NCEP Synergy Meeting Highlights: February 6, 2017

This meeting was led by Mark Klein (WPC) and attended by Steven Earle (NCO); Eric Rogers (MMB); Glenn White (GCWMB); John Derber (EMC); Israel Jirak (SPC); Scott Scallion (MDL); Jeff Waldstreicher (ER); Greg Patrick (SR); Curtis Alexander (ESRL); and Kelsey Jeffers (NESDIS).

1. NOTES FROM NCO (*Steven Earle)*

- NAMv4 - In 30-day stability test; Implementation planned for mid-March

http://www.nws.noaa.gov/os/notification/tin16-41nam_updatesaaa.htm

- RTOFS global - on hold waiting for an implementation at the Navy
- NHC Guidance suite - in 30-day; Implementation planned for mid-March (internal to NHC only)
- ECMWF-MOS - Evaluation expected to start this week; Implementation end of March
- PSURGE - Canned IT testing is on-going; Implementation planned for early to mid April
- NGAC - Implementation planned for March 7

http://www.nws.noaa.gov/os/notification/scn17-10ngac.htm

- ESTOFS Atlantic - Evaluation expected to start next week; implementation planned for early April
- LMP/GLMP - Evaluation expected to start next week; implementation planned for late March
- RTMA/URMA - Evaluation expected to start this week; implementation planned for late March
- NWM - Testing is ongoing; 30-day stability expected to start this month with implementation in mid-April

2. NOTES FROM EMC

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

GFS upgrade:

GFS2017 retrospectives nearing completion-few days left in Oct/Nov. 2014.
Webpage on the implementation
http://www.emc.ncep.noaa.gov/gmb/noor/GFS2017/GFS2017.htm

Briefing of EMC director Feb. 17

Briefing of NCEP director Feb. 21

If approved, scientific evaluation will be over and global branch will hand over code to NCO. 30 day IT test in April; implementation in May. Real time parallel will continue to run.

Several case studies have been done by Tracey Dorian and others.
Most centers and regions have completed their evaluations; they are being posted at the webpage on the implementation. MDL and NHC are still working on theirs; we have received no response from Alaska and Space Weather Prediction Center.

Objective verification indicates a significant improvement in forecasting light to moderate amounts of precipitation for the first three days and improvements to near surface temperatures and dew points over the CONUS and Alaska overall. Stratospheric fields are improved. Some scores against own analyses seem slightly worse, but it is not clear the differences are significant; they may reflect more variability, stronger features in the forecasts in the new GFS. MEG this Thursday and next will features briefings on the evaluation of the GFS2017.

The global branch is working on producing hourly soundings from the GFS2017 out to 120 hrs and every 3 hours from 120 to 180 hours; the station list for the soundings is being expanded. They should be ready in the near future. Work on producing 1/8th degree files have begun and preliminary discussion with MDL, SPC, OWP, and WPC has begun on the 1/8th degree files. Initially the files will probably be available on WCOSS; placement on ftp/NOMADS will be subject to space availability and will be coordinated with NCO.

The global branch appreciates all the evaluation done by others of the GFS2017.

AMS 2017 presentation on strategy for NOAA modeling

2b. Mesoscale Modeling Branch (MMB) *(Eric Rogers)*

SREF will be ported from WCOSS Phase 2 to WCOSS Cray machine with a few possible minor fixes in 2017. No changes in resolution, membership and sciences given the decision of "system freezing".

NAMv4 implementation :

1) 30-day evaluation period ended in mid-January; MDL evaluation delayed until finish of EMC winter 2015-16 retrospective (done on 1/30)
2) NCO 30-day stability test restarted 18z 1/30 due to 1/28 failures of ops and parallel NAM (still under investigation as of 1/31)
3) Science and IT Briefing to NCEP Director scheduled for March 9

RTMA/URMA:

v2.5 of the system is NCO now and has a targeted implementation date of April 11th (the 30 day should start ~ Feb. 27th). v2.5 is a minor upgrade that includes upgraded CONUS ceiling analysis (using HRRR background), addition of URMA precip analysis to PR and AK, and the westward expansion of the CONUS domain.

