Verification and Validation *Working Group*

Presented by

Tara Jensen, NCAR and DTC

Coordination Meeting for the UFS SIP

August 2, 2018; College Park, MD

Verification and Validation WG *Membership*

- ❖ **Tara Jensen NCAR/RAL, DTC**
- ❖ **Geoff Manikin NCEP/EMC**
- ❖ **Jason Otkin U of Wisc - Madison**
- ❖ **Ivanka Stajner NWS/STI**
- ❖ **Zhuo Wang U of Illinois**
- Mike Baldwin Purdue
- John Halley Gotway NCAR/RAL, DTC
- Matt Janiga NRL
- Israel Jirak SPC
- Jason Levit NCEP/EMC
- Melinda Marquis ESRL/GSD
- Tanya Peevey ESRL/GSD
- Richard Rood U. Michigan
- Patrick Skinner NSSL
- Nathan Snook OU/CASP
- Dana Strom MDL
- Bonny Strong ESRL/GSD, DTC
- Laurie Trenary George Mason U
- Fanglin Yang NWS/NCEP
- Chidong Zhang NOAA/PMEL

- *Arun Kumar CPC*
- *Mike Bodner WPC*
- *Lance Bosart SUNY*
- *Michael Brennen NHC*
- *Jan-Huey Chen OAR/GFDL*
- *Bruce Entwistle AWC*
- *Mark Klein WPC*
- *Rolf Langland NRL*
- *Hui Shao JCSDA*
- *Joe Sienkiewicz OPC*
- *Rodney Viereck SWPC*
- *Xuguang Wang OU*
- *Zizang Yang NOS/OCS/CSDL*
- *Linjiong Zhou OAR/GFDL*

❖ Co-Chair • Active • *Non-active*

V&V WG
Project Milestone Accomplishments

SIP project accomplishments to date:

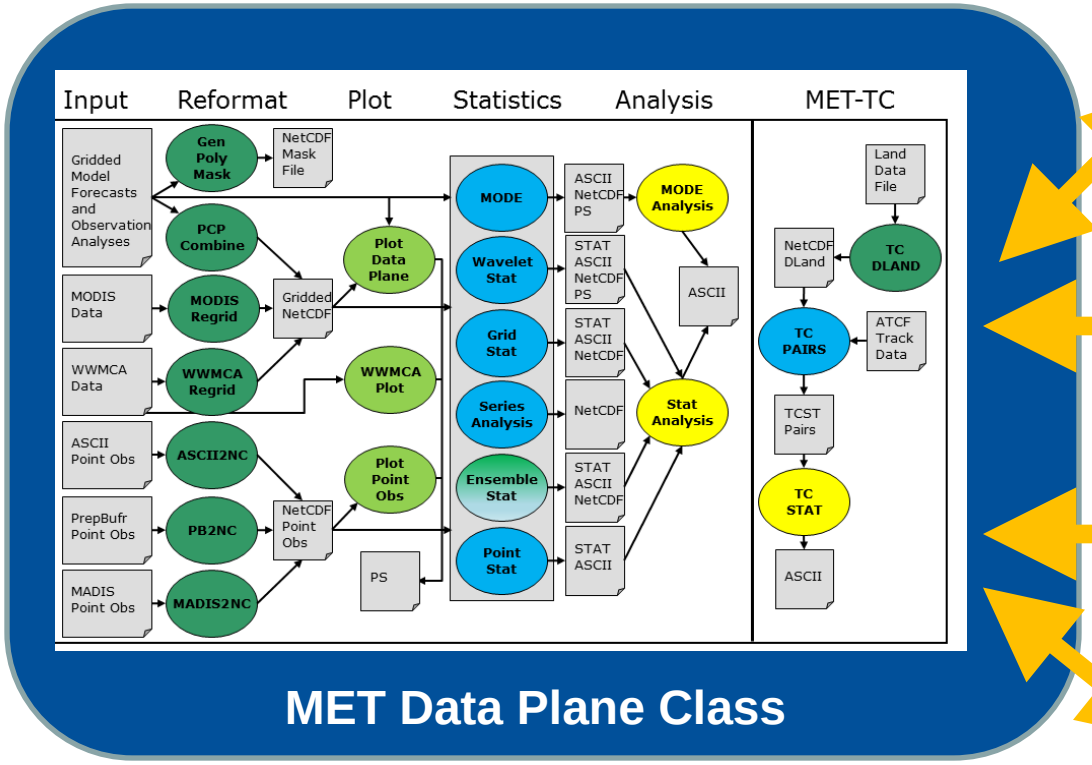
- Rapidly developing prioritized enhancements to MET+ (MET, METViewer and python scripts)
- Fruitful collaborations between EMC, NCAR, GSD, DTC, WPC, OPC, NSSL, SPC, MDL, ARL, SWPC, Air Force, PSD, NRL, NASA, and several universities
- FV3GFS test plan in use; MEG discussions and website making in-roads into informing, educating, and supporting FV3GFS end-users while gathering input
- Significant progress on developing METplus Authoritative Repository (or is it an Umbrella Repository?)

