

NCEP Synergy Meeting Highlights: November 26, 2018

This meeting was led by Mark Klein (WPC) and attended by Holly Uhlenhake and Steven Earle (NCO); Ben Blake, Jacob Carley and Geoff Manikin (EMC); Curtis Alexander (ESRL); Dave Rudack and Jeff Craven (MDL); Ryan Solomon (AWC); Paul Kirkwood (SR); Jeff Waldstreicher (ER); Bill Ward (PR); and Jason Taylor (NESDIS)

1. NOTES FROM NCO (*Steven Earle*)

RTMA/URMA - 30-day stability test restarted. Implementation briefing scheduled for Wednesday with implementation Dec 4, pending approval. SCN is here: https://www.weather.gov/media/notification/pdfs/scn18-96rtma_urma2-7.pdf

- Update 12/6/2018 - RTMA/URMA implemented

HSOFS - Working through canned testing.

AQM - Started 30-day and implementation December 18

HYSPLIT - NCO is working this upgrade part-time; expected to start 30-day next month with implementation in early January.

AWC IFI - Expected 30-day start in early December and implementation in early January

GFS/GDAS - Delivered to NCO... target implementation is end of January with 30-day starting at the end of December.

Partial moratorium from now until end of FY19; NWM and NBM upgrades are only approved exemptions at this time; others are currently being considered.

2. NOTES FROM EMC

2a. Global Modeling (*Geoff Manikin*)

GFS v15: We are still on track for implementation of the FV3GFS in late January, although we'll have a better feel for a target date once NCO completes constructing their parallel.

2b. Mesoscale Modeling (*Jacob Carley*)

RTMA/URMA v2.7: The bug in min/max T analysis was fixed and the 30 day restarted. The new expected implementation date is Dec. 4th.

RTMA/URMA v2.8: We expect a 3 month delay owing to the WCOSS moratorium and transition to the Dell. RTMA/URMA currently runs on WCOSS phase 2 and so some effort will be required to port the system to the Dell. v2.8 is expected to be implemented in Q2FY20.

2c. Marine Modeling

3. EARTH SYSTEM RESEARCH LAB (*Curtis Alexander*)

- ESRL/GSD RAPv5/HRRRv4
 - <https://rapidrefresh.noaa.gov/RAP>
 - <https://rapidrefresh.noaa.gov/hrrr/HRRR>
 - RAPv5/HRRRv4 scope:
 - Planned:
 - Physics and DA changes
 - Storm-scale ensemble data assimilation (HRRRDAS) for HRRRv4
 - FVCOM Great Lakes dynamic SST updating (fallback to global SST analysis)
 - More testing and discussion with EMC will follow:
 - RAP/HRRR-smoke prediction inclusion
 - RAP/HRRR forecast length extensions (51/48 hrs at 00z/12z?)
 - Increased vertical resolution (50 to 64 levels)
 - Hourly HRRR-AK cycling (three hourly forecast updates?)
 - HRRR Hawaii domain
 - RAPv5/HRRRv4 operational implementation currently scheduled for Feb 2020
- RTMA-3D
 - Prototype development with EMC
 - Experimental real-time grids and graphics available
 - <https://rapidrefresh.noaa.gov/hrrr/HRRRrtma/>
 - Two more years of development planned with improved analysis and

post-processed products

- ESRL/GSD HRRRE
 - Nine forecast members + ensemble products
 - 12z half-CONUS forecasts to 36 hrs
 - 00z full-CONUS forecasts to 36 hrs
 - Full-CONUS forecasts at 00z/12z starting after 15 December 2018
 - Leverages HRRR-TLE post-processing for product generation
 - <https://rapidrefresh.noaa.gov/hrrr/HRRRE>

- ESRL/GSD HRRR-Smoke runs:
 - Run every six hours out to 36 hrs over CONUS and Alaska
 - Produces smoke plume estimates from VIIRS fire data
 - Merged with experimental HRRRv4 prototype
 - <https://rapidrefresh.noaa.gov/hrrr/HRRRsmoke>

4. NATIONAL OCEAN SERVICE:

5. FEEDBACK FROM MDL/OPERATIONAL CENTERS/REGIONS

5a. MDL

- National Blend of Model (NBM) -
 - The NBM V3.1 fix for the incorrect GRIB2 encoding of ProbThunder and the bug associated with QMD QPF CDF creation is scheduled to be implemented in early December.
 - The NBM V3.2 development, handoff, and implementation timeline has been extended by one Quarter by the NWS Executive Committee (EC). So, here is the **new** NBM V3.2 timeline: **(1) Hard code freeze in April, (2) Science Brief and NCO Code Handoff in June, and (3) operational in October 2019.**

Some of the new NBM V3.2 weather elements and functionality that will be added to the operational Viewer in the coming days include:

- **CONUS and OCONUS:**
 - Solar radiation
 - Cloud Base RH

- 30-m wind speed
- 80-m wind speed
- Categorical Turbulence
- **Oceanic Domain:**
 - Water Temperature
 - Wave Height
 - Daily verifications can be seen in Event Review
- LAMP: The LAMP/GLMP v2.2 upgrade to redevelop ceiling (C), visibility (V), and obstruction to vision (OBV) guidance out to 38 hours, expand the GLMP domain for C&V&OBV to match the NBM domain in the CONUS, and add 1-, 6-, and 12-h POP Gridded LAMP guidance is nearing completion. Some of the upgraded guidance is currently available experimentally at: https://www.weather.gov/mdl/lamp_experimental and additional experimental products will soon be added to this website.
- P-ETSS: The ETSS 2.3 / P-ETSS 1.1 implementation was delivered on 8/13/2018 and is still on hold. It may end up being cancelled due to the NCEP Moratorium. The implementation entails (a) upgrading ETSS's wind forcing to 13 km wind resolution, (b) updating the ETSS's East Coast and Gulf of Mexico basins, (c) expanding the number of station forecasts for ETSS, (d) operationalizing image production for ETSS and P-ETSS, (e) and operationalizing bias adjusted station forecasts for P-ETSS.
- P-Surge: The P-Surge 2.8 (2019 hurricane season) implementation is cancelled due to the Moratorium. The implementation would have entailed: (a) using different error statistics for Tropical Storms vs Hurricanes, (b) handling a potential 60-hr forecast point, (c) using a 'halo' parallelization technique to enable use of the full south Florida and New Orleans basins, and (d) providing an operational data feed for the .shp file output.
- BMOS Ceiling and Visibility Grid update has been adjusted to coincide with the NBM V3.2 timeline. Grids are expected to be available to NBM developers in December.

