NCEP Synergy Meeting Highlights: November 27, 2017

This meeting was led by Mark Klein (WPC) and attended by Steven Earle (NCO); Glenn White, Jacob Carley, Vijay Tallapragada, Ben Blake and Eric Rogers (EMC); Steve Weiss and Andy Dean (SPC); Dave Rudack (MDL), Curtis Alexander (ESRL), Bill Bua (COMET), Greg Patrick (SR), Jeff Waldstreicher (ER), and Jason Taylor (NESDIS).

1. NOTES FROM NCO (*Steven Earle*)

LMP/GLMP - NCEP OD briefing on December 1. Implementation December 5
http://www.nws.noaa.gov/os/notification/scn17-101lamp2_1aaa.htm

ETSS/PETSS - NCEP OD briefing on December 1. Implementation December 6
http://www.nws.noaa.gov/os/notification/scn17-63etss_petssaac.htm

RTMA/URMA - NCEP OD briefing on December 5. Implementation December 12
http://www.nws.noaa.gov/os/notification/scn17-105rtma_urma_namaab.htm

NOS GoM - NCEP OD briefing TBD in early-mid December. Implementation the week of December 11.
http://www.nws.noaa.gov/os/notification/scn17-108nos_gomofs.htm

Global Wave - 30-day IT stability test starting today. Implementation scheduled for January 9
SCN coming soon...

NWPS - 30-day IT stability test restarting today. Implementation scheduled for January 10
http://www.nws.noaa.gov/os/notification/scn17-84nwpsupgradeaac.htm

NCO started working on NAM-MOS, NAEFS, ESTOFS-Micronesia and NWM. More details coming soon but implementations are likely end of January and into February.

2. NOTES FROM EMC

2a. Global Modeling (*Glenn White*):

FV3-GFS testing continues, with preliminary graphics available at http://www.emc.ncep.noaa.gov/mmb/cguastini/fv3/fv3images.html   This is a very early version of the model which does not contain its own DA or cycling; it is initialized off of the GFS.   A fully-cycled test version of the FV3-GFS will become available later in the winter.

Verification is available online at:

- Monthly GFS *vs.* FV3GFS QPF scores:
  http://www.emc.ncep.noaa.gov/mmb/ylin/pcpverif/scores.fv3/
- Daily QPF images: http://www.emc.ncep.noaa.gov/mmb/ylin/pcpverif/daily/
  (ConUS; link in each day's page for the day's OConUS images)
- http://www.emc.ncep.noaa.gov/gmb/wx24fy/NGGPS/fv3gfs_rt/: Additional FV3
  performance statistics using GFS as analysis
- Via MetViewer: http://metviewerdev.ncep.noaa.gov/, database: mv_ylin_pcp

FV3 precip skill scores are higher than GFS scores; daily plots sometimes show smoother fields with lower maxima than the GFS or verifying analysis.

2b. Mesoscale Modeling *(Eric Rogers, Ben Blake, Jacob Carley)*

V2.6 RTMA/URMA/RTMA-RU:
> The stability 30-day clock for the RTMA/URMA upgrade was reset on November 7th. The new, expected implementation date is December 12th.
>
> It was noticed that the temperature bias correction was leading to erroneously extreme values in the RTMA-Rapid Update temperatures analysis. When developers switched off the bias correction, the problem was solved. This only impacts the temperature analysis field and the specific humidity field in RTMA-RU, both of which are improved. All other analysis fields, including C&V, are *not* impacted by this change - as expected. More details about the change can be found in the below presentation:
>
> https://docs.google.com/a/noaa.gov/presentation/d/1d3Z7wOG87Qa8cLvI4j8i6U3Y8VoDouzDFS_ADSeN7I8/
>
> Updated SCN:
> http://www.nws.noaa.gov/os/notification/scn17-105rtma_urma_namaab.htm

V2.7 RTMA/URMA/RTMA-RU:
> Development continues for this package. This upgrade includes modifications to the background error covariance to allow closer fits to the observations, with an initial focus on temperature. Additional changes highlighted: improved fit to obs for C&V, updated wind-direction QC, improved RTMA-RU latency, as well as expanded support for OCONUS ceiling, sky cover, and waves (waves are URMA-only). The official parallel for evaluation is planned to start in early December, with an expected implementation in May 2018.

HiresWv7/HREFv2: Implemented on 1 November 2017, go here for details.

EMC's HREF page : http://www.emc.ncep.noaa.gov/mmb/mpyle/href_v2awips/

EMC's HiresW page : http://www.emc.ncep.noaa.gov/mmb/mmbpll/ncep_hiresw/

The RAPv3/HRRRv4 official evaluation is underway.   The central web page is http://www.emc.ncep.noaa.gov/mmb/bblake/rap_hrrr/   Web pages (listed on that site) are available for CONUS and Alaska; actual grib files are available on an ftp server and on para nomads.

