

A New METplus-based Verification System for the Global Forecast System (GFS)

Mallory Row, IMSG at NOAA/NWS/NCEP/EMC
Jason Levit, NOAA/NWS/NCEP/EMC

Acknowledgments:

The METplus team at the Developmental Testbed Center (DTC)

2020 International Verification Method Workshop – Online

Virtual Poster - November 18, 2020



Moving to METplus

- Push across United States numerical weather prediction (NWP) community to move toward a unified verification system.
- *MET (Model Evaluation Tools)* originally chosen as the unified verification system. MET is developed and maintained by DTC in Boulder, Colorado.
- Decision later expanded to include the *database and display systems METviewer & METexpress*, and the *python wrappers around MET*. **Umbrella repository known as METplus.**

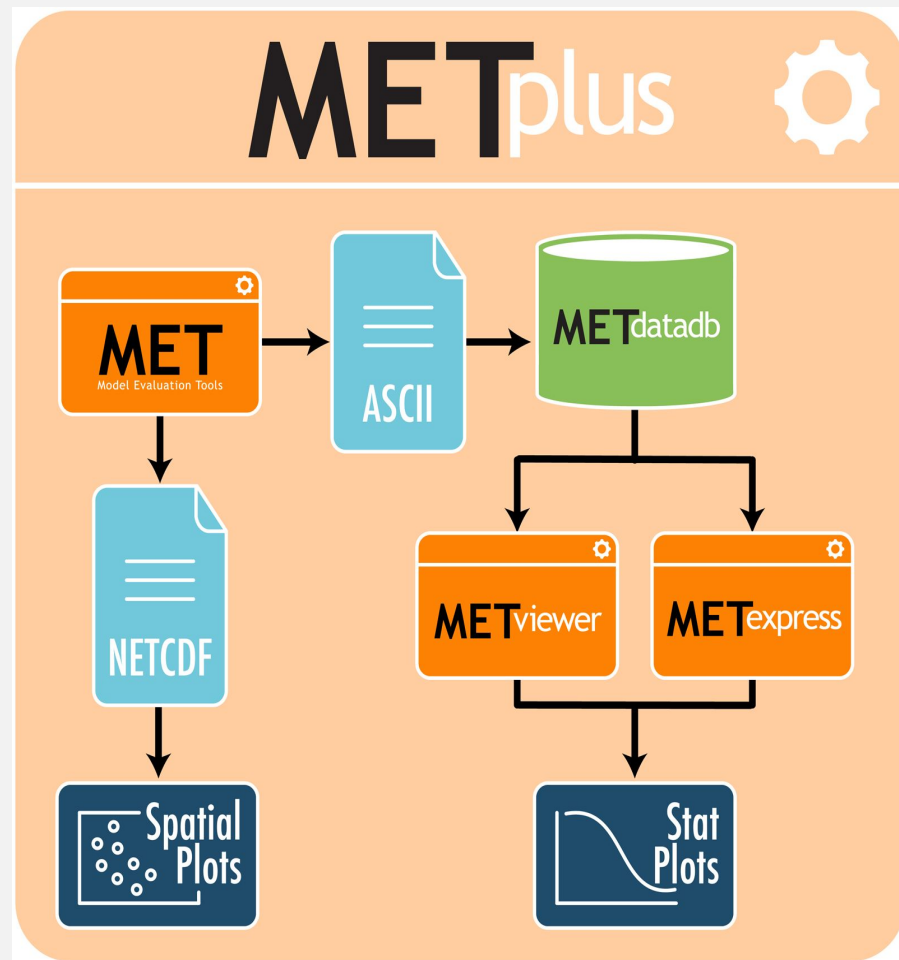


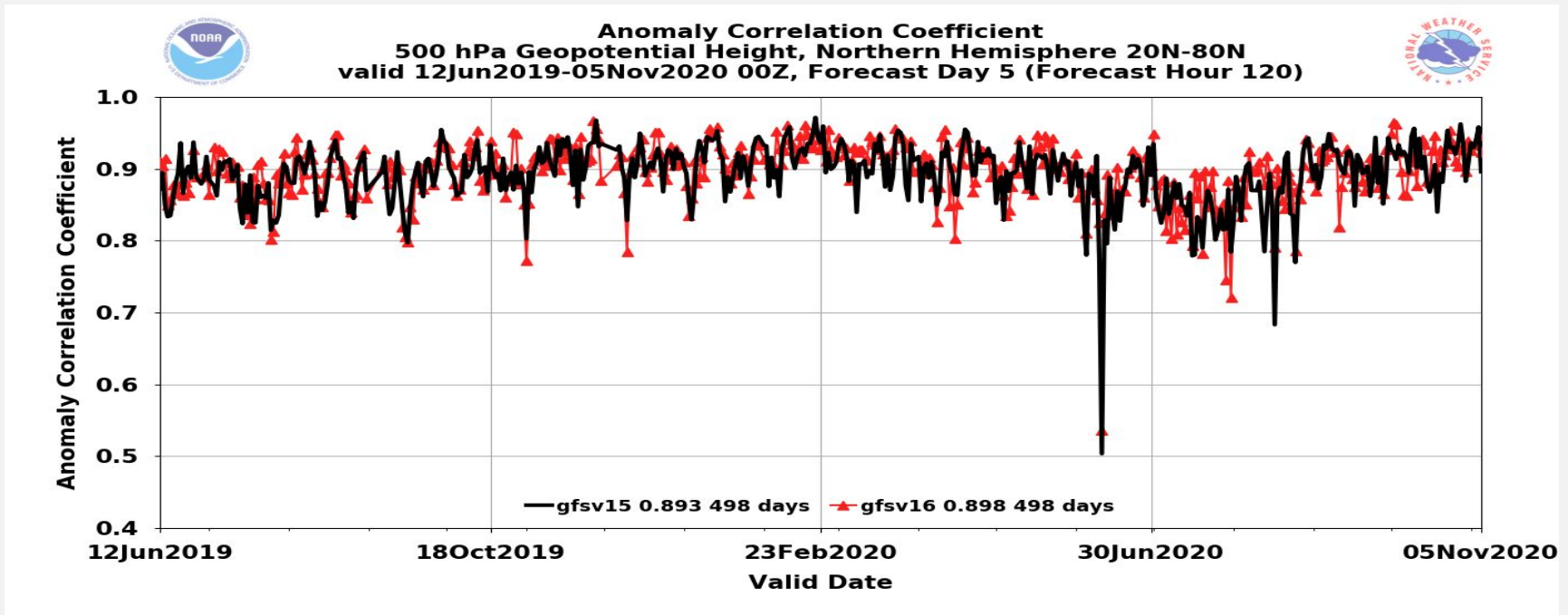
Figure from DTC METplus System Architecture page

Moving to METplus at EMC for the GFS

- New, METplus-based GFS verification system needed to replicate the capabilities of the old, in-house developed verification package.
 - calculate statistics
 - produce graphics
 - website to display graphics
 - run stand alone or in GFS development workflow
- Collaborative work with DTC started back in 2018 ensuring METplus was ready to be used for GFS verification.
 - what could already be replicated
 - what needed to be developed
 - what needed to be expanded
- EMC_verif-global, new METplus-based GFS verification system, development began in early 2019.

GFS Version 16 Evaluation

- EMC_verif-global was incorporated into the GFS workflow in Fall 2019.
- Package ran within the retrospectives and real-time parallel of GFS version 16; it produced verification statistics as the experiments ran in Spring/Summer 2020.
- Statistics and graphics used in the Model Evaluation Group (MEG) evaluation of GFS version 16 in Summer 2020.



Future Work and Summary

- Further development to support the community-based, coupled Earth modeling system, known as Unified Forecast System (UFS), efforts.
 - input from United States NWP community identifying key metrics to verify
- EMC working toward developing a verification system to be run in operations.
- *EMC_verif-global*, new METplus-based GFS verification system, housed on GitHub at https://github.com/NOAA-EMC/EMC_verif-global.
- New GFS verification website at <https://emc.ncep.noaa.gov/users/verification/global/gfs/ops>