5b. NCEP Centers

- Weather Prediction Center (WPC):
- Storm Prediction Center (SPC):

- National Hurricane Center (NHC):
- Ocean Prediction Center (OPC):
- Aviation Weather Center (AWC):
- Climate Prediction Center (CPC):
- Space Weather Prediction Center (SWPC):

5c. NWS Regions

- Pacific Region (PR):
- Alaska Region (AR):
- Western Region (WR):
- Southern Region (SR):
- Central Region (CR):
- Eastern Region (ER):

6. Office of Water Prediction

- NWM V2.0 code handed off to NCO on 11/14, scheduled for implementation in Q2 FY19.

7. NESDIS

GOES-17 and GOES-15 Drift and Transition Plan Update:

GOES-15 reached its new operating location of 128 degrees west on November 7, 2018. GOES-17 completed its drift on November 13, 2018 when it reached its final operational location of 137.2 degrees west. All instruments resumed data distribution on November 15, 2018. GOES-17 will remain non-operational to allow for operational testing at the 137.2 degrees west position. After successful test completion, the satellite will go into operations as the GOES-West satellite on December 10, 2018. GOES-17 and GOES-15 will operate in tandem for six months from their respective locations of 137.2 degrees west and 128 degrees west, until a date is specified for disabling the GOES-15 GVAR.

METOP-C Launched Successfully on 11/7/18:

The Metop-C satellite launched on November 7, 2018 and is the third and final satellite in its series. It was preceded by Metop-A and Metop-B, which launched in 2006 and 2012 respectively. The Metop satellites are polar orbiting meteorological missions that provide detailed observations of the atmosphere, oceans and land. These satellites are part of the EUMETSAT Polar System (EPS), Europe's contribution to the Initial Joint Polar System (IJPS) in coordination with NOAA for monitoring weather and climate from the mid-morning and mid-afternoon polar orbits. NOAA delivered four instruments for flight on Metop-C, including:

- Advanced Very High Resolution Radiometer/3 (AVHRR) -
A visible/infrared imaging radiometer that provides global imagery twice a day for global measurement of cloud cover, sea surface temperature, ice, snow, volcanic ash plumes and vegetation cover.
- Advanced Microwave Sounding Unit - A1 and A2 (AMSU-A) -
Microwave sounders for temperature sounding under clear and overcast conditions that measure global atmospheric temperature profiles and provide information on atmospheric water in all forms.
- Space Environmental Monitor (SEM) - The instrument suite that provides in situ observations of energized protons and electrons around the satellite to detect solar activity and space weather. SEM observations are used by NOAA to assist satellite operators to determine possible cause of spacecraft anomalies from single event upsets.

The data generated by the instruments on Metop are used in Numerical Weather Prediction (NWP) models to compute forecasts and reduce errors. The four instruments, which are also on board the two other Metop satellites, continue to provide terrestrial and space weather information to improve understanding of the environment.

NOAA-18 MHS Anomaly on the MiRS Products:

Starting around 0830 UTC on October 21, 2018, the NOAA-18 Microwave Humidity Sounder (MHS) data became bad due to an the instrument issue, which causes a significant degradation to the Microwave Integrated Retrieval System (MiRS) NOAA-18 products, especially rain rate and moisture profile. A detailed quality impact assessment has been performed by the MiRS science team. The following are the recommendations based on the study:

- 1) Temperature profiles, land surface temperature are minimally affected, and the quality of the products still meet the operational requirement. The products can be used as before.
- 2) TPW, CLW, Sea Ice Concentration are degraded, but to a smaller extent. The products might be used with caution.
- 3) Water vapor profiles, Rain Rate, Snowfall Rate, Snow Cover and other hydrometeors are significantly impacted. The products should not be used.
- 4) Land surface emissivity is slightly affected in the AMSUA frequencies, but can likely be used as before. The emissivity values at the MHS frequencies should not be used or used with caution.

GOES-17 ABI Cryocooler Anomaly (Nov 20th and Nov 24th):

GOES-17's primary and redundant Advanced Baseline Imager (ABI) cryocooler shuts down when heat sink temperatures exceed the auto-shutoff limit of 330K. With the cryocoolers off, the Focal Plane Module (FPM) temperatures are uncontrolled. As temperatures climb, ABI radiance data (science data) begins saturating in the lower frequency channels – impacting the infrared (IR) 7-16 channels. As the focal plane temperature increases, the sensors ability to detect IR diminishes for any signal “cooler” than the focal plane temperature. Engineers have temporarily modified the Primary and Redundant Cryocooler control settings, per instrument vendor recommendations, to reduce stress on the Redundant Cryocooler and to lower the Focal Plane temperatures to operational ranges. Engineers are continuing to investigate issue.

The next Synergy Meeting is scheduled for Monday, January 28, 2019 at 2:30 pm EST in NCWCP conference room 2890, with remote teleconferencing capability.

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

Passcode: **524234#**