NCEP Synergy Meeting Highlights: March 25, 2019

The primary foci of the monthly NCEP synergy meeting are:
- NCO provides an update for upcoming model implementations
- EMC, ESRL, NOS, MDL, and OWP write brief updates regarding current and planned development of their respective modeling systems
- NESDIS provides any recent satellite-related information
- Centers and Regions can communicate feedback regarding operational or experimental model performance, make requests for products/output from developers, or highlight upcoming events (such as HMT experiments)

This meeting was led by Mark Klein (WPC) and attended by Steven Earle (NCO); Ben Blake, Jacob Carley, Eric Rogers and Geoff Manikin (EMC); Curtis Alexander (ESRL); Dave Rudack (MDL); Austin Cross (AWC); Andrew Penny (NHC); Jack Settelmaier and Greg Patrick (SR); Brian Cosgrove (OWP); Bill Bua (COMET), and Jason Taylor (NESDIS)

1. NOTES FROM NCO (*Steven Earle*)

GFS/GDAS - TBD

HYSPLIT - TBD; coupled with GFS/GDAS

NWM - 30 day stability test starting this week. Implementation scheduled for May 7

Wsa-enlil - On track for end of May implementation

Transition to Phase 3 WCOSS is on track and scheduled to complete at the end of CY19.

2. NOTES FROM EMC

2a. *Global Modeling*:

The FV3GFS implementation is being delayed while the cold, snowy bias of the current winter is investigated. The model clearly became colder this winter due to fixing a bug in the radiation driver in September. EMC has been testing a new configuration that allows the radiation scheme to interact with the different types of hydrometeors - results indicate that this reduces the cold bias. EMC got approval last week from the NWS Executive Council to have an OD briefing with field input next week - an overview of the testing and proposed implementation will be sent to the centers and

regions within the next 2 days.

2b. Mesoscale Modeling

<u>FV3 Convection Allowing Model development (HREFv3 and RRFS development - collab. across multiple orgs)</u>
- Running several in-house parallels of FV3 at 3km and CONUS wide for testing
- Still early in development - plan to evaluate in HWT SFE
  - Candidate HREFv3 configurations
- Hourly max severe weather fields now available
- Graphics from real time parallels [*all runs/graphics are subject to machine outages, are not monitored, very experimental, etc.*]:
  - [HREFv3 test run, feature one 00Z FV3-CAM member and HRRR extension(s) - HiResW NMMB member(s) removed](#)
  - [3 km FV3 with data assimilation vs 3 km NAM CONUS nest](#)
  - [This page includes:](#)
    - 3 km FV3 with data assimilation vs without data assimilation
    - 3 km FV3 standalone regional (SAR) vs. nested 3km

<u>RTMA/URMA:</u>
- Possible update to QPE mask in WR along coastline to address nearshore discontinuities/clipping in QPE.
  - NCO is onboard following discussion.
  - Timeline is still TBD but will either occur alongside the Phase 3 (Dell) transition or sooner.
- Phase 3 (Dell transition)
  - Going well, currently ahead of schedule. No science changes with this.
  - On track for hand off in June/July 2019, implementation in August 2019
- v2.8
  - Reduce low wind speed bias
    - Account for mesonet sensor height in analysis for mesonets
  - Expand significant wave height to include Great Lakes
    - Subject to issues related to ice-cover during winter
  - Increase grid resolution over Puerto Rico
    - 2.5 km --> 1.25 km
  - Re-tune sky cover analysis
  - Add snow cover analysis from NOHRSC (if ready)
  - Science evaluation: Summer/Fall 2019
  - Implementation: Late Winter/Early Spring (Q2) 2020
- **3DRTMA [collab. with GSD, SPC, AWC, FAA]**
  - Full column representation and physically consistent analysis of 3D

meteorological fields
  - ○ Will replace 2D RTMA/URMA ~ earliest time frame is 2021
  - ○ Real time testing this spring in HWT SFE and other testbeds (e.g. AWT).

