



Fleet Numerical Meteorology and Oceanography Center

FNMOC Update
for COPC

25 October 2016

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Model Upgrades

- Navy Global Environmental Model (NAVGEM)
 - Version 1.4 in operations October 2016
 - Hybrid 4DVAR and shorter timestep
 - No resolution change
 - Version 2.0 4th qtr FY17
 - T681L80 (~19Km res; top at 0.01hPa, ~80Km)
- Data Assimilation
 - Navy Atmospheric Variation Data Assimilation System (NAVDAS) – Accelerated Representer (AR)
 - COAMPS NAVDAS
 - Navy Coupled Ocean Data Assimilation (NCODA)
 - Navy Aerosol Analysis and Prediction System (NAAPS)
 - BUFR Obs



Model Upgrades

- Coupled Ocean-Atmosphere Mesoscale Prediction System (COAMPS)
 - CONAVDAS operational Sept 2016
 - Radar assimilation operational
 - Getting shipboard radar data back is problematic
 - 4DVAR in FY17
 - Two coupled regions operational August 2016
 - 3Km NCODA nest
 - 126 hour coupled run takes 3 hours on the clock



Model Upgrades

- Atmospheric Acoustic Propagation (AAP)
- Aerosols
- Wave Watch III
- Tropical Cyclones
- NAVGEM Ensemble Forecast System (NAVEFS) (EFS v 1.4.1 in OPTEST 2 Nov 16)
- Advanced Climate Analysis and Forecasting System (ACAF)



Unified Modeling Initiative

1 October 2017 FNMOC takes over command and control of ocean modeling and some ocean forecasting functions currently under control of Naval Oceanographic Office in order to operationalize coupled global and regional models for Fleet Support, and prepare for ESPC.



Unified Modeling Initiative

- 31 NAVO NP31 personnel merge with 14 N34 personnel from FNMOC to form Unified Modeling Department 'in' FNMOC
- FNMOC owns operations run at Navy DSRC and organic resources of FNMOC and (some of) NAVO
- UM Department continues to provide modeling and ocean and coastal forecasting support to other NAVO organizations, Naval Oceanographic Operations Command, and the Ice Center
- NRL-OD and NRL-MMD Transitions for models under the purview of the UM Department are executed by UM Department



FNMOC Power Outage

- ~0900 16 October 2016 FNMOC computing center lost power suddenly
- Naval Facilities Command personnel responded and determined that UPS breaker had tripped open.
- Battery support component of UPS performed properly, provided power to computer center for approximately an hour, then ran out, leading to power loss
- Using existing SOPs, SMEs were recalled and performed some safety actions pending power restoration
- 17 October FNMOC restored power through unconditioned connection direct to local utility
- 19 October UPS manufacturer technicians began repair process
- 22 October power restored through planned process
- Source fault appears to have been condensation inside UPS cabinets



FNMOC Power Outage

- Lessons Learned
 - FNMOC has practiced power outages and had refined and current SOPs for powering down and powering up
 - FNMOC relied too heavily on a maintenance contract executed by NAVFAC
 - Extraordinary team collaboration and support led to effective troubleshooting, decision-making, and system restoration.