NCEP Synergy Meeting Highlights: April 26, 2016

This meeting was led by Mark Klein (WPC) and attended by Steven Earle (NCO); Vijay Tallapragada (EMC); Geoff DiMego (MMB); Israel Jirak (SPC); Scott Scallion (MDL); Andy Edman (WR); Jack Settelmaier (SR); Jeff Manion and John Eise (CR); Brian Miretsky and Jeff Waldstreicher (ER); Brian Cosgrove (NWC); and Jason Taylor (NESDIS).

1. NOTES FROM NCO (*Steven Earle*)

RTOFS - Implementation approved on 9/30. Implementation delayed and will be at the same time as NAVY upgrade, which is currently unknown.
http://www.nws.noaa.gov/os/notification/tin1536globalrtofsaaa.htm

HYSPLIT - Postponed; 30-day evaluation will be redone for GFS 0.5deg output only and is expected to start this week (4/25)
http://www.nws.noaa.gov/os/notification/tin16-05hysplit_smokeaab.htm

NGAC - Cancelled; Currently back in EMC for testing and is targeting late Summer 2016 for implementation.
http://www.nws.noaa.gov/os/notification/tin16-06ngacaaa.htm

LEOFS - Briefing scheduled for April 29 with implementation on May 3.
http://www.nws.noaa.gov/os/notification/tin16-08nos_leofs.htm

GFS/GDAS - Technical Implementation Briefing scheduled for May 6. Implementation scheduled for May 11
http://www.nws.noaa.gov/os/notification/tin16-11gfs_gdasaaa.htm

SWMF - Briefing scheduled for May 18 with implementation on May 24. This is an internal SWPC evaluation only.

HSOFS - Distribution only to NHC for this hurricane season. Internal technical test with NHC and NCO scheduled for the week of May 9. Operational implementation is targeting May 31. Contact points Jesse Feyen and Jamie Rhome.

NWM - 30-day evaluation scheduled to start the week of May 9. Operational implementation by the end of June 2016. More details coming soon.

RAP/HRRR/RTMA/URMA - Currently being worked at NCO. Start of 30-day evaluation is unknown at this time as we work through model stability issues in the RAP and HRRR.

PSURGE - Canceled for 2016 hurricane season.

CFS v 2.2 - NCO has received the code and are beginning our initial setup. 30-day

evaluation scheduled to start in early June. More details coming soon.

2. NOTES FROM EMC

2a. Global Climate and Weather Modeling Branch (GCWMB) *(Vijay Tallapragada):*

- GFS/GDAS upgrade implementation on May 11.
- Transitioning GFS/GDAS into NEMS and porting to Cray in preparation for Q2FY17 implementation
- Benchmarking NEMS/GSM in progress
- A detailed 3-year development/implementation strategy for NGGPS is presented to NCEP and NWS leadership. Presentation can be accessed here.:

- NGAC implementation is withdrawn based on feedback from evaluators.
- Investigating source of discrepancies in the emission datasets and any model related issues.
- Revised implementation planned for August 2016.

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

NAM V4 upgrade (Implementation date moved to either 2016Q4 or 2017Q1 to allow for a robust solution for the CONUS nest failures with Hurricane Joaquin;, 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 for all domains; 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 2m Td bias during cool season.
- PBL changes to address maritime shallow cloudiness.
- Radiation/microphysics changes to address 2m 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 3h NDAS forecasts).
- Replace 3h NDAS (which only runs on the 12 km domain) with 6-h hourly assimilation "catch-up" cycle with hourly analysis updates for 12km parent/3 km CONUS and 3 km Alaska nest
- **Tentative: make 18h forecast of 12 km parent and 3 km CONUS/Alaska nest every hour (NAMRR); first step towards future convection allowing ensemble (ARW members (i.e., 3 km HRRR) + NMMB members (3 km NAM nests))**
- Now running 6h NAMRR "catchup" cycle with a 6h, hourly cycle of the 12 km parent, 3 km CONUS nest, and 3 km Alaska nest in real time, followed by full 60h forecasts of the CONUS/Alaska nests and 84h 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
- Hourly forecasts from NAMRR are now being run in real-time. These forecasts are associated with all domains having a distinct data assimilation cycle, i.e. the 12 km parent, 3 km AK nest, and 3 km CONUS nest.
- New observations assimilated :
    i. New satellite winds:
        1. MTSAT2 IMAGER WVct AMVs (JMA)
        2. 254 54 M7 IMAGER WVct AMVs
        3. M10 IMAGER WVct AMVs
        4. NOAA 15 AVHRR IR AMVs
        5. NOAA 18 AVHRR IR AMVs
        6. NOAA 19 AVHRR IR AMVs

