

## Precip-related use of MET

- VSDB on METviewer
- Verification of FV3GFS parallel run
- MET for QPF verification/QPE validation

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# QPF verification

Daily forecast vs. analysis images (ConUS, AK/HI/PR):

<http://www.emc.ncep.noaa.gov/mmb/ylin/pcpverif/daily/>

Stats/scores, portal to model QPF VSDBs loaded to  
METviewer:

<http://www.emc.ncep.noaa.gov/mmb/ylin/pcpverif/scores/>

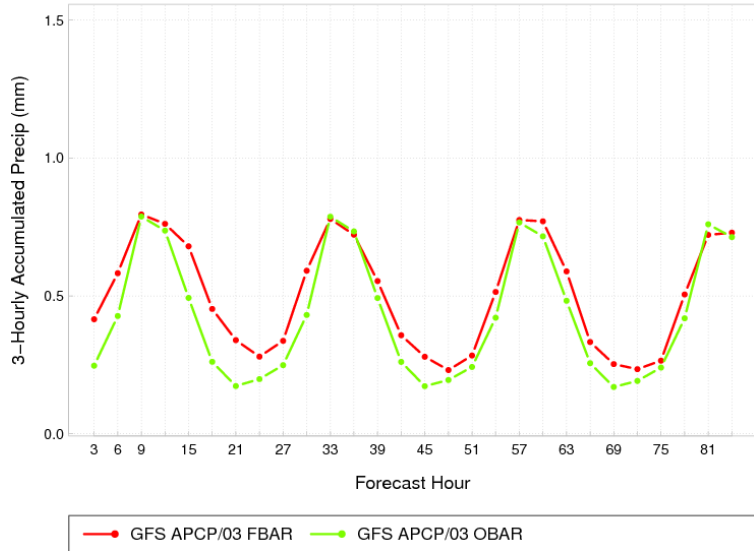
About 15% of model QPF stats get loaded to METviewer (add'l data loaded on user request)

# Make large number of plots using METviewer batch engine:

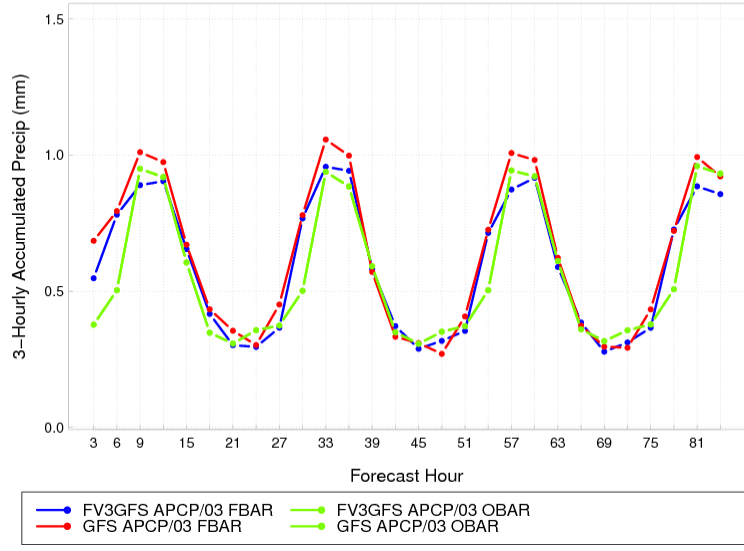
<http://www.emc.ncep.noaa.gov/mmb/ylin/pcpverif/gfs.diurnal/>

GFS precipitation diurnal cycles plot: domain-averaged 3-hourly forecast APCP vs. analysis, for ConUS and the 14 subregions, for 3-month seasons from Jun-Aug 2016 to Jun-Aug 2018.

GFS 3-hrly domain-avg APCP Jun-Aug 2016 12z cyc APL region



FV3GFS/GFS 3-hrly domain-avg APCP Jun-Aug 2018 12z cyc APL region



# FV3GFS vs. GFS real-time parallel comparison: monthly and quarterly stats from June 2017:

<http://www.emc.ncep.noaa.gov/mmb/ylin/pcpverif/scores.fv3/>

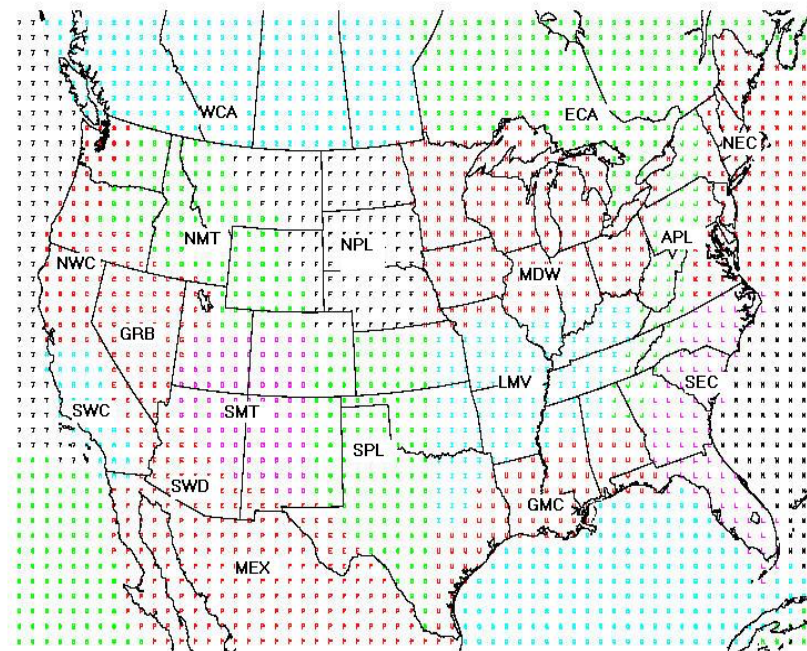
Daily updates to the “past 30 days” page suspended until Tempest recovers or an alternative found. Without data from tempest, the early morning 3 Oct scores run wiped out the latest score plots for the past 30 days.

