

# January 2016 NCEP Synergy Notes

The NCEP synergy meeting was to be held on Monday, January 25, but the federal government in the Washington, DC area was closed due to a blizzard. The following are notes provided in advance for this meeting. Our next meeting will be on February 29.

## 1. NOTES FROM NCO (*Steven Earle*)

RTOFS - Implementation approved on 9/30. Implementation delayed will be at the same time as NAVY upgrade, which is currently targeting Q2.

<http://www.nws.noaa.gov/os/notification/tin1536globalrtofsaaa.htm>

Air Quality Model (AQM) to be implemented January 26

<http://www.nws.noaa.gov/os/notification/tin15-58aqm.htm>

NearShore Wave Prediction (NWPS)

Implemented for Miami and Boston... Follow-up implementation for the remaining Southern and Eastern Region WFOs is scheduled for February 9th.

Geospace - NCO parallel to begin at the end of February

NAEFS / CCPA - NCO parallel scheduled to begin January 28

NGAC - NCO parallel scheduled to begin Feb 18

HYSPLIT - NCO parallel scheduled to begin Feb 18

\*\*\* The implementation / briefing process has been changing recently. There is a much more weight being put on evaluations and the feedback received from the field. If your organization can't formally participate in an evaluation then we at least need an email stating this and that you are okay with the upgrade proceeding.

-- SBN bandwidth issues

It has come to the attention of the NCF and NCEP that twice a day the SBN line containing grib data is becoming saturated. In return data is delayed up to 20 minutes being delivered to AWIPSII. The times are 0826 and 2026z plus or minus 10 minutes. We are working with the NCF on how to move forward and address this problem.

## 2. NOTES FROM EMC

**2a. Global Climate and Weather Modeling Branch (GCWMB) (Representative from GCWMB):**

Current GFSX under new implementation process: --OFFICIAL TESTING AND EVALUATION UNDERWAY

Running 3 years of tests: Hurricane Sandy (2012); Summers 2013, 2014, 2015 and Winters 2013/14, 2014/15, 2015/16 (real time)

Pre-CCB briefing to EMC and Office of the Director Jan. 26; Testing complete Feb 15; Evaluation complete Feb. 29; EMC CCB approval March 8; Management briefing March 10; 30 Day parallel April FOR IT TESTING ONLY. Operational implementation May 3, 2016

The land surface parameter refinements have significantly reduced the warm/dry biases in the summer. The change has little impact in the winter. However there are some degradations in the spring/fall. Also it is worst in 00Z (sunset). Some of them will be addressed in the next GFS physics implementation.

[GEMPAK](#) plots are being produced from the real time parallel and can be seen at: and can be compared to the operational gfs <http://mag.ncep.noaa.gov/>.

Western Region has a side by side [display](#) of the operational and parallel GFS for North America and the North Pacific:

Ocean Prediction Center displays both the GFSp and operational GFS 9950 sigma winds and has difference fields for wind and EMSL. [Click on GFS Evaluation](#).

An extended version of the real time parallel can be found [here](#).  
Effect of GFS changes on CONUS precip skill needs extended period of evaluation. Rain-no rain worse especially in short range forecasts More "socialist" rain (land surface change). Overall looks like increase in skill (more green than red).

RMS error of 10 m winds improved in most regions in all retrospectives. 2m T reduced, 2m moisture increased, whether that better or worse depends on region, season, year. Overall probably more positive than negative.

Tracey Dorian has created a web page showing soundings from 12 hr forecasts of the GFS and GFSX against observed soundings for selected US cities [here](#). Also working on MODE verification of precipitation, jets, CAPE for the GFS and GFSX.

Overall, GFSX analyses display less variability than GFS analyses, but forecasts display similar levels. Very significant reductions in day 1 and day 3 errors against analyses. Temperatures, winds show more significant improvement than heights. Smaller scales (zonal wavenumbers 102-0) show more improvement than larger scales.

## **2b. Mesoscale Modeling Branch (MMB) (Representative from MMB)**

NAM V4 upgrade (Implementation planned in 2016Q3, recent changes/testing in boldface)

