

Progress and plans for the use of radiance data in the NCEP global and regional data assimilation systems

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12th June 2019 Global Model Upgrade

- Forecast model is now based around the Finite-Volume Cubed-Sphere dynamical core.
- All-sky radiance assimilation for ATMS
- Add moisture sensitive channels for IASI and CrIS.
- Implement channels 5 and 6 for SEVIRI on Meteosat-11.
- Assimilate radiances from Saphir on Megha-Tropiques.
- OMPS Nadir Sounder assimilated
- Metop-B ASCAT winds assimilated.
- NOAA-20 CrIS, AMSU-A and MHS radiances as well as GOES-16 AMVs included prior to this upgrade
- Improvements to the use of climatology in Near Sea-Surface temperature analysis.

November 2019 Planned Data Upgrade

- Assimilate radiance from Metop-C AMSU-A and MHS
- Assimilate GOES-17 AMVs
- Assimilate KOMPSAT-5 GPSRO and prepare to monitor COSMIC-2

January 2021 Global Model Package (GFS v16)

- Upgrade is primarily to increase the number of model levels from 64 to 127.
- Introduction of correlated observation errors for IASI and CrIS (Kristen Bathmann, 13.04)
- Use of water vapor channels for Meteosat-8, Himawari-9 and GOES-16 infrared imagers. (Haixia Liu, 4.01, Xiaoyan Zhang, 3p.10)
- Inclusion of sub-gridscale cloud and cloud fraction for microwave all-sky radiances and QC for cold-air outbreaks.
- Assimilation of AMSU-A Ch 14 and ATMS Ch. 15
- NOAA-20 VIIRS winds and more aggressive use of ASCAT winds
- Increased use of aircraft data including LATAM and TAMDAR
- 4D-Incremental Analysis Update and replace EnSRF with LETKF

Future Work

- All-sky infrared assimilation
- Extension of all-sky assimilation to precipitating conditions.
- Microwave all-sky assimilation over land surfaces. (Yanqiu Zhu 5.04)
- Getting ready for MTG-IRS.
- JEDI