

WPC Challenges

- Diverse product suite requiring use of multiple aspects of the NCEP modeling environment across CONUS and OCONUS domains
- Greater focus on IDSS → improving forecast of high-impact events at sufficient lead times

Focus Areas

Winter weather

- Providing calibrated probabilistic guidance to support greater winter storm watch collaboration with WFOs
- Main challenges – lake effect, precipitation transition zones, membership performance (primarily the SREF) in our PWWF suite

QPF

- Providing greater lead time for high impact heavy rainfall events in the Day 0-3 time frame, Collaborative Forecast Process
- Main challenges – NWP QPF has only marginally improved over the last decade – especially at day 3, Lack of CAM through day 3 (Agency Priority Goal – Day 3 ERO High Risk Issuance).

Medium Range

- Day 3-7 Hazards, Collaborative Forecast Process
- Main challenges – Develop better objective inputs for Day 3-7 Hazards Product. Under-dispersive ensemble guidance.

Testbed R2O

- Evaluating new data sets, products and forecast methodologies through HMT-WPC (Flash Flood, Winter Weather, and Extended Range Forecast Experiments) for potential transition to operations
- Main challenge – Obtaining new data sets in time for experiments and consistently during the duration of experiments

WPC's Production Suite Requirements

FV3 (GFS, GEFS, CAM ensemble)

- GFS/GEFS/CAM ensemble - Have an explicit microphysics-based precipitation type algorithm and variable snow ratio calculated at every model time step for snowfall accumulations. Consider including differing microphysics schemes while developing ensemble membership to enhance spread of winter weather-related guidance
- Add additional output parameters from microphysic schemes (e.g. snow mixing ratio, depositional snow growth, vertical snow flux)
- CAM ensemble - run to 84 hours at 00/06/12/18 UTC and ensure CONUS domain includes all RFC areas of responsibility
- All - focus on improving QPF performance, especially warm season convection and tropical cyclones.
- Add post-processing to incorporate hydrologic (e.g. QPF with respect to flash flood guidance , ARIs, etc...) and climate (e.g. how do max/min temperature forecasts or QPFs compare to record events?, etc...) context

WPC's Production Suite Requirements

National Blend of Models

- Support evidence-based decisions through retrospectives versus subjective determination of model weighting – Support NBM SAG mission

National Water Model

- Production of output more relevant to flash flood impacts (e.g. inundation)
- Work toward more probabilistic output

Parallel evaluations

- Provide parallel output in near real-time to promote greater forecaster involvement
- At least for now...still need to create GEMPAK output
- Is WAVE an option here?