2c. Marine Modeling

Ocean:
The Global RTOFS was upgraded to ver 1.1.0 as of Oct 17, 2017

Waves:
The Global Wave Deterministic system Multi_1 will be upgraded in Jan 2018 to include a polar stereographic Arctic grid, and hourly grib2 output to 120h.
NWPS v1.2 is on track to be upgraded on Nov 28, 2017.

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

- RAPv4/HRRRv3 EMC science evaluation underway (mid-Nov to mid-Jan):
    - 1 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

- WWE real-time experimental ESRL/GSD runs:
    - RAPv4 (will become RAPv5 prototype) 09/21z 51hr
    - https://rapidrefresh.noaa.gov/RAP
    - HRRRv3 (will become HRRRv4 prototype) 00/12z 48hr
    - https://rapidrefresh.noaa.gov/hrrr/HRRR
    - HRRRE (55% CONUS), nine members + ensemble products
        - Currently 00z/12z 36 hr
        - Attempting to reconfigure to 09z/21z 51 hr
        - Leverages HRRR-TLE post-processing for product generation
        - https://rapidrefresh.noaa.gov/hrrr/hrrrtle
    - https://rapidrefresh.noaa.gov/hrrr/HRRRE

- Real-time experimental 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 in the next month
- ○ https://rapidrefresh.noaa.gov/hrrr/HRRRsmoke

4. NATIONAL OCEAN SERVICE

5. FEEDBACK FROM MDL/OPERATIONAL CENTERS/REGIONS

5a. MDL (*Judy Ghirardelli, Mark Antolik, Arthur Taylor, John Wagner, Jeff Craven*)

GFS MOS and LAMP - Implementation of the upcoming GFS MOS ceiling/sky cover and visibility and obstruction to vision equations has been postponed to allow time for the LAMP group to redevelop downstream equations for these elements. Shortly after approval for implementation in October, it was discovered that the new MOS equations were different enough that they were adversely impacting some LAMP and LAMP Meld products. The new GFS MOS system will now be implemented in tandem with an updated LAMP system in mid-2018.   The companion NAM MOS systems, plus an updated set of NAM MOS PoP/QPF equations, will be implemented in January, as originally planned.

The Probabilistic Extra-Tropical Storm Surge v1.0 (P-ETSS) and ETSS v2.2 implementations continue their 30 day stability testing (ending Dec. 1) with a planned implementation on Dec. 5. The planned P-Surge v2.7 implementation had to be "re-scoped". That has been done and coordinated with NCO, NHC and MDL. It will be a technical upgrade with code delivery in late Dec.

The LAMP/GLMP v2.1.0 implementation had a failure during the 30-day IT test at NCEP. This led to the discovery of a small bug that resulted in one step in the supplemental quality control done in LAMP on the MRMS radar not being done as intended. The impact on the forecasts was minimal. The impact was assessed and documented, and the resulting presentation can be shared with anyone interested. The code was fixed, and the 30-day IT test was restarted on October 23, 2017, with the implementation currently scheduled for December 5, 2017.

EKDMOS V2.2 - Development continues on the expanded CONUS and Alaska domains to support the NBM. Code that combines GFSMOS, NAMMOS, ECM/ECME MOS, and LAMP forecasts along with EKDMOS GEFS and CMCE forecasts is currently being tested. Text products to support the new forecasts are also in development.

GMOS - Development of expanded CONUS grids to support the NBM is nearing completion. The CONUS update also includes a retuning to add Mesonet

stations. Development of expanded Alaska grids is underway.

NBM V3.1 - Much of the initial code is written and we are in the process of integrating all of the components into the WCOSS Dev Cron. We are targeting December 1st to have everything running routinely (WCOSS Dev machines permitting).   Expecting to spend much of December fixing bugs and hoping to freeze code in mid January.

Some of the newer items that are running routinely:

Fire Weather: Mixing Height, Transport Wind, Ventilation Rate
Aviation: Max Hourly Reflectivity, VIL
Winter: SnowAmt01, SnowAmt06, IceAmt01, IceAmt06

Items that we are working on but not quite running (should be up in December):

30 meter and 80 meter wind
Significant Wave Height
LLWS (for TAF formatters)
Echo Tops
Haines Index
Fosberg Index
Predominant Weather
QPF06 10th and 90th percentile
1 hour and 12 hour thunderstorm probabilities

Current plan is to have Dec-Feb verification for a mid March NCEP Director Science brief and hand off code to NCO in mid-late March for a July 2018 implementation.

5b. NCEP Centers
- Weather Prediction Center (WPC):

- Storm Prediction Center (SPC):

- 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): Request:

The FV3 information shared in the October notes was the schedule -- any insight that can be offered about initial FV3 performance?

Answer: See links above under "Global Modeling" to access verification data. In addition, there is a SOO/DOH Model Evaluation Group team dedicated to assessing the FV3 and operational GFS. There is a VLab site where performance feedback is being organized, and comments on performance are welcome!

