Fleet Numerical Meteorology & Oceanography Center

FNMOC Global Ensemble Forecast System

1 May 2011

Michael Sestak,
Current FNMOC Global EFS

- Current operational ensemble
  - T159 resolution with 42 vertical levels
  - 80 total members, 20 chosen
  - Run twice a day (00Z, 12Z) out to 384 hours (16 days) at 6-hourly increments
  - Initialized with 9-band Ensemble Transform
    - Updated 4 times per day
  - In operations since September 2011
  - Verification web page includes forecast vs obs skill statistics for surface winds and temperatures based on buoys
FNMOC Global EFS Plans

• NOGAPS T239L42 to fcst hour 192, T159L42 to fcst hour 384
  – Will use analysis error from model history rather than based on NAVDAS code
  – Begin operational test late June to early July
  – In operations by early Aug

• Stochastic Kinetic Energy Backscatter (SKEB) model implementation on hold pending T239 NAVGEM
FNMOC Global EFS Plans (cont’d)

• NCEP bias correction (Cui et al., *in press*)
  – May 2012 implementation

• NUOPC Multimodel Products
  – Current WxMap and gridded NUOPC products use 20 NOGAPS and 20 GFS members
  – Add CMC members by Q1 2013.

• Verification and validation web page to include all NUOPC forecast vs obs metrics except precip and clouds by Q4 2012.
FNMOC EFS Verification

- Based on fcst vs obs using NRL NAVDAS-AR fcststats code to create “extended” innovations (fcst-obs, not just analysis-background)

- Currently implemented:
  - surface winds from buoys, land stations, SSMI and satellite scatterometer
  - surface temperature from buoys and land stations
  - upper air temperatures and heights from radiosondes
  - wave height from buoys and satellite altimeter
  - bias, rmse, brier score, crps, reliability diagram, ROC diagram
10 m wind speed and ensemble spread
Probability of wind speed > 20 kt
FNMOC EFS Grids to BFTN
NAEFS/CAGIPS: 12Z

Average Bundles per Min: 73.4
On-Time: 100%
NAEFS/CAGIPS: 12Z

Average Bundles per Min: 73.4
On-Time: 100%
FNMOC EFS Grid Delivery to NCEP
Northern Polar (60 to 90 deg) Air Temperature Statistics
Forecast - Analysis for Ensemble Mean
Feb 1 - 29, 2012
Northern Hemisphere (80 to 20 deg) Air Temperature Statistics Observation - Forecast for Ensemble Mean

Nov 20 – Dec 28, 2012