2c. Marine Modeling

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

- ESRL/GSD RAPv5/HRRRv4 (now includes smoke forecasts)
  - ○ 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)
      - RAP/HRRR-smoke prediction inclusion
    - ■ More testing and discussion with EMC will follow:
      - RAP/HRRR forecast length extensions (51/48 hrs at 09z/21z and 00z/12z)
      - Hourly HRRR-AK cycling
      - HRRR Hawaii domain
  - ○ RAPv5/HRRRv4 implementation schedule for March 2020 (approx)
    - ■ 6/1/19 code delivery
    - ■ 8/15 start official evaluation
    - ■ 10/15 evaluation ends
    - ■ 11/1 code delivery to NCO
    - ■ 2/10/20 start 30 day IT test
    - ■ 3/23/20 implementation
  - ○ Evaluation this spring/summer in HWT/HMT/AWT

- RTMA-3D
  - ○ Prototype development with EMC
  - ○ A prototype experimental real-time example with grids and graphics: https://rapidrefresh.noaa.gov/hrrr/HRRRrtma/
  - ○ Two more years of development planned with improved analysis and post-processed products
  - ○ Evaluation this spring/summer in HWT/AWT

- ESRL/GSD HRRRE
  - Nine forecast members + ensemble products
  - Switched to full-CONUS runs with (at least):
    - 00z to 36 hrs
    - 12z to 18 hrs
    - 18z to 18 hrs
    - 21z to 12 hrs
  - Leverages HRRR-TLE post-processing for product generation
  - https://rapidrefresh.noaa.gov/hrrr/HRRRE
  - Evaluation this spring/summer in HWT/HMT/AWT

- SAR (Stand Alone Regional) FV3
  - Collaboration with EMC, NSSL on testing/development
  - First tests with RAP/HRRR physics using CCPP interface in SAR FV3 on RAP/HRRR "grids"
  - Potential real-time RAP/HRRR IC/BC/CCPP physics for HWT SFE

4. NATIONAL OCEAN SERVICE:

Code package for NOS models transitioning onto Phase 3 was delivered to NCO on March 5, 2019. This package includes all existing NOS models in production suite and two new models of Cook Inlet model (CIOFS) and Lake Michigan and Huron (LMHOFS).

5. FEEDBACK FROM MDL/OPERATIONAL CENTERS/REGIONS

5a. MDL
- Statistical Modeling Branch (SMB):
  - SCN Sent out for April 16, 2019 termination of GEFS MOS (run on IBM and won't be migrated to Dell - use EKDMOS)
  - Preparing NBM v3.2 DRG request and data for AWIPS testing.
  - NBM v3.2 GRIB2 available here (including new Guam sector)
  - NBM v3.2 text files available here, including new probabilistic bulletin NBP. We have added about 2,000 new stations including those requested by NCEP Centers (RAWS and Ocean points)
  - Verification to SSDs/collect comments - **June 14, 2019**
  - NCEP Science Director Briefing - **July 23, 2019**
  - Final Code Delivered to NCO - **July 30, 2019**
  - 30 Day IT Stability Test on WCOSS - **First week Oct. 2019**
  - NCO Implementation - **Nov. 5, 2019**
  - NBM Development Living Blog NBM Development Living Blog

- ■ NBM v3.2 scientific evaluation form due May 31st. [NBM v3.2 Evaluation Form](#)
- ○ Digital Forecast Services Branch (DFSB):
  - ■ LAMP:
    - ● We began a user evaluation for the LMP/GLMP v2.2.0 upgrade which includes: redevelopment of ceiling (C), visibility (V), and obstruction to vision (OBV) guidance out to 38 hours; expansion of the GLMP CONUS domain for C&V&OBV to match the NBM domain in the CONUS; and the addition of 1-, 6-, and 12-h POP Gridded LAMP guidance. This upgrade also includes new guidance for KSBD and the transition from the identifier of K36U to KHCR, which are changes requested by the field.
    - ● The upgraded guidance is currently available experimentally at: https://www.weather.gov/mdl/lamp_experimental
    - ● The evaluation will run until Monday April 1. For more information on the implementation, please see our [documentation page](#).
    - ● For the User Evaluation Form for submitting feedback about the implementation, please access the Google Form [here](#).
    - ● NCEP Science Director Briefing - **April 2, 2019 at 1pm.**