Testing for v2.6 is ongoing. v2.6 includes the 15 min RU-RTMA (was delayed from 2.5

to 2.6), GLERL obs adjustment, porting to Cray, and expanding the buddy check as requested from the SOO team. We will also add an analysis of significant wave height and min/max RH. We will have the opportunity to put in unified terrain for the OCONUS if it is ready. As a part of the new implementation process, we plan to freeze the code around early to mid-April to facilitate evaluations on May 26th and hand off on May 31st. Implementation is scheduled for September 2017.

2c. Marine Modeling and Analysis Branch (MMAB).

Ocean update:
Removal of the NCEP RTOFS Atlantic Forecasting System Effective March 14, 2017

Wave Forecasting:
The NWPS is fully operational.
The Great Lakes Wave (GLW) model provides operational wave guidance to the region since 2004. It currently runs using a 2.5km spatial resolution Lambert conformal grid matching the National Digital Forecast Database (NDFD) requirements. There are 8 daily cycles, of which four (00, 06, 12 and 18Z) have a forecast range of 84h and use wind fields from the NAM, and the remaining four (03, 09, 15 and 21Z) run out to 147h and use wind fields from the Great Lakes NDFD products. All cycles use ice concentrations provided by the National Ice Center.

The GLW will be upgraded in May 2017. Changes consist of:

1 - Removing the NAM cycles, and adding 20 new short-range, NDFD-driven cycles with forecasts out to 24h, interspersed between the four longer-range NDFD-driven cycles (03, 09, 15 and 21Z), which will reamain as they are now.

2 - Replacing the current curvilinear spatial grid (~2.5km all over) by a higher-resolution unstructured grid with resolutions varying from 2.5km offshore to 250m at the coast.

3 - Providing new wave growth source-term tuning to improve wave model skill at nearshore locations.

It is expected that the upgrades will benefit higher confidence of forecasters in wave model guidance for issuing small-craft advisories, as well as provide higher sill in nearshore wave applications.

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

Operational RAPv3/HRRRv2

- Pending inclusion of TAMDAR aircraft data around 21 February 2017

Experimental real-time RAPv4/HRRRv3 development

- Currently producing RAPv4
    - 51 hr forecasts at 09, 21z

    - 39 hr forecasts at 00, 03, 06, 12, 15, 18z
    - 21 hr forecasts otherwise
- Currently producing HRRRv3
    - 48 hr forecasts at 00,12z -- for WPC Winter Weather Experiment
    - 36 hr forecasts at 03, 06, 09, 15, 18, 21z
    - 18 hr forecasts otherwise
    - Recently added freezing rain accumulation
- Currently producing experimental OCONUS HRRRv3 runs
    - HRRR-Alaska, 36 hr forecasts, every 3 hrs
    - HRRR-Hawaii, 24 hr forecasts, every 3 hrs
    - HRRR-Puerto Rico, setup underway
- April 2017 code freeze for experimental RAPv4/HRRRv3 real-time runs
    - More weight to ensemble in data assimilation (from 75% to 85%)
    - More consistent building of clouds between METAR and satellite data
    - Refined assimilation of surface observations
    - Storm-scale ensemble data-assimilation for HRRR (hourly)
    - Higher-resolution land use data (15" MODIS)
    - Real-time greenness fraction
    - Non-local mixing (eddy diffusivity mass-flux) in MYNN PBL
    - WRF-ARW version 3.8.1
- June 2017 code delivery to EMC
- February 2018 scheduled implementation

Experimental real-time HRRR-TLE

- Uses multiple consecutive runs of experimental HRRRv3 with time/space filters
- Currently producing 24 hr forecasts, updated hourly
- Probabilistic products for QPF, winter weather, severe weather, aviation
- Added probability of icing accumulation
- NCO on-boarding possible sometime in 2018

Experimental real-time HRRRE

- Real-time runs resuming 01 March 2017 for VORTEX-SE
- 60-70% CONUS domain (central and eastern US)
- Forecasts updated every three hours (max)
- 3-36 members, depending on initialization time
- Initializing downstream Warn-On-Forecast prototype ensemble
- Evaluated in the 2017 NSSL/SPC Spring Forecast Experiment as part of CLUE
- Candidate for HREFv3 in early 2019, pending science and resource evaluations

