NCEP Synergy Meeting Highlights: March 12, 2018

This meeting was led by Mark Klein (WPC) and attended by Steven Earle (NCO); Eric Rogers, Ben Blake, Jacob Carley, Geoff Manikin and Vijay Tallapragada (EMC); Andy Dean (SPC); Jeff Craven (MDL), Ed Myers and John Kelley (NOS), Jack Settelmaier (SR), Brian Miretsky and Jeff Waldstreicher (ER), and Jason Taylor (NESDIS).

1. NOTES FROM NCO (*Steven Earle)*

NAEFS / CCPA / EKDMOS - On hold for at least another 2 weeks due to CMC data feed instability. Earliest implementation is beginning of May.

RAP / HRRR - NCO has been working on the code for a few weeks. We've got about a month left of testing before freezing the package. Target implementation is end of May or early June at this point.

PSURGE - Canned testing has begun. Implementation currently scheduled for early June but that may come forward based on successful canned storm testing and coordination with NHC.

GLOFS -
HYSPLIT -
SEA ICE -
These have just been assigned in NCO. Initial target implementations will be mid to late-June.

2. NOTES FROM EMC

2a. Global Modeling:

Original plans to have NCO take over running the FV3GFS-Beta later this spring have changed. NCO will disseminate the data, but EMC will continue to run the parallel. We still plan to start the official evaluation period in April or May. EMC and STI have made a formal proposal to implement the FV3GFS-Beta into operations in Q1 FY19 as a way of mitigating resource issues related to EMC parallels. This new plan is being assessed by the NCEP Director and NWS management.

2b. Mesoscale Modeling:

- RAPv4/HRRRv3

- Approval from NCEP Director on 2/2
- Codes have been handed off to NCO
- Upgrade includes extensions to f36 4x/day (00/06/12/18z)
- Upgrade includes HRRR Alaska
- Some new severe and winter parameters have been added
- See the 1/25 MEG presentation for full details on the package and the evaluation

- RTMA/URMA
    - Handed off updated codes/scripts for the RAPv4 and HRRRv3 implementation.
        - This will includes the update to the AK terrain and bugfix to pressure downscaling.
        - Freckling issue is still being investigated with downscaling, may be tied to grib2 encoding. Will work to submit RFC to get fix in with this change as directly impacts utility of URMA and NBM in WR.
    - Next RTMA/URMA/RU-RTMA upgrade (v2.7) still slated for October 2018
        - tentative changes include:
            - Improve RTMA-RU latency
            - Expand ceiling/sky analysis to OCONUS domains
            - Improve ceiling/visibility analysis
            - Fill gaps in precip analysis near coastlines
            - Updates to improve fits to obs
                - Use obs closest to analysis time instead of full window of obs
                - Update background error covariance for closer fit to data when first guess is highly variable [application for temperature here]
            - Update wind QC lists for mesonets
            - Remove legacy coarse-resolution grids
            - Use HRRR-AK in AKRTMA/AKURMA
            - Hourly Guam RTMA to support NBM
        - Early evaluation parallel in mid/late March
        - Official evaluation parallel to start in April

- HREF v2.1 : EMC has tentative plans to implement an upgrade to HREF in the October-December 2018 time frame. Possible changes include adding the extended HRRR runs, adding (at the request of SPC) a few additional severe wx fields to the NAM nest for it to be consistent with Hiresw/HRRR model output (-10C level reflectivity, 100-1000 mb hourly max updraft speed, 0-3 km and 2-5 km AGL hourly minimum updraft helicity), refine the generation of probabilistic output, and add bias corrections.