 RTMA -- reference to change sent out via email and in the Oct notes -- what does "turning off bias correction" really mean?   Going thru the math .. Are we now not nudging the first guess back toward the hourly observations or did we eliminate a long term observation/location bias?

Answer: No change was made to hourly RTMA/URMA, only the rapid update version (the RTMA-RU with 15 minute updates). We had to remove the bias correction for this system as it was introducing unphysical temperatures in RTMA-RU analysis.

- Southern Region (SR):

- Central Region (CR):

- Eastern Region (ER):

6. Office of Water Prediction

- Science evaluation complete for NWM V1.2 and code handed off to NCO for implementation in March. Work now commencing on NWM V2.0 with implementation scheduled for next Fall.

7. NESDIS

JPSS-1 Launch:

- Joint Polar Satellite System-1 (JPSS-1) launched successfully on November 18 at 0947z (0447 ET).
- The vehicle was successfully delivered to its planned orbit by the Delta II launch vehicle and the Launch team began initialization of the spacecraft, expected to last for 90 days.
- Renamed NOAA-20 in orbit, the satellite's next-generation technology will help improve the timeliness and accuracy of U.S. weather forecasts three to seven days out.
- Scientists and forecasters will be able to use the satellite's data officially after its five advanced instruments, all significantly upgraded from those on NOAA's previous polar-orbiting satellites, complete three months of tests.
- The satellite is designed to operate for seven years, with the potential for several more years.

GOES-13 to GOES-16 Product Transition Information

- Once the GOES-13 GVAR data stream is deactivated on January 2, 2018, a number of satellite derived products using GOES-13 data will be impacted. NOAA/NESDIS plans to produce a set of equivalent products from the new GOES-East satellite, GOES-16.
- In some cases, products will be degraded as a result of the loss of GOES-East coverage or discontinued entirely.
- To facilitate user awareness and effectively prepare for the transition from GOES-13 to GOES-16 GOES-East operations, the Office of Satellite and Product Operations (OSPO) has established the following informational webpage: (http://www.ospo.noaa.gov/Operations/GOES/16/transition.html).
- Specifically, users may click on the "Product Transition Status" link on the right side of this webpage to view detailed information on the transition status of the products.

GOES-16 Drift and Transition Plan

- November 30, 2017: GOES-16 ABI, GLM, SUVI, SEISS, and EXIS are put in safe or diagnostic mode and GRB, DCS, HRIT/EMWIN, and SARSAT are disabled between 1300-1430 UTC
- November 30, 2017: GOES-16 drift begins after 1430 UTC

- November 30, 2017: GOES-13 drifts slightly from 75 degrees West to 74.5 degrees West.
- December 7, 2017: GOES-13 GVAR relay through GOES-14 GVAR begins (GOES-13 GVAR still transmits until December 14th to allow users time to repoint antennas)
- During drift, no instrument data will be captured or distributed from ABI, GLM, EXIS, SUVI, and SEISS. MAG data will still be distributed but with data outages on days of drift start (11/30) and drift stop (12/11)
- During drift, GRB, DCS, HRIT/EMWIN, and SARSAT will be disabled
- December 11, 2017: GOES-16 drift ends and calibration activities begin
- December 14, 2017: GOES-13 GVAR available only through GOES-14 GVAR
- December 14-20, 2017: GOES-16 resumes nominal operations and GOES-East operational status after calibration activities
    - GOES-16 GRB, DCS, HRIT/EMWIN and SARSAT are activated
    - GOES-16 products continue validation towards Provisional and Full Maturity levels
    - Provisional Products (ABI L1b and CMI) no longer require 'preliminary, non-operational' data caveat language
- No maneuvers / special operations during Thanksgiving and Christmas holidays
- No GOES-East transition / interruption during designated Critical Weather Days
- January 2, 2018: GOES-13 will stop transmitting data and begin drift to storage location
- January 22, 2018: GOES-13 will reach storage location at 60 degrees West
- See http://www.goes-r.gov/users/transitionToOperations.html for additional information.

GOES-14 EMWIN Broadcast Available
- On or before December 11, 2017, the Emergency Managers Weather Information Network (EMWIN) broadcast from GOES-14 will be activated and remain active for six (6) months.
- The broadcast from GOES-14 provides GOES-East users an additional opportunity to continue to use their existing EMWIN satellite receivers and software, while making preparations for transitioning to the new HRIT/EMWIN broadcast which is scheduled to become operational between December 14-20, 2017, when GOES-16 replaces GOES-13 at the GOES-East station at 75.2 degrees West.
- GOES-14 is expected remain in its present geosynchronous orbit at 105 degrees West, throughout this service period. The GOES-14 EMWIN Broadcast will terminate on or about June 13, 2018.

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8. Offline Discussions
Topic:
Lead:

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

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