4. NATIONAL OCEAN SERVICE:

5. FEEDBACK FROM MDL/OPERATIONAL CENTERS/REGIONS

5a. MDL (*Scott Scallion*)

- ECMWF-MOS handoff to NCO on 10/7/16 for updated temperature equations and new snowfall forecasts. Targeting a March implementation, pending the resolution of an open ticket with IBM to resolve runtime inconsistency issues between the two Cray platforms. Experimental websites are below (NOAA internal only):
  - http://www.mdl.nws.noaa.gov/~ecmwf/moscomp_eval.php
  - http://www.mdl.nws.noaa.gov/~ecmwf/snowfall/mos_snowfall.php

- Blend Version 3.0 has completely it's development phase and will be handed off to NCO in March (EE Kickoff is today). This major update includes:
  - Hourly updates based on any new model inputs
  - Blend short-term models (HRRR, LAMP, SREF, etc.) over the CONUS
  - Ceiling, lowest cloud base, and visibility over the CONUS
  - Add PoP12 and QPF over Alaska, Hawaii and Puerto Rico
    - Also includes CONUS PoP/QPF improvements that were previously part of Blend V2.1 update which not implemented, due to NCO resources and MDL's reprioritization.
  - Create blended inputs to support production of Weather, Snow Amount and Ice Accumulation grids

- P-Surge handoff to NCO on January 6 is being updated based on feedback from the SPA and from NHC. A new handoff is expected COB February 8.

- P-ETSS 1.0 / ETSS 2.2 handoff to NCO is on track for February 22.

- LAMP/Gridded LAMP
  - MDL continues to produce hourly experimental updated LAMP convection and lightning guidance which uses HRRR, MRMS, and Total Lightning inputs and which covers 1-hr valid periods instead of the current operational 2-hr valid periods. Images of this guidance are available at: http://www.weather.gov/mdl/lamp_experimental
  - In addition, we continue to produce experimental LAMP/HRRR "Meld" gridded forecasts of ceiling and visibility. (http://www.mdl.nws.noaa.gov/~rlamp/glmp_expr_viewer_meld.php) - Requires LDAP credentials
    Soon to be available to public at:
    http://www.weather.gov/mdl/lamp_experimental
  - The LAMP ceiling and visibility Meld forecasts will be available soon in the NCEP 30-day parallel run, and implementation is planned for on or about Wednesday March 29, 2017.
  - The LAMP convection and lightning implementation has been slightly delayed, and is now planned for handoff to NCEP/NCO in April 2017 with

implementation in July 2017.

- Finally, MDL is working on producing updated LAMP/GLMP ceiling and visibility guidance every 15 minutes using the most recent hourly observations, including “Special” observations. The current run which provides guidance for the next 25 hours will continue to run, but will now use the most recent observation instead of the “top of the hour” observation as a predictor. In addition, LAMP will provide extra runs per hour, and those interim runs will provide guidance for only ceiling height and visibility and only going out 2-3 hours. The 15-minute LAMP/GLMP will also be handed off in April and implemented in July.

5b. NCEP Centers

- Weather Prediction Center (WPC):

- Storm Prediction Center (SPC):
    - HWT Spring Forecasting Experiment is scheduled to run five (5) consecutive weeks (M-F) beginning May 1.

- 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) no feedback received about NAM

- Southern Region (SR):

- Central Region (CR):

- Eastern Region (ER): Concerns expressed by several field offices about the performance of the SREF. In particular, the field has been noticing frequent QPF overforecasts from the ARW members. This has been going on at least since last winter, and has adversely impacted the WPC PWPF ensemble (overdispersion) and resulting WFO probabilistic snowfall forecasts.