5b. NCEP Centers
- ● Weather Prediction Center (WPC):
  - ■ Flash Flood and Intense Rainfall experiment is slated to take place for 4 weeks from June 17-July 19 (off the week of July 4)

- ● Storm Prediction Center (SPC):
  - ■ HWT Spring Forecasting Experiment: April 29 - May 31
  - ■ Working to finalize participants by the end of the month, so please provide feedback/interest, if you have not already done so

- ● National Hurricane Center (NHC):
  - ■ Need guidance on final decision about implementation of FV3GFS soon, since 2019 TC guidance code suite, which has numerous dependencies on GFS, must be delivered to NCO in April.

- ● Ocean Prediction Center (OPC):

- Aviation Weather Center (AWC):
    - Summer Experiment Aug 19-23
    - Finalizing experiment specifics and invite by end of month
    - Focus on C&V forecasting, GFA web eval, day 2 convection

- Climate Prediction Center (CPC):

- Space Weather Prediction Center (SWPC):

5c. NWS Regions

- Pacific Region (PR):

- Alaska Region (AR):

- Western Region (WR):

- Southern Region (SR): SR requests that any decisions to delay major implementations (such as GFSv15) be communicated to the regions and centers prior to issuing the SCN. For those that are not subscribed to SCNs or missed the NCEP Synergy call, the first word of the FV3-GFS delay was via Twitter or major media outlets.

- Central Region (CR):

- Eastern Region (ER):

6. Office of Water Prediction
- NWM V2.0 30-day NCO IT stability test scheduled to start this Thursday, March 28th. Implementation scheduled for May 7th. Highlights: includes 7-member ensemble medium-range configuration and domain expansion to cover Hawaiian Islands.

7. NESDIS

Jason-2 Remains In SafeHold Mode (SHM):
- On February 16th, Jason-2 entered SHM, and re-entered SHM on Feb 19, mid-way through the recovery.
- Jason-2 will remain in SHM until May 21 for a hibernation period to produce a gyro healing effect for longer periods of operation without entering SHM.
- Jason-2 will be put back into the Long Repeat Orbit before entering the Atlantic Hurricane season.

NOAA-20 NUCAPS (Phase 4 Part 2) CrIS/ATMS Environmental Data Records (EDRs) Products Operational:
- On March 7 2019, declared the NOAA-20 NUCAPS (phase 4, part2) EDRs products operational.
- This operational implantation includes the cloud information (cloud mask and cloud height) in the CrIS Sensor Data Records (SDR); and the profiles of Temperature, Water Vapor, Ozone, and trace gases (CH_4, CO, CO_2, HNO_3, N_2O, and SO_2), as well as Outgoing Longwave Radiations (OLR) in the Environmental Data Records.
- NUCAPS sounding products are displayed in Advanced Weather Interactive Processing System (AWIPS) and used for weather forecasts and National Centers for Environmental Prediction (NCEP) uses the SDR products for model data assimilation. (Dr. A. Sharma, 301-683-3229)

NOAA-20 Microwave Integrated Retrieval System (MiRS) Products Operational:
- On March 7, 2019, the MiRS NOAA-20 products were successfully implemented into operations at NDE/OSPO.
- This implementation meets the JPSS requirement for 11 NOAA-20 ATMS products, including Total Precipitable Water, Rainfall Rate, Sea Ice concentration, etc.
- The addition of NOAA-20 doubles the number of ATMS overpasses and improves spatial and temporal coverage of the MiRS products. (L Zhao,

301-683-3240)

The next Synergy Meeting is scheduled for Monday, April 29, 2019 at 2:30 pm EDT in NCWCP conference room 2890, with remote teleconferencing capability.

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