7. METOPA AVHRR IR AMVs
8. METOPB AVHRR IR AMVs

ii. New GPS Radio Occultation Data
    1. METOPB 3 (subtype)

iii. New Satellite radiance data
    1. M10 Seviri
    2. metopb hirs4, amsua, mhs, iasi
    3. npp atms, cris
    4. f17 ssmis

iv. Resume use of AFWA snow depth product using envelope adjustment

v. 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.

vi. Use NESDIS burned area data in the NAM fire weather nest. Two "accumulation" burned area files are used: 2-day and 30-day. The greenness fraction and albedo is adjusted according to the 30 day data and the top layer soil moisture according to the 2-day data

NAM info from WCOSS Science Quarterly

RAP/HRRR Upgrade (Implementation targeted for mid/late June - implementation will occur concurrent with RTMA/URMA upgrade)

- RAP domain expanded to essentially match NAM domain (will include Hawaii)
- RAP forecasts extended from 18 to 21 hours; HRRR forecasts extended from 15 to 18 hours
- The major changes are targeted to reduce the warm, dry biases of both models

2c. Marine Modeling and Analysis Branch (MMAB)

Not represented

3. NATIONAL OCEAN SERVICE

Not represented

4. FEEDBACK FROM MDL/OPERATIONAL CENTERS/REGIONS

4a. MDL

- P-ETSS - Code handoff in the next 2 weeks
- GFS MOS and GMOS upgrade
  - Code handoff 4/27
- EKDMOS and National Blend of Models V2.0
  - Code handoff 6/7
- LAMP - MDL has developed an upgraded LAMP convection product that:
  - provides gridded convection guidance for 1-hr valid periods instead of 2-hr valid periods
  - uses the MRMS and Total Lightning data as predictand and predictors
  - uses the HRRR model output as predictors

  We are finding improved skill and temporal and spatial resolution with the prototype products.

  We are producing them 8 times a day experimentally, but will be adding to that soon. Interested users can see the experimental LAMP convection here:

  http://www.nws.noaa.gov/mdl/lamp/cnv1h.php

  This shows the current 2-h operational guidance on the left and the 1-h prototype experimental guidance on the right for convection (lightning will follow in time).

  Please direct any feedback on these products to Judy.Ghirardelli@noaa.gov and Jerome.Charba@noaa.gov.

4b. NCEP Centers

- Weather Prediction Center (WPC):
  - Flash Flood and Intense Rainfall experiment - June 20 - July 22. A total of 4 weeks, with a break the week of July 4.

- Storm Prediction Center (SPC):
  - HWT Spring Forecasting Experiment begins next week and runs for five weeks. Focus is on the generation of higher temporal resolution severe weather outlooks (i.e., 4-h periods) and the configuration of convection-allowing ensembles.

- 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)

Questions were raised regarding the need to continue running the DGEX. Andy Edman

took an action item to check with Alaska region if they still need it. The Centers and Regions attending this synergy meeting believe it is appropriate to sunset this model.

Question: Status update requested: The **EC/GFS Ensemble Spaghetti web page** http://www.emc.ncep.noaa.gov/gmb/tpm/emchpc/ens/index.html has been encountering off and on problems **since last Thanksgiving**. The main issue are the missing GEFS and EC ensemble members. This is a really popular page in the west -- and used a lot by the WFOs. I reported this problem during the NCEP review, in Dec 16, Jan 22 and Feb 26 emails and in March synergy notes. ***Is there any hope of making this a permanent- operational web page ?***

Answer from EMC: This page is still maintained by Tim Marchok, but there are plans to bring it under EMC's purview.

