NCEP Synergy Meeting Highlights: November 30, 2015

This meeting was led by Mark Klein (WPC) and attended by Carissa Klemmer (NCO); Glenn White and Geoff DiMego (EMC); Arun Chawla (MMAB); Israel Jirak and Andy Dean (SPC); Mike Brennen and Richard Pasch (NHC); Ed Myers (NOS); Dave Myrick (MDL); Bryan Caffrey (AR); Andy Edman (WR); Greg Patrick (SR); Jeff Manion and Jeff Craven (CR); Brian Cosgrove (NWC); and Jason Taylor (NESDIS).

1. NOTES FROM NCO (*Representative from NCO*)

Below is a summary of current and upcoming WCOSS evaluations/implementations:

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

NAM MOS - Delayed due to lack of customer feedback; NCO will be looking to brief Dr Lapenta on this soon.
http://www.nws.noaa.gov/os/notification/tin15-33namaab.htm

GEFS (include GEFS_legacy) - Implemented on December 2.
http://www.nws.noaa.gov/os/notification/tin1543gefs.htm

NearShore Wave Prediction (NWPS) - Model crashed a couple days into the 30-day evaluation period. 30-day clock should reset the week of Dec 1.
http://www.nws.noaa.gov/os/notification/tin15-01madisv1aaa.htm

National Blend of Models - NCO parallel is in progress. Implementation planned for early January; includes an upgrade to RTMA/URMA, EKDMOS and GFS-MOS
http://www.nws.noaa.gov/os/notification/tin15-50nbm.htm
http://www.nws.noaa.gov/os/notification/tin15-53rtma_urma.htm
http://www.nws.noaa.gov/os/notification/tin15-52gmos_mesonetfix.htm
http://www.nws.noaa.gov/os/notification/tin15-51ekdmos.htm

Geospace - NCO parallel to begin in December

Air Quality Model (AQM) - NCO parallel expected to begin in early December

*** 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.

2. NOTES FROM EMC

2a. Global Climate and Weather Modeling Branch (GCWMB) *(Glenn White):*

The GFS 4D hybrid EnVar data assimilation is currently being tested in a real time parallel and in 5 retrospective runs covering the summers of 2013, 2014, and 2015 and the winters of 2013/2014 and 2014/2015. The experimental GFS includes a correction to the land surface that significantly reduces the warm, dry summertime bias over the Great Plains. A summary of the new GFSX and results of the test of the land surface correction can be found at:
https://drive.google.com/drive/folders/0BySqFAN_J6G4cWdpNzBRMkM4ZVE
under 2015-11-12_medium.pdf and 2015-11-19_medium.pdf.

Two of the retrospectives are being run by NCO. The current schedule calls for the retrospectives to be finished by Feb.1, 2016. ***Testing and evaluation should be complete by Feb. 19*** and there will be an EMC CCB on Feb. 22 to determine whether the new system should be implemented. A 30 day parallel for IT checkout purposes only is scheduled to begin in April.

Verification of the real time parallel can be found at:
http://www.emc.ncep.noaa.gov/gmb/STATS_vsdb/
Near the top on the left is a link labelled Precip QPF. This will take you a page where you can find verification plots over CONUS for precip forecasts by the operational and experimental (GFSX) GFS for a wide range of dates. If you go to the bottom on the left, there are 2D maps showing the current forecasts from the operational and parallel GFS. By 00z there is a link to arch. This will take you to an archive over the past few years for synoptic maps for different regions for the operational and parallel GFS. Note that the parallel GFS is whatever was running that day. Only since Nov. 1 2015 have we been running the current GFSX with the land surface correction.

Another site for precip verification is
http://www.emc.ncep.noaa.gov/mmb/ylin/pcpverif/daily/
These sites are subject to the availability of the computers to EMC and may not be up to date every day.

GEMPAK plots are being produced from the real time parallel and will be placed soon on the NCO MAF evaluation site. Western Region has offered to establish a side by side display of the operational and parallel GFS as they did for the 13 km evaluation last year.