2c. Marine Modeling

3. EARTH SYSTEM RESEARCH LAB

- RAPv4/HRRRv3
  - NCEP Director Approval 2 Feb 2018
  - NCO code delivery completed
  - Additional diagnostics will be available including some highlights:
    - Min/Max Updraft Helicities over 0-2,0-3,2-5 km layers
    - Max Relative Vertical Vorticities over 0-1,0-2 km layers
    - Max graupel/hail diameter in column and at surface
    - Accumulated freezing rain
  - 29 May 2018 operational implementation (estimate)
  - RAP 39hr fcsts at 03z, 09z, 15z, 21z, 21 hrs otherwise
  - HRRR-CONUS 36hr fcsts at 00z, 06z, 12z, 18z, 18 hrs otherwise
  - HRRR-Alaska, 36hr fcsts at 00z, 06z, 12z, 18z
  - HRRR-Alaska, 18hr fcsts at 03z, 09z, 15z, 21z

- ESRL/GSD RAPv4 (will become RAPv5 prototype) 09/21z 51hr
  - https://rapidrefresh.noaa.gov/RAP
- ESRL/GSD HRRRv3 (will become HRRRv4 prototype) 00/12z 48hr
  - https://rapidrefresh.noaa.gov/hrrr/HRRR
- ESRL/GSD HRRRE, now re-configured post-Winter Weather Experiment
  - Nine forecast members + ensemble products
  - 00z 36 hr full CONUS forecast
  - 12/15/18z 24 hr half-CONUS forecasts (resource constrained)
  - 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
  - Plan to merge with experimental HRRRv4 prototype before mid-April
  - https://rapidrefresh.noaa.gov/hrrr/HRRRsmoke

4. NATIONAL OCEAN SERVICE *(Ed Myers/John Kelley)*:

- GLOFS-Fixes (Code and script fixes to improve the Great Lakes Operational Forecast System)
  - Code delivered to NCEP on 2/26
- Hurricane Surge On-demand Forecast System (HSOFS) Upgrade
  - Science Briefing on Thursday, 3/15
  - Water level bias correction
  - More flexible options for ensemble simulations

5. FEEDBACK FROM MDL/OPERATIONAL CENTERS/REGIONS

5a. MDL (*Jeff Craven*)

- NBM: MDL is planning to turn over the NBM V3.1 code package to NCO in late March for a July 2018 Implementation. Work is beginning on NBM V3.2 which will continue to populate NWS Program service gaps. Additional Probabilistic information will be added to V3.2 (i.e., PQPF, Snow Amount Exceedance, MaxT/MinT)

- EKDMOS: Development for V2.2 (expanded CONUS and AK grids for NBM; inclusion of additional MOS forecasts; add PQPF, wind speed, and apparent temperature forecasts; addition of text products) has been completed. Testing has been conducted along with reforecasts for verification.

- GMOS: Expanded CONUS grids to support the NBM have been completed. Development of expanded Alaska grids has completed. Testing and reforecasts for verification is complete. Timing issues and Bugzilla tickets are currently being addressed.

- LAMP/GLMP: the LAMP/GLMP implementation which adds 1-hr convection and lightning guidance, as well as produces 15-minute updates of guidance for ceiling and visibility out to 3 hours, was implemented into NWS Operations on January 25, 2018. Development for V2.2 (redeveloping ceiling and visibility [C&V] guidance using upgraded GFS MOS and HRRR inputs, expanding GLMP domain for C&V to match the NBM domain, expanding LAMP/GLMP C&V to cover the 36 hour period, and adding 1-h POP and PQPF to the GLMP suite of products) continues with expected implementation in Q1 FY19.

- GFS/NAM MOS: New NAM MOS guidance for PoP/QPF, Ceiling/Sky Cover, and Visibility/Obstruction to vision was implemented on Jan 24. However, it appears that new thresholds for QPF and VIS were not added to the fix file turned over to NCO. There may also be issues with ceiling height thresholds. We have been working with NCO to test an updated threshold file that appears to address the QPF and vis issues. Additional investigation may be necessary to get to the root cause of forecaster-reported issues with the ceiling height forecasts before any updates to the NCO jobstream are attempted.

  A new package of Ceiling/Sky Cover and Visibility/Obstruction to vision guidance also has been developed for the GFS MOS system. This is

scheduled to be implemented alongside the new GMOS and NBM v3.1 in late July. To minimize downstream impacts on LAMP, we plan to continue running the existing MOS equations for these elements in parallel until the new LAMP guidance is in place.

- P-Surge: NCO/MDL are actively working to implement P-Surge 2.7 before the upcoming hurricane season.