Question: Status update requested: ***HRRR:*** The HRRR is quite popular with the forecast offices. What is the status of the next update? *Note: CR also very interested in this WR question.*

Answer from NCO: There have been code stability issues on the supercomputer with this upgrade, and it is being worked on. Currently no estimated date is in place for the parallel to start.

Question for global group -- the latest GFS data 4dEnv assimilation upgrade did not result in the jump in forecast improvement that other national modeling centers experienced -- now that the upgrade is completed, any initial thoughts on why the GFS did not observe a similar increase in skill

- Southern Region (SR):

- Central Region (CR): Although we will continue to use the DGEX in our Day 4-7 SuperBlend forecasts until it stops running, I think it would be appropriate to sunset the model. This was talked about a couple of years ago at the NCEP Review 2014. We have to become as proficient at stopping things as we are at starting and improving on them.

  With the next URMA/RTMA upgrade, CR will adopt the use of URMA as ground truth and for bias correction in BOIVerify. We have been using MatchObsAll for our "obs" ground truth using a blended background using RTMA, RAP, HRRR, NAM, and LAPS. CR made a commitment to switch to RTMA/URMA at the December 2014 NCEP Review by January 2016. The unified terrain will make that possible. *NOTE: This commitment does not mean we feel the RTMA/URMA does not need additional work to improve on well documented issues in complex terrain and issues of balancing the influence of observations versus background fields.*

- Eastern Region (ER)
  - ER will follow up with Jesse Feyen and Jamie Rhome of NHC regarding the availability of the HSOFS model this hurricane season

5. National Water Center

- Currently working with NCO towards the start of the 30-day test May 9th, and implementation on June 21st.

6. NESDIS

Operational Commencement for Blended-Hydro Products with GCOM-W1 Capability: On March 30, 2016, the Blended-Hydro products will be implemented into operation as planned. The products have being generated and evaluated routinely on the test mode since Feb 1, 2016 and the Operational Readiness Review was conducted on Feb 29, 2016 and was passed without any issue identified. The decision briefing on the enhancement of blended-hydro products was presented to the OSPO/SPSD Division Chief on March 15, 2016 as required, and the transition of the blended-hydro products with GCOM-W1 capability into operation is approved.

This implementation will meet the requirement of JPSS L1RD supplements for continuity of operation for blended products, which include *blended TPW, Percentage of TPW Normal, and blended Rain Rate.* With the newly added GCOM-W1 capability, improvements on data quality, temporal refresh rate, and spatial coverage are expected, which enhance the quality of the blended-hydro products in support of NWS operation. (Limin Zhao, 301-683-3240)

Retirement of Legacy Sea Surface Temperature (SST) and Aerosol Product Suite: On March 16, the Satellite Products and Services Review Board (SPSRB) executive board gave final approval to retire the legacy polar satellite SST and Aerosol Optical Depth (over oceans) product suite. The Advanced Very High Resolution Radiometer (AVHRR) – based legacy SST product application had been in continuous production since the first TIROS-N launch in 1978. Aerosol optical depth products were added to the product suite in the late 1980s and received wide acclaim when they were able to highlight and track the June 15, 1991 Mount Pinatubo eruption and resulting plume for roughly two years after the eruption.

With one or two exceptions, all of the products in this product suite have been replaced with higher quality products in more modern formats and the majority of users of the legacy products have transitioned to the replacement products. This legacy product suite was discontinued on or about April 18. (J. Sapper, 301-683-3234)

Satellite Ocean Heat Content Suite inclusion of Cryosat-2 Sea Surface Height Anomalies: Sea surface height anomalies (SSHAs) derived from altimeters on multiple satellites are crucial to the computation of satellite derived ocean heat content. As of April 12, 2016 the operational Satellite Ocean Heat Content Suite of products is using Cryosat-2 SSHAs as input, in addition to Jason-2 and SARAL/AltiKa SSHAs. The benefit to users is increased global coverage of SSHA's. (David Donahue, 301-683-3236)

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7. Offline Discussions
Topic:
Lead:

The next Synergy Meeting is scheduled for Monday, June 27, 2016 at 2:30 pm EDT in NCWCP conference room 2890, with remote teleconferencing capability.

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