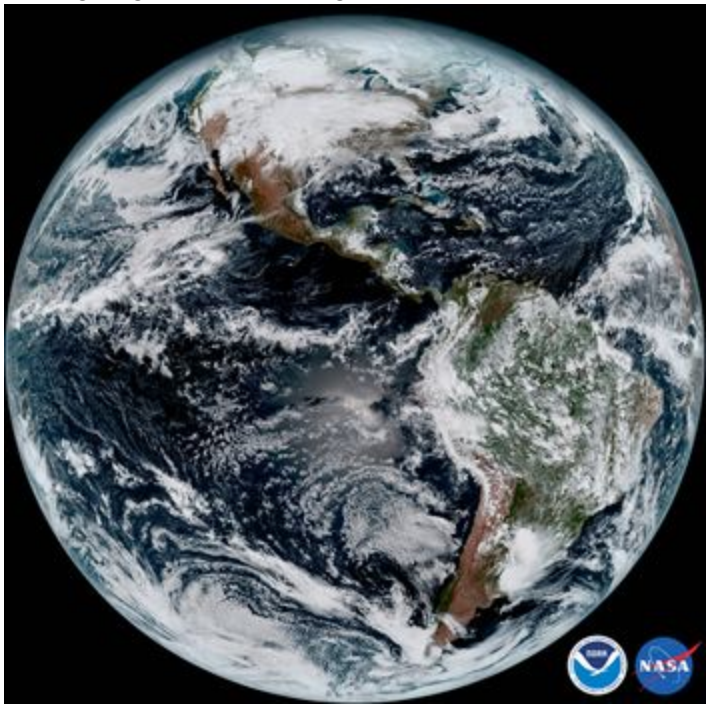
  WFOs are greatly appreciating the recent availability of BUFR soundings from parallel model runs (e.e., GFSX and NAMX). The soundings are easily integrated into forecast operations and enhance forecasters ability to assess and provide feedback for evaluations.

6. Office of Water Prediction

- NWM V1.1 code has been handed off to NCO and is scheduled for implementation in mid-April.

7. NESDIS (*Kelsey Jeffers*)

January 23: GOES-16 First Public Imagery:
The first public imagery from the GOES-16 Advanced Baseline Imager (ABI) was released on January 23 via NBC's Today Show and The Washington Post! In conjunction, NOAA Satellite and Information Service issued a press release and NOAA published a photo story with the high-resolution color composite imagery. The images were also unveiled at the 97th American Meteorological Society (AMS) Annual Meeting in Seattle during a session featuring the ABI. The imagery will also be highlighted at the NOAA booth at the meeting and in a number of other AMS presentations. View images below and animations and imagery in the GOES-16 data and imagery gallery. Note: this GOES-16 data are preliminary, non-operational data and are undergoing on-orbit testing. (Contact: Lauren Gaches, 301-286-9056)



ATOVS (Advanced Tiros Operational Vertical Sounder) and MIRS of the Metop-B Advanced Microwave Sounding Unit (AMSU-A) Channel-7 Anomaly:
Starting around 1300z on January 17, 2017, no valid channel 7 measurements were available due to the Metop-B AMSU-A channel 7 anomaly, which caused a degradation of the ATOVS product quality. Sounding products use AMSU-A channel-7 in its retrieval process and it is an important channel for ATOVS to retrieve temperatures as AMSU-A channel-7 peaks at 260 mb temperature retrievals. The ATOVS soundings products are severely impacted by the anomaly and STAR scientists are working to find a substitute for AMSU-A channel 7 on Metop-B for ATOVS application and are making an assessment for a possible solution to the anomaly. Users were notified about the degradation while the sounding product area lead (PAL) is working with STAR scientists to develop a possible mitigation for the anomaly. The impact assessment indicates that the mitigation solution will restore the ATOVS sounding data products

quality. MIRS (Micorwave Information Retrieval System) application indicates a minimal impact on its temperature retrievals and the channel-7 was disabled in the retrieval process after STAR scientists made an assessment for the MIRS processing. (Awadhesh Sharma, E/SP05, 301-683-3229, Limin Zhao, E/SP05, 301-683-3240).

Coastal Winds Products with Sentinel 1b Data:
On Thursday, January 12, Sentinel 1b Synthetic Aperture Radar (SAR) data was added to the operational high resolution coastal winds products distributed from the Office of Satellite and Product Operations (OSPO) data delivery server. This will provide additional coverage of U. S. coastal regions for our customers, adding to the RADARSAT and Sentinel 1a winds products that were already operational. The wind data and imagery are also available on the OSPO web site at http://www.ospo.noaa.gov/Products/ocean/sar/
(John Sapper, 301-683-3234)

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8. Offline Discussions
Topic:
Lead:

The next Synergy Meeting is scheduled for Monday, March 27 at 2:30 pm EDT in NCWCP conference room 2890, with remote teleconferencing capability.

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