

7th NOAA TBPG Workshop

College Park, MD

April 5-6, 2016

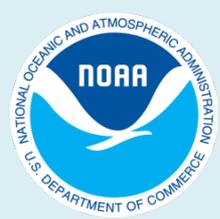
Roundup Presentation
Joint Center for Satellite Data
Assimilation



FY15 Highlights

JCSDA

- Initial or optimized assimilation:
 - GPM/GMI in the GFS
 - Himiwari-8 AH1 (GOES-R ABI) in the GFS
 - MT SAPHIR in GFS
 - ISS Rapidscat, Aura/MLS Ozone in GEOS-5
 - IASI from METOP-B (multiple systems)
 - DMSP F19 SSMIS radiances (multiple systems)
- Community Surface Emissivity Model (CSEM)
- Polar-Satellite Gap Mitigation Baseline Study

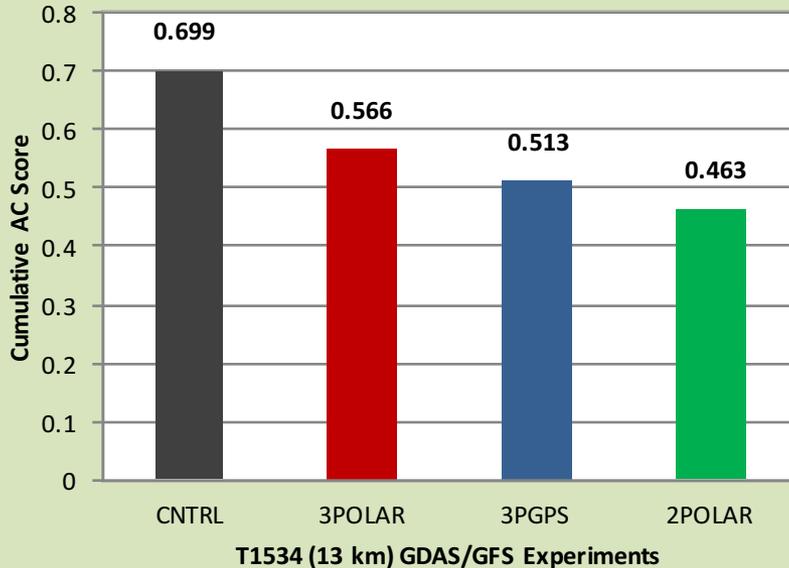


Polar-orbit Gap Mitigation Study

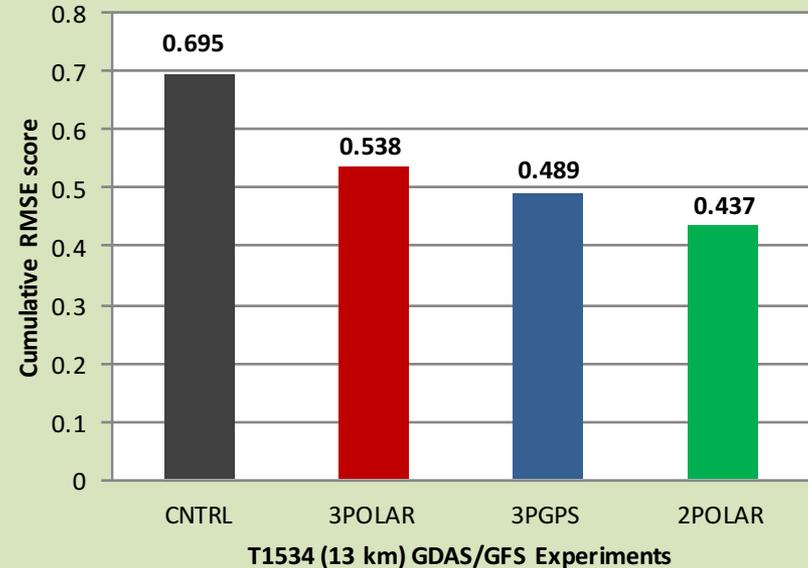
Tier 1: Cumulative Forecast Score

Reference: CNTRL Analysis

Normalized Cumulative AC Scores



Normalized Cumulative RMSE Scores



Cumulative Anomaly Correlation Scores

- 3POLAR – Removal of quasi-redundant polar data results in reduction of C_{AC}
- 3PGPS – Removal of quasi-redundant polar data plus additional loss of polar GPSRO further degrades C_{AC}
- 2POLAR - Removal of quasi-redundant polar data plus additional loss of PM polar data results in more significant degradation of C_{AC} than loss of GPSRO

Cumulative RMSE Scores

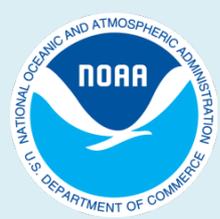
- 3POLAR – Removal of quasi-redundant polar data results in significant reduction of C_{RMSE}
- 3PGPS / 2POLAR – Further removal of the GPSRO observations or the afternoon polar observations has similar degradation as shown with C_{AC} score.



FY15 Transition Metrics

JCSDA

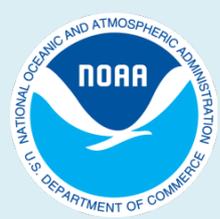
Major Tests Conducted	Transitioned to Operations	Recommended for Trans. to Operations	Advanced to Experimental Testing Phase	Decision pending or deferred on advancement
Testing and implementation of METOP-B IASI radiance data in GSI/GFS and other models	X			
Development and Testing of Community Surface Emissivity Model			X	
Parallel testing of MT-SAPHIR radiances in GSI/GFS		X		
Parallel testing of NASA's GPM Microwave Imager (GMI) radiances in the GSI/GFS				X
Demonstration of impact of near-real-time ISS RapidScat Ocean Surface Wind data in NASA's GEOS-5 NWP system			X	
Operational Implementation of multiple added satellite data products in Navy-FNMOC's NAVGEM System, including NPP-VIIRS AMVs, GRACE-B and TanDem-X GPSRO, and SSMIS upper air channel radiances.	X			



FY16 Activities

JCSDA

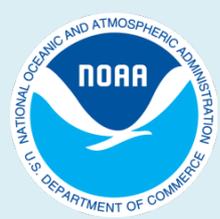
- Testing and Demonstration of data from new operational satellite sensors
 - JASON-3 Altimetry products
- Continued CRTM Development
 - Surface, SM missions, all-sky radiance assimilation
- Preparation for testing and demonstrating utility of observations from new operational satellite sensors (to be launched in FY17)
 - GOES-R – ABI AMVs, ABI L1B radiances
 - JPSS-1 – ATMS and CrIS SDR assimilation
 - COSMIC-2 – Bending Angle assimilation



FY16 Activities (continued)

JCDSA

- Initiation of JCDSA Observation System Assessment Standing Capability (JOSASC)
 - Provide rapid impact assessments of satellite observations (configurations) in operational NWP
- Drop-out Project
 - Develop tool for NWS Model Evaluation Group (MEG) to investigate role of observations when model skill drops below threshold performance
- Initiate Joint Effort for Data assimilation Integration (JEDI) Initiation
 - To modularize portions of DAS and facilitate shared development



Best Practices/Lessons Learned

JCSDA

- Availability and maintenance of O2R environment(s) remains critical to support rigorous testing leading to (readiness for) implementation.
- Maintenance and evolution of Common Tools continue to facilitate shared development, testing, and implementation by multiple operational partners
 - e.g. Community Radiative Transfer Model (CRTM)