Verification for the retrospectives can be found at:
http://www.emc.ncep.noaa.gov/gmb/wd20rt/vsdb/pr4devbs13/
http://www.emc.ncep.noaa.gov/gmb/wd20rt/vsdb/pr4devbs14/

http://www.emc.ncep.noaa.gov/gmb/wd20rt/vsdb/pr4devbs15/
http://www.emc.ncep.noaa.gov/gmb/wd20rt/vsdb/pr4devbw13/
http://www.emc.ncep.noaa.gov/gmb/wd20rt/vsdb/pr4devbw14/
http://www.emc.ncep.noaa.gov/gmb/wd20rt/vsdb/pr4devbw14_before_20150114/

The global branch has offered to plot maps for specific cases from the retrospectives and has solicited specific cases and specific fields to look at. Western and Central and Alaska Regions have sent in specific cases to look at.

This is a new implementation procedure and very much work in progress. The global branch wants a thorough evaluation of the GFSX and values your insight. Please be patient and persistent with us.

Please contact Glenn.White@noaa.gov or Vijay.Tallapragada@noaa.gov if you have any comments, concerns or questions.

2b. Mesoscale Modeling Branch (MMB) *(Geoff DiMego)*

Air Quality (ozone and particulate matter from anthropogenic, smoked and dust sources) : Updated CMAQ PM bias correction delivered to NCO. Expected implementation in early February.

Dispersion (volcanic ash, radiological, chemical releases): Correction to HYSPLIT wet deposition after Fukishima NPP accident evaluation. Provision of volcanic ash and Great Lake trajectory graphics, extension of CONUS nest coupling to 48 hours. Expected implementation by Mid-January.

RTMA/URMA:

Implementation scheduled for Q1FY16 pushed back to early Q2FY16 after variational QC was found to worsen a local wind speed bias issue. Variational QC for winds has been removed for this implementation but will remain in for temperature, moisture and pressure observations. Implementation also includes min/maxT for CONUS and AK.

Next implementation is scheduled for Q3FY16, to coincide with RAP/HRRR. Upgrades include implementation of URMA (including min/maxT) for HI and PR, GLERL adjustment over Great Lakes, new variable (cloud ceiling) and use of unified land/sea mask and terrain generated as part of NBM project.

Ob quality control remains a major issue. We hope to discuss further at NCEP

Production Suite Review in December.

NAM upgrade (Implementation planned in 2016Q3)

- 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

- Removed “Dry” soil adjustment due to increasing warm bias as we moved into summer. Cycled land states were restarted from ops NDAS on 2 August 2015.

- 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)

- 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.

RAP/HRRR:

- implementation has been delayed until Q3
- all RAP runs will be extended to f21, and all HRRR runs will be extended to f18
- significant reduction in the warm, dry bias of both systems

2c. Marine Modeling and Analysis Branch (MMAB) *(Arun Chawla).*

RFC #1357 – RTOFS global v1.1.0 – Major upgrade of the Global RTOFS model. See the TIN at:

http://www.nws.noaa.gov/os/notification/tin15-36global- rtofsaaa.htm

for details. This was advertised as having an October 6 implementation date but this implementation was postponed due to a delay in the Navy's HYCOM model upgrade. Once the HYCOM upgrade is implemented, the Global RTOFS will be scheduled for implementation. Notification will be given in advance so users may prepare for any changes which may affect them. This upgrade of the Global RTOFS was approved by the NCEP Director.

3. NATIONAL OCEAN SERVICE (*Ed Myers*):

Minor upgrade to the Great Lakes OFS scheduled in December.

ROMS model code upgrade scheduled for March 2016; will affect the Tampa Bay OFS, Delaware Bay OFS and Chesapeake Bay OFS.

New FVCOM-based Lake Erie OFS scheduled for March 2016 implementation.