SIP project challenges:

- **Transition to MET+ - Blocked** by lack of NCAR and NOAA/GSD staff access to WCOSS and EMC under-resourced to make transition on their own – some aspects may need higher-level attention
- **Transition to METViewer – Blocked** by lack of space in IDP and unsuccessful requests/proposals for additional computational resources capable of running METViewer database software – no where to go but to the cloud or servers outside of NCEP (e.g. at GSD or NCAR)

Early Adopters
Communication between MET and Python

Using Xarray, Numpy or Pandas



ARL Air Quality

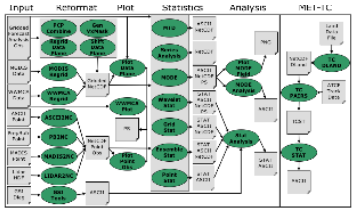
EMC Marine Verification

NSSL CAM Verification

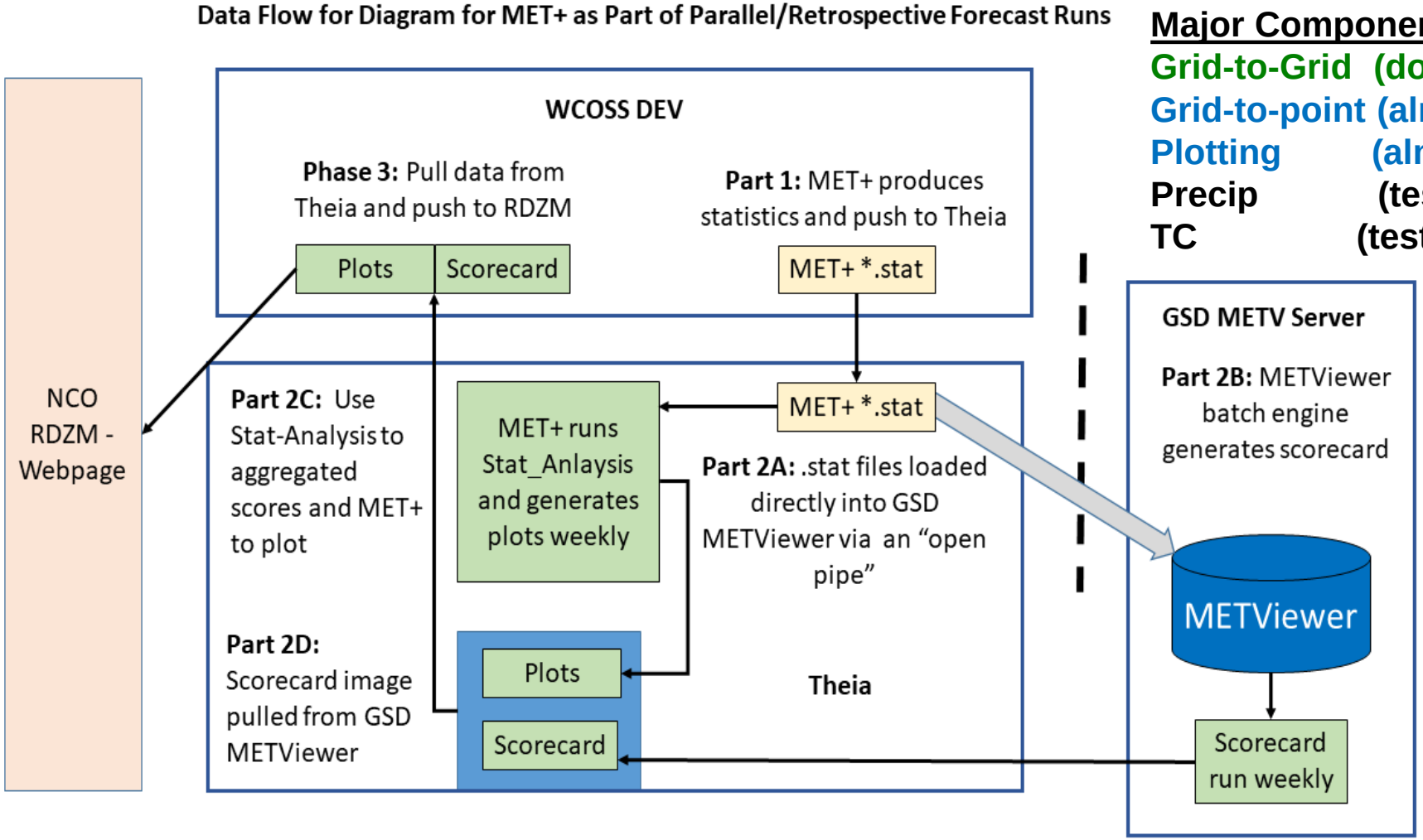
WPC QPF Verification

Opens up a world of possibilities

METplus Authoritative Repository



MET+ at EMC



Major Components

Grid-to-Grid (done)

Grid-to-point (almost)

Plotting (almost)

Precip (testing)

TC (testing)

Mallory Row, NOAA/EMC, now a MET+ developer; Ensembles, Precip, Mesoscale, Air Quality, and Extra-Tropical Cyclones working on setting up their applications

Verification and Validation WG Team Coordination and Dependencies

- V&V team needs to be coordinated with all other WGs
  - Good connections to **Aerosols & Atmospheric Composition CAM, and Marine,** and some connection to **Physics and Post-Processing** discussing metrics
  - We have been listening **Infrastructure** report outs and are now ready to be brought into dialogue about Umbrella and Authoritative Repositories
  - Participating in **System Architecture** calls but should start discussions are needed about how to couple with Post-Processing and bring MET+ into GST
  - Need to connect with **DA and Post-Processing** about coupling with **JEDI and UPP**
  - Others have been on back-burner due to time constraints or lack of response to requests from input