- P-ETSS: MDL is developing P-ETSS 1.1 / ETSS 2.3 which will update the East Coast basin, update the gulf of Mexico basin, and use the 42 member NAEFs for 00 and 12Z while using the 21 member GEFS for 06 and 18Z. The coordination meeting with NCO is planned for the end of March (roughly March 28).

5b. NCEP Centers

- Weather Prediction Center (WPC):

- Storm Prediction Center (SPC):
  - SPCSREF post-processing job was updated by NCO to allow for 1-h calibrated thunderstorm probabilities for NBM
  - HWT Spring Forecasting Experiment: April 30 - June 1; Please provide information regarding expected participants by next week

- 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 V1.2 implemented into operations on March 6th. Version 2.0 now under development and scheduled for January 2019 implementation.

7. NESDIS

GOES-S Launch Successful: On March 1, GOES-S lifted off from Cape Canaveral at 1702 ET, right at the beginning of the launch window. The spacecraft was delivered to orbit successfully, deployed solar arrays and achieved sun-pointing. Once GOES-S is positioned in a geostationary it will be renamed GOES-17. Later this year, after undergoing a full checkout and validation of its six high-tech instruments, the new satellite will move to the GOES-West position and become operational. (P. Sullivan, 301-575- 4496)

NASA Officially Handovers of NOAA-20 Satellite to OSPO: NASA and the NESDIS Office of Satellite and Product Operations (OSPO) conducted their Post-Launch Acceptance Review and Handover Readiness Review on Mar 6 and 7. OSPO accepted ownership of the satellite on Mar 7. (M. Danehy, 301-817-4253)

GOES-16 Advanced Baseline Imager (ABI) Level 2 Atmospheric Motion Vectors (AMV) Binary Universal Form for the Representation of meteorological data (BUFR) products are available on the Global Telecommunications System (GTS): The GOES-16 AMV (also named as Derived Motion Winds) BUFR products have been posted on the GTS after the products archived Provisional Validation Maturity on February 9th, 2018. The GOES-16 AMV BUFR products on the GTS are available via

the new BUFR Table (recently approved by the WMO) and the heritage BUFR Table (same as legacy GOES AMV BUFR Table). Currently the Numerical Weather Prediction (NWP) centers including NOAA/NCEP and FNMOC use the AMV BUFR products in operation. The availability of the GOES-16 AMV BUFR products on the GTS would benefit all NWP centers and help them assimilate the GOES-16 AMV products into the Numerical Weather Prediction Models timely. (Hongming Qi, 301-683-3238)

Jason-2 out of Safe Hold: On February 20, at 1840Z, the Jason-2 spacecraft entered Safe Hold Mode (SHM), immediately interrupting its measurements. Investigations showed that the Safe Hold Mode was triggered by the same gyrometer failure as before. Safe Hold recovery began March 1. The Poseidon Altimeter and all payload instruments were restarted around 1000Z on March 2. However, in order to take sufficient time to check the quality of the products generated, the first post-SHM Operational Geophysical Data Records (OGDRs) were not be disseminated until March 5. (Dave Donahue, 301-683-3236)

Meteosat-10 to Meteosat-11 Transition: EUMETSAT's transitioned from Meteosat-10 to Meteosat-11 operations on February 20th, 2018. OSPO successfully processed and distributed Meteosat-11 products to its users. (John Paquette, 301-683-3237)

Jason-3 Sea Surface Height Anomalies as input to the Satellite Ocean Heat Content Suite for the Pacific: Use of Jason-3 Sea Surface Height Anomalies as input to the Satellite Ocean Heat Content Suite began 31 January 2018 for the North Pacific basin and 2 February 2018 for the South Pacific basin, in addition to Sea Surface Height Anomalies from Jason-2, SARAL/AltiKa, and Cryosat-2.
Links to all basins can be found on the Satellite Ocean Heat Content Suite home page:
http://www.ospo.noaa.gov/Products/ocean/ocean_heat.html
(David Donahue, 301-683-3236)

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8. Offline Discussions
Topic:
Lead:

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

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