JTWC INTENSITY PERFORMANCE ON STY HAIYAN - PRELIMINARY

68th INTERDEPARTMENTAL HURRICANE CONFERENCE
4-6 MAR 2014

Mr. Robert (Bob) Falvey
Director, Joint Typhoon Warning Center
MISSION

Provide tropical cyclone reconnaissance, analysis, forecast and warning support for Department of Defense, and other US Government assets in the Pacific and Indian Oceans as established by Commander, United States Pacific Command.
ANNUAL TC ACTIVITY
(All Intensities All Basins)

After 8 years of below average WPAC TCs, 2013 was 2 cyclones above the long term average.
2013 SATELLITE RECON
Fixes by Agency – 14,261

- Over 14K satellite fixes in the AOR
- Over 9K completed by JTWC Satellite Analysts
- Over 3K completed by our partners at NESIS SAB
- 6 Cyclones in the north Indian Ocean – only 1 in the NAS
- Most significant cyclone was TC 02B (Phailin) with a peak intensity of 140kts – making landfall in India at 120 kts
- Fairly typical SHEM season with 24 cyclones – 4 below the long term average
2013 WESTERN NORTH PACIFIC

Tropical Depressions: 6
Tropical Storms: 12
Typhoons: 10
Super Typhoons: 5

- Slight warming in Nino-4
- Genesis region shifted eastward
- STY Haiyan above T7.0 for nearly 48 hours and T8.0 for 18 hours
JTWC TRACK ERRORS
All Basins

- Continued improvement in track forecasts
- WPAC errors lowest ever at 24-96 hours
- SHEM errors lowest ever at 24, 48, 72 and 120 hours
- NIO errors remain low and show high yearly variability – low sample size
2013 JTWC TRACK ERRORS

All Basins

U.S. Pacific Command Goal

WPAC-2013
NIO-2013
SHem-2013
- CONW continues to be tough to beat
- Both versions of COAMPS-TC exhibited a significant north bias at extended forecast times
- NAVGEM, H-WRF, and GFS performed best
- GFDN, ECMWF and UKMO (EGRI) were in the middle of the pack
2013 MODEL TRACK ERRORS
(Northern Indian Ocean – Homogeneous)

- Low verification opportunities
- COAMPS-TC driven by NAVGEM struggled at extended forecast times
- NAVGEM, ECMWF, and GFS performed best
- GFDN and UKMO (EGRI) were in the middle of the pack
- CONW continues to be tough to beat
- Meso-models struggled at the extended forecasts
- NAVGEM, ECMWF and GFS performed best
JTWC TRACK ERRORS
(Western North Pacific - 24-72 Hours)
JTWC TRACK ERRORS
(WESTERN NORTH PACIFIC – 96-120 Hours)

Year:
- 2009 - 258, 298
- 2010 - 216, 261
- 2011 - 177, 252
- 2012 - 166, 226
- 2013 - 152, 241

Goal:
- 96 Hr: 100, 150
- 120 Hr: 150, 200
2013 JTWC INTENSITY ERRORS
All Basins

Knots

WPAC-2013
NIO-2013
SHEM-2013

24 Hr | 48 Hr | 72 Hr | 96 Hr | 120 Hr
2013 MODEL INTENSITY ERRORS
(Western North Pacific – Homogeneous)

- Statistical-Dynamical models (S5XX/YY) perform best
- Global models perform worst, but GFS was respectable
- Despite north bias, both versions of COAMPS-TC performed well
- H-WRF edged out COAMPS-TC through day 2, but COAMPS-TC better at days 4 and 5
JTWC INTENSITY ERRORS
(Western North Pacific 24 - 120 Hours)

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<th>Year</th>
<th>24 Hr</th>
<th>48 Hr</th>
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Day 5 = 13.9
Day 4 = 15.5
Day 3 = 15.8
Day 2 = 14.6
Day 1 = 10.1
Rapid Intensification

RI (≥30 kts/24 hrs) and ERI (≥ 50 kts/24 hrs) remains a intensity forecast challenge

- Widespread favorable conditions increase likelihood of RI/ERI in WPAC
- Over 40% of all TCs and 50% of TCs reaching TS strength or greater in WPAC experience RI
- RI handled poorly by models
- 12 TCs in 2013 with RI/ERI (6 in Oct!)

2013 Tropical Cyclones with RI or ERI
2013/4 PROJECTS/EVENTS

• Genesis or Development potential evaluation continues
• Ensemble TC forecasting evaluation continues
• ATCF Version 5.6 expected in April
• AWIPS-2 Stand-alone (ATOM) evaluation
• GFDN upgrades / coupling – pushing to continue funding
• COAMPS-TC implemented at FNMOC - NAVGEM as parent model
• COAMPS-TC running at NAVO - GFS as parent model
• HFIP H-WRF runs expanded to cover entire JTWC AOR
• Global Hawk – planned field campaign in WESTPAC in 2016/17
• JTWC Collaboration website moved to NDBC
  – https://pzal.ndbc.noaa.gov
• JTWC Public website planned move to NDBC
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