The Environmental Modeling Center's Model Evaluation Group

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Inspired by monitoring activities at ECMWF, Met Office, GMAO

MEG developed after months of discussions and review by members of EMC, NCO, WPC

Examines model performance from perspective of forecaster and provides verification

Enhances synoptic verification within NCEP
Model Evaluation Group (MEG) proven entity with 3 years of enhancing communication among EMC and the field

- Weekly briefing of model performance, synoptic emphasis, also statistics, time means
- Organized evaluation of EMC parallels and experiments
- Critical feedback to developers
- Updates users regarding model changes and issues
- Listens to users’ feedback
- Rapidly generates critical case studies (e.g. 2012 Mid-Atlantic derecho, 2013 El Reno tornado/OKC flooding, 2015 PHL-NYC snow forecast bust, ATL/BHM Jan 2014 commuter disaster, Superstorm Sandy....)
Clear trend towards a period of rain with sfc temps below frz forecasts for the PHL-NYC ice event this January.
NAM NEST

24 hr Precip forecast

30 hr forecast

42 hr forecast

36 hr forecast

48 hr forecast

NYC snow overforecast
Clear trend in hourly HRRR for enhanced risk in northeast NE

June 16, 2014 twin tornado supercell in northeast NE
• Participation and presenters from other NCEP centers, NWS regional/local offices, ESRL

• Transitioned to Webinars early this year thanks to Southern Region in response to increased remote participation from NWS regional and local offices

• Model changes already implemented, being tested in response to MEG concerns
In late spring 2012 MEG noted late afternoon moist bias in GFS (especially over mid-west US)

Associated cold bias seen in summer — most evident in hot air masses

EMC aware of it by time forecasters noticed

Implemented correction in late summer 2012
Last year an EMC model evaluation group was formed; weekly EMC synoptic evaluations are held. The group noted a late afternoon moist bias in the GFS (especially over the midwest US); an associated cold bias became evident as summer arrived since the problem was most evident in hot air masses. EMC was aware of the issue by the time forecasters noticed it and were able to implement a correction in early September.
SREF Great Lakes Temperature Initialization

SREF NMMB members too dry east of Erie/Ontario/Huron

Those lakes incorrectly frozen in NMMB initial conditions

All members much wetter with better lake temps
GFS Problems

Late afternoon 2 m cold, wet bias in eastern US
2m temps can plummet between 21 and 0z
--collapse of boundary layer
--reduction to 2m

EMC Land-Sfc Team testing modifications to roughness length to reduce exchange coefficient and hopefully limit decoupling – modest success thus far
Forecast from 00Z Oct. 5 example of bogus tropical storms

6.5 day forecasts

10 day forecasts

27 km GFS

13 km GFS
EXAMINATION OF NAM
WARM SECTOR LOW PRECIP BIAS

24-48 hr precip for May 31 12 UTC-June 1 12 UTC
12-hr fcst soundings (dash) for Brownsville, TX vs. obs (solid)

Not as much of an issue in the nest (explicit convection), so parent NAM Convection tests underway
GFS 500 height day 5 anomaly correlation—4 cycles

PNA sector: Middle of Pacific to middle of Atlantic
Still have bad cases—"mini-dropouts"

Statistical verification
Zonal mean vertical velocity F00 vs F168 0Z Jan-May 2015 Time means
MEG needs to expand

-- more complete evaluation of operational and new versions of models
-- beyond CONUS
-- observations, data assimilation plans for revival of “drop out” team
-- more interaction with users
-- full, open and user-friendly access to statistics
EMC wants to change implementation process

--involve rest of NWS in evaluating tests of improvements to operational models much earlier and much longer in implementation process

--visitors’ program between EMC and rest of NWS
MEG meetings Thursday 11:30 AM

Webinars thanks to Southern Region

Everyone welcome

More info or forecast issues:

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