4. FEEDBACK FROM MDL/OPERATIONAL CENTERS/REGIONS

4a. MDL

Upcoming implementations:

- Refresh NAM MOS Station Guidance (T, Td, MaxT, MinT, Wind)
  - Code delivered to NCO 11/15/2015
- National Blend of Models - PoP12 guidance
  - Scheduled code delivery to NCO 1/15/2016

4b. NCEP Centers

- Weather Prediction Center (WPC):
- Winter Weather Experiment

  Week 1: January 25 – 29, 2016 (Monday – Friday)

  Week 2: February 1 – 5, 2016 (Monday – Friday)

  Week 3: February 8 – 12, 2016 (Monday – Friday)

  Week 4: February 16 – 19, 2016 (Tuesday – Friday)

- Storm Prediction Center (SPC):

- National Hurricane Center (NHC):
- With the upcoming GFS upgrade, there was some concern regarding the February 2016 feedback deadline given staff scheduling, as well as concern about the impacts downstream on the GFDL and HRWF

- Ocean Prediction Center (OPC):

- Aviation Weather Center (AWC):
  - Winter Experiment
    Feb 8 - 21, Feb 22 - 26 (Feb 20 - Mar 4 alternate week)

- Climate Prediction Center (CPC):

- Space Weather Prediction Center (SWPC):

4c. NWS Regions

- Pacific Region (PR):

- Alaska Region (AR):

Question: Why is the HRRR implementation delayed?
Answer: EMC has not received the complete code package from GSD

- Western Region (WR)

- Southern Region (SR):

- Central Region (CR):

- Eastern Region (ER):

Question: Will the delay in the HRRR also delay the RTMA/URMA upgrade?
Answer: Unlikely.

5. National Water Center

6. NESDIS

Cessation of MTSAT-2 Broadcast Scheduled: Following NESDIS' 2014 request to extend the

mission beyond the original planned date of July 2015, Japanese Meteorological Agency (JMA) will cease data broadcast of the older MTSAT-2 High Rate Information Transmission (HRIT) data on December 4, 2015. The extension provided additional time for NWS and DoD Pacific Region users to transition from MTSAT-2 to the new Himawari-8 operations. To mitigate the gap in critical satellite coverage following the loss of MTSAT-2, and to maintain continuity of operations, the NESDIS Office of Satellite Products and Operations (OSPO) is taking action to process imagery in Man-computer Interactive Data Access System (McIDAS) using Himawari-8 data. For efficient product development, Himawari-8 data will be sub-sampled and processed to reflect MTSAT-2's specified five spectral channels with a spatial resolution of 4 km for infrared and 1 km for visible. In addition to these level 1 imagery products, using the MTSAT-2 legacy product set as a guide, OSPO also plans to test and validate product applications using the same Himawari-8 sub-sampled data. The objective is to make these McIDAS products available to NOAA users initially, with the later potential for general user access. (John Paquette, 301-683-3237)

Special GOES-15 American Samoa RSO Sector Broadcast Test: In response to a request from the NWS Pacific Region, NESDIS developed a new GOES-West RSO sector covering American Samoa. On December 10, 2015, 1700 UTC - 2000 UTC, NESDIS will perform a GOES-15 GVAR direct broadcast test of the American Samoa sector using the standard GOES-West RSO dissemination schedule and concurrently produce associated images for SBN distribution for AWIPS sites. If both modes of data delivery are successful at the respective NWS sites during the RSO test, NESDIS will incorporate the American Samoa RSO into the overall GOES-West schedule suite to be ready for immediate operational call-up when requested from the NWS (via the NCEP SDM). (Paquette)

GCOM-W1 AMSR-2 Day-1 Products Declared Operational: On Nov 4, 2015, Global Change Observation Mission (GCOM-W1) Advanced Microwave Scanning Radiometer (AMSR-2) Day-1 products were implemented into operations with 24/7 support, which includes: *Imagery, Cloud Liquid Water, Total Precipitable Water, Precipitation, Sea Surface Temperature, Sea Surface Wind Speed*. The products are expected to be used in support of the numerical weather prediction model assimilation, tropical cyclone location and intensity forecast and analysis, inter-satellite/sensor calibration, and also precipitation analysis, forecast and monitoring, etc. (L. Zhao, 301-683-3240)

---

7. Offline Discussions
Topic:

Lead:

The next Synergy Meeting is scheduled for Monday, January 25, 2016 at 2:30 pm EST in NCWCP conference room 2890, with remote teleconferencing capability.

Telecon**: 1-866-763-1213**
Passcode**: 524234#**