Past months' plots (last updated on 1 Oct for Sept 2018) and seasonal plots are still intact.

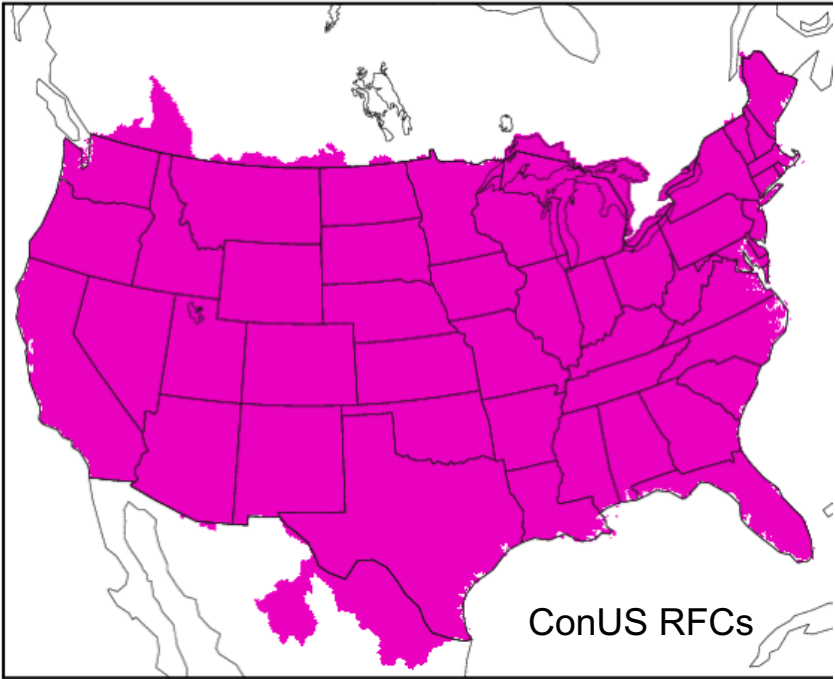
# grid\_stat for model QPF verif: verifying domains

For CTC and SL1L2: use the current common ConUS and 14 subregions, switch to new subdomains (Bukovsky?) in the future.

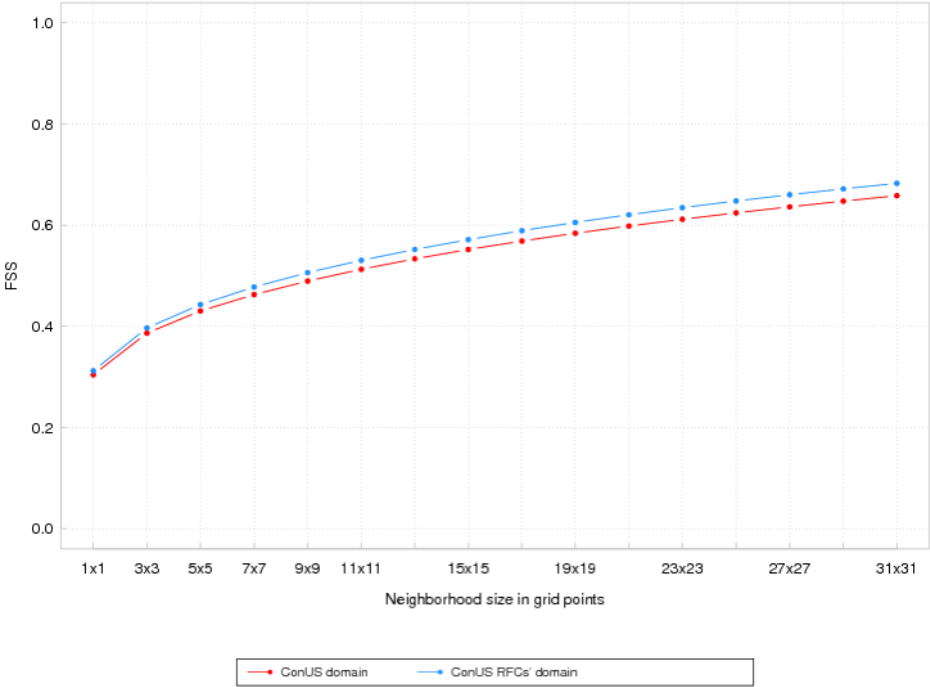
For neighborhood verifications, use the ConUS RFC domain (vx\_mask from RFC domain map on HRAP grid) for historical