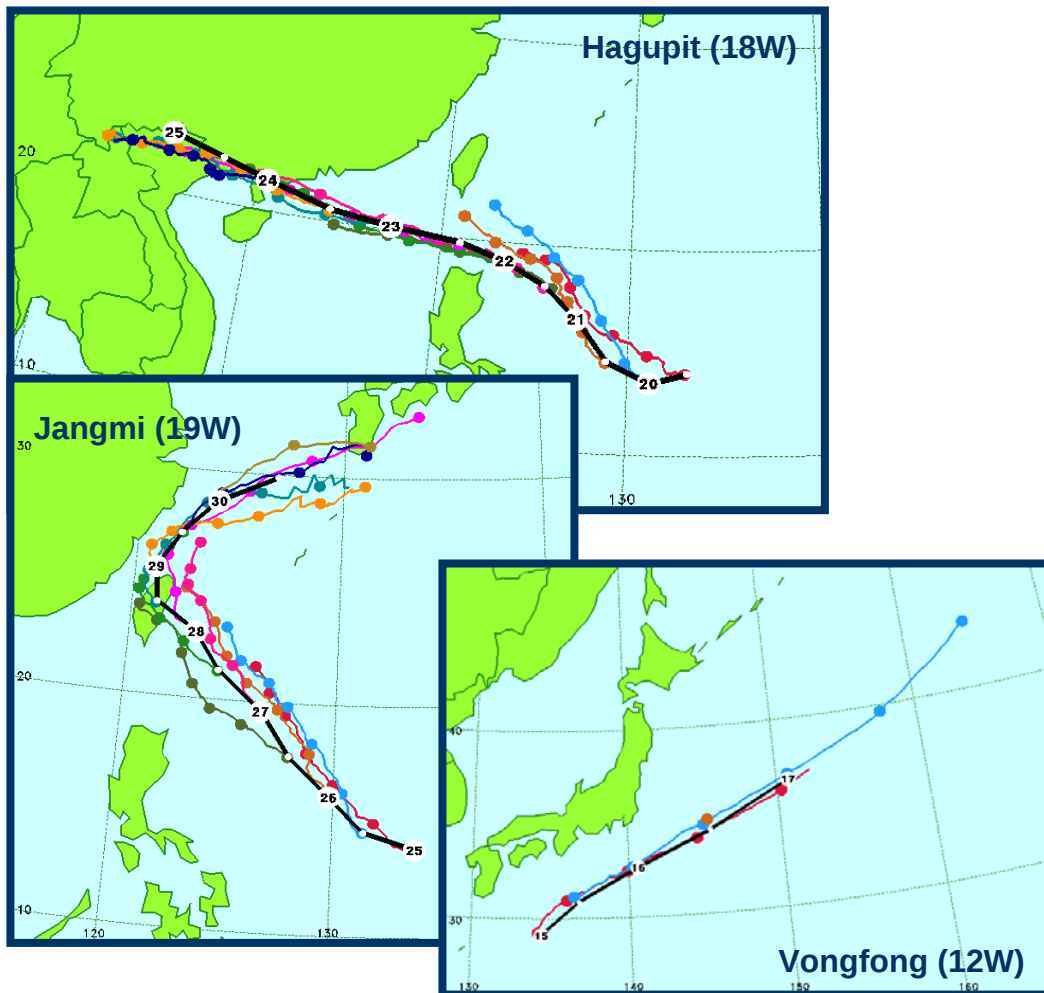
COAMPS – TC Products

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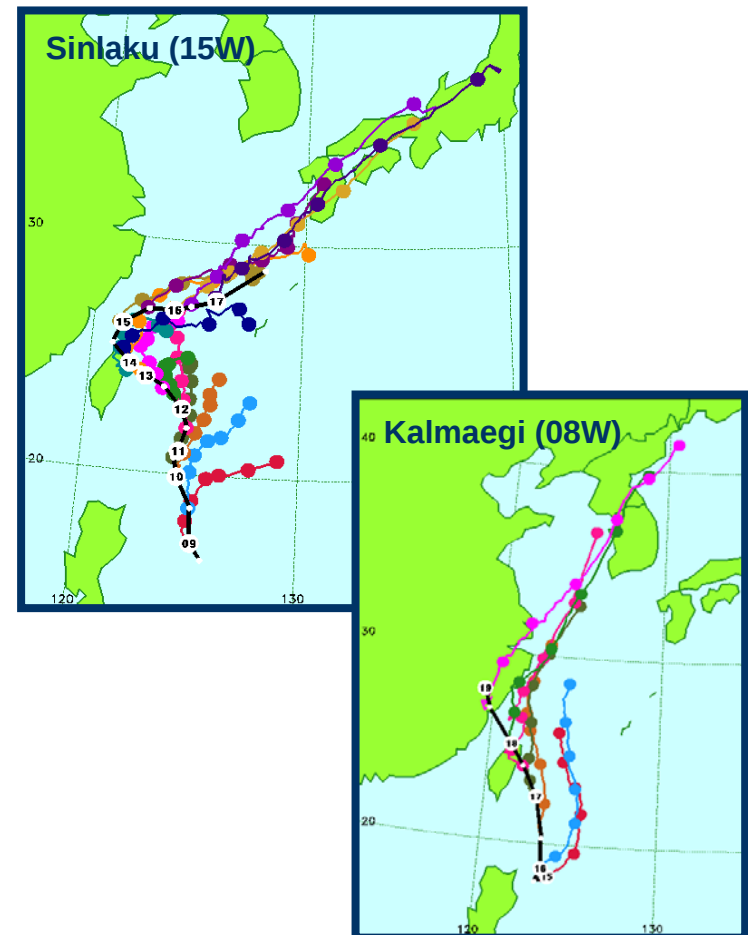
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Black line: Warning positions, large white circle with day at 0000 UTC, small white circle at 1200 UTC.
Colored lines: COAMPS forecasts starting from different times with a circle every 12 hours.

Successes



Challenges



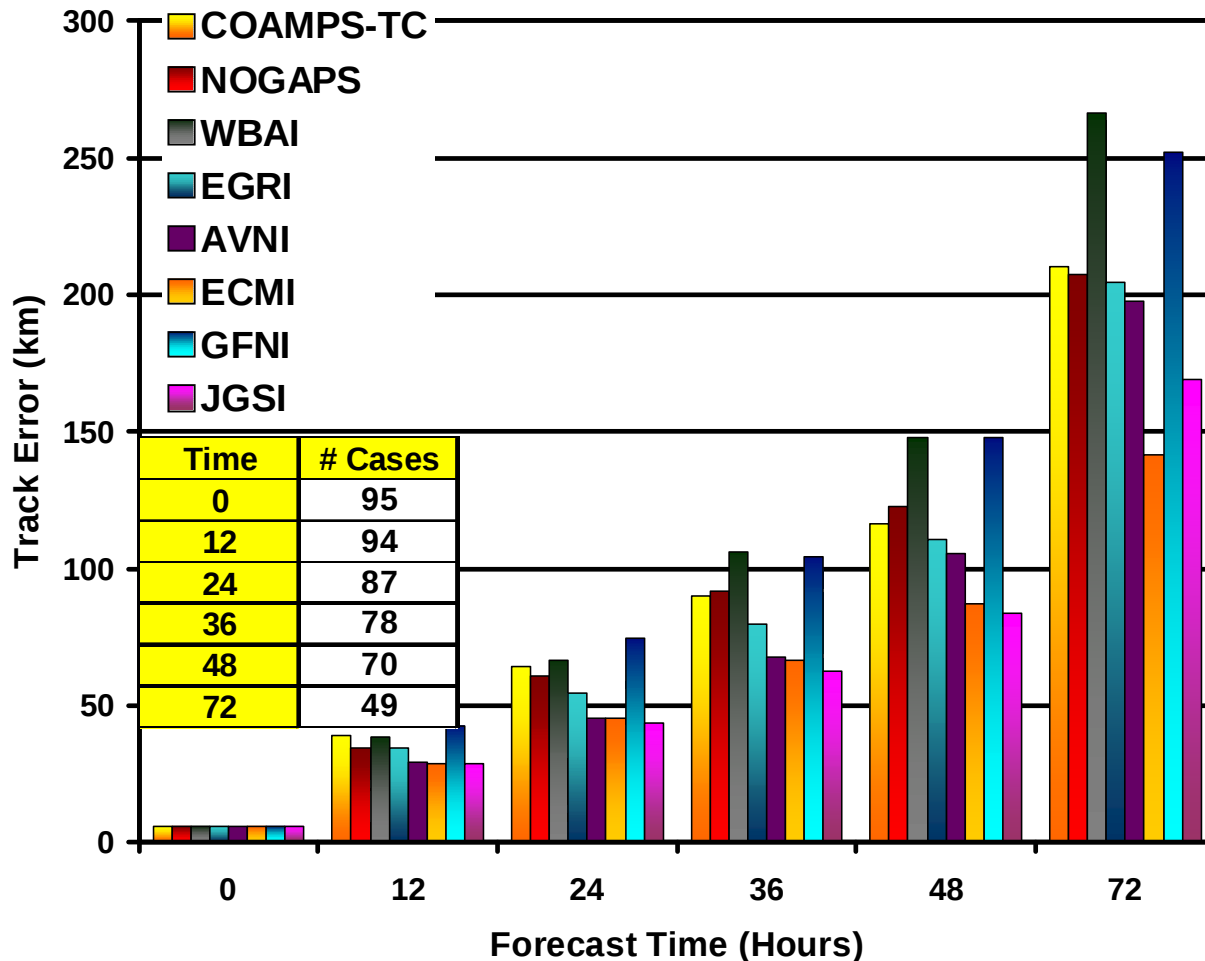


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Homogeneous Sample Compared to all Models for TC 08W-18W



COAMPS-TC slightly underperforms in TC track early in the forecast, but does well at later forecast times outperforming GFNI and competitive with other models.

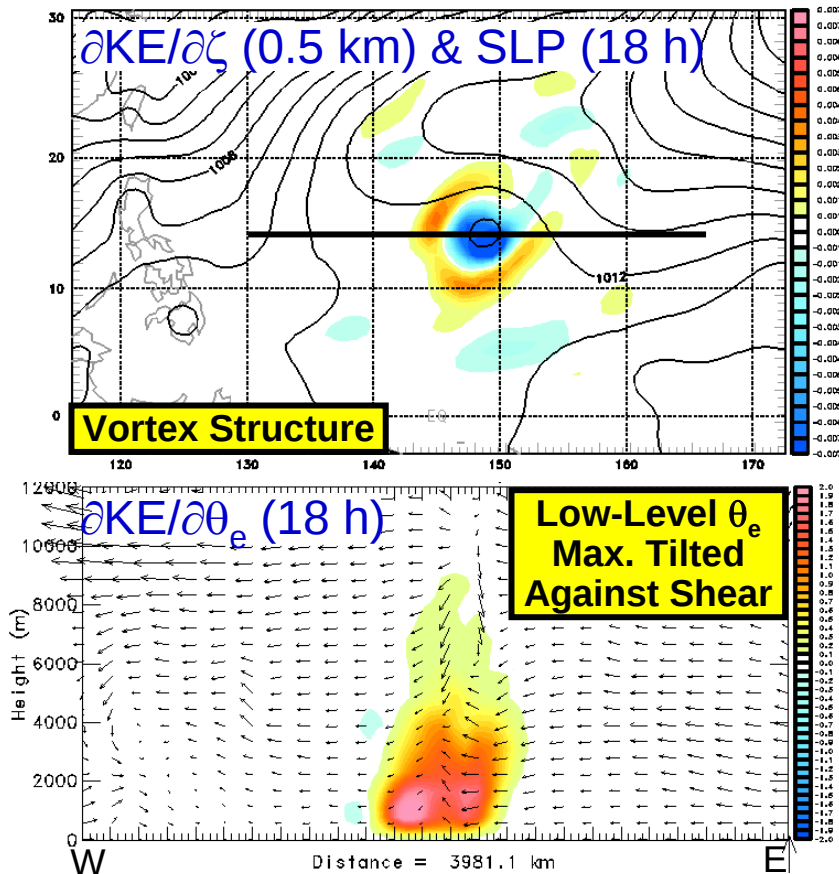


COAMPS Adjoint Products

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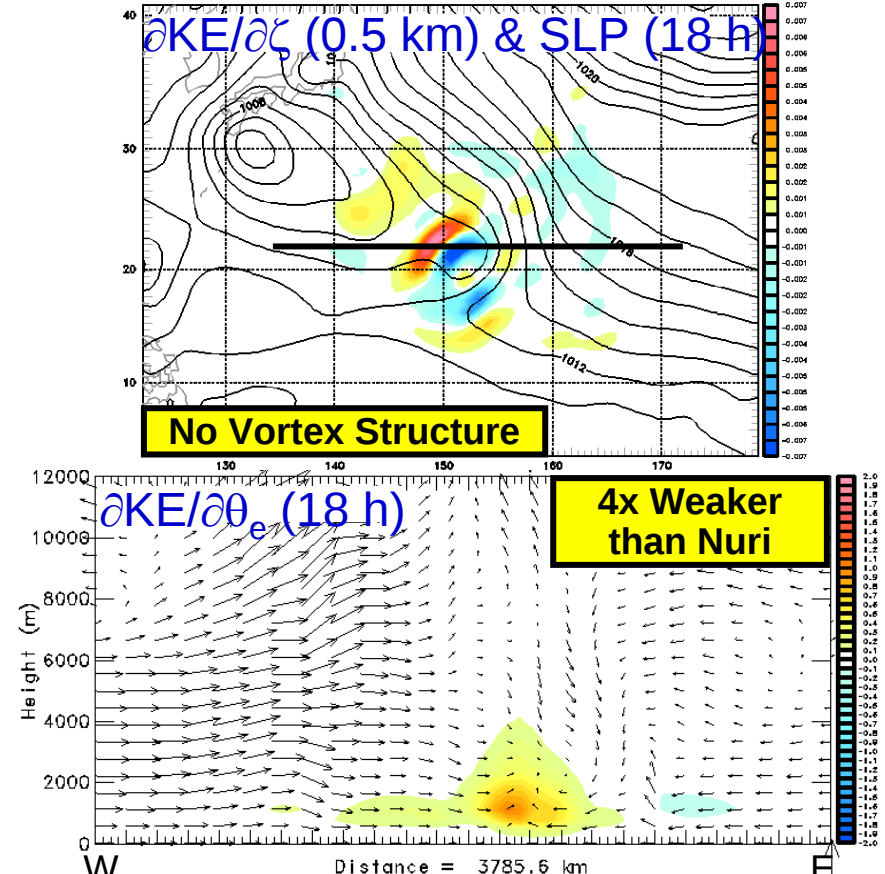
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TC Nuri (Developer)



- Large sensitivity to radial vorticity gradient.
- q_v , θ sensitivities are 3-4x greater than u .
- Optimal θ_e perturbations destabilize core.

TCS025 (Non-Developer)



- Non-developers show slow growth
- Weaker sensitivity to q_v , θ
- Greater sensitivity to vertical shear.