- Increase resolution of CONUS nest from 4 km to 3 km; CONUS nest output grid will be the same as that from the HRRR. 3 km nest has improved QPF bias over 4 km CONUS nest at higher thresholds.
- Increase resolution of Alaska nest from 6 km to 3 km
- Increase frequency in calls to model physics and for the 12 km parent, call the radiation scheme every 20 min instead of once an hour
  - Physics changes (now being tested or under development; subject to change)
  - Convection changes → higher (i.e., closer to one) 12 km NAM QPF bias, improved 12 km NAM equitable threat score during cool season
  - **Currently testing running shallow convection in 3 km parallel CONUS nest to reduce low-level dry bias, decrease high QPF bias in nests, and remove unrealistic persistent light precipitation over the eastern Pacific**
  - Land-surface model changed to increase canopy resistance, reduce plant transpiration, and reduce direct evaporation from frozen soil, targeting low 2-m Td bias during cool season
  - PBL changes to address maritime shallow cloudiness
  - Radiation/microphysics changes to address 2-m T warm bias during warm season.
    - Use of radar-derived temperature tendencies in model's diabatic digital filter initialization; call digital filter at start of NAM forecast (now only done at start of 3-h NDAS forecasts)
    - Replace 3-h NDAS (12 km domain only) with hourly cycled system (NAMRR) with 12-km parent/3 km CONUS and 3 km Alaska nest; make 18h forecast of 12 km parent and 3 km CONUS/Alaska nest every hour; first step towards future convection-allowing ensemble (ARW members (i.e., 3 km HRRR) + NMMB members (3 km NAM nests)
    - Now running 6-h NAMRR “catchup” cycle with a 6-h cycle of the 12 km parent, 3 km CONUS nest, and 3 km Alaska nest in real-time, followed by full 60-h forecasts of the CONUS/Alaska nests and 84-h forecast of the 12 km NAM. Links to web pages can be found at <http://www.emc.ncep.noaa.gov/mmb/mmbpll/eric.html#TAB2>**
    - New observations assimilated :

1. New satellite winds

1. MTSAT2 IMAGER WVct AMVs (JMA)
2. 254 54 M-7 IMAGER WVct AMVs
3. M-10 IMAGER WVct AMVs
4. NOAA -15 AVHRR IR AMVs
5. NOAA -18 AVHRR IR AMVs
6. NOAA -19 AVHRR IR AMVs
7. METOP-A AVHRR IR AMVs
8. METOP-B AVHRR IR AMVs
2. New GPS Radio Occultation Data
  1. METOP-B 3 (subtype)
3. New Satellite radiance data
  1. M10 Seviri
  2. metop-b hirs4 (moni), amsua, mhs, iasi
  3. npp atms, cris
  4. f17 ssmis

- Resume use of AFWA snow depth product using envelope adjustment
- For CONUS/Alaska/Fire Weather nest: Land-sea mask changed to add all lakes resolved by the new fresh water lake (FLAKE) climatology. Water temperatures at "FLAKE" lake points are a blend using a Cressman analysis of the FLAKE climatology and temperatures at nearby water points resolved by the RTG\_SST\_HR analysis.
- Use NESDIS burned area data in the NAM fire weather nest. Two "accumulation" burned area files are used: 2-day and 45-day. The greenness fraction and albedo is adjusted according to the 45-day data and the top layer soil moisture according to the 2-day data.

**2c. Marine Modeling and Analysis Branch (MMAB) (Bob Grumbine).**

**3. NATIONAL OCEAN SERVICE (Aijun Zhang):**

NOS delivered code package to NCO for March implementation of,

1. Updating versions of hydrodynamic ocean models of FVCOM and ROMS
2. Updating of shared Coastal Ocean Modeling Framework (COMF)
3. Upgrading Lake Erie OFS to FVCOM-based from POM-based

NOS/CO-OPS received SPA feedback and comments, and is updating package accordingly.

**4. FEEDBACK FROM MDL/OPERATIONAL CENTERS/REGIONS**

#### **4a. MDL**

#### **4b. NCEP Centers**

- Weather Prediction Center (WPC):
  - Winter Weather Experiment begins Jan 25, but postponed 2 days due to blizzard closure.
  
- Storm Prediction Center (SPC):
  - HWT Spring Forecasting Experiment set for May 2 - June 3
  
- National Hurricane Center (NHC):
  
  
- Ocean Prediction Center (OPC):
  
  
- Aviation Weather Center (AWC):
  
  
- Climate Prediction Center (CPC):
  
  
- Space Weather Prediction Center (SWPC):

#### **4c. NWS Regions**

- Pacific Region (PR):
  
  
- Alaska Region (AR):
  
  
- Western Region (WR) I have been communicating with Becky Cosgrove

about this issue -- this just documents the communication

Any luck with restoring the data to EC/GFS Ensemble Spaghetti page ?the <http://www.emc.ncep.noaa.gov/gmb/tpm/emchpc/ens/index.html> This is a really popular page in the west -- and very useful to operations. Any hope of making this permanent operational?

- Southern Region (SR):
- Central Region (CR):
- Eastern Region (ER):

## 5. National Water Center

## 6. NESDIS

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## 7. Offline Discussions

Topic:

Lead:

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**The next Synergy Meeting is scheduled for Monday, February 29 at 2:30 pm EST in NCWCP conference room 2890, with remote teleconferencing capability.**

Telecon: **1-866-763-1213**

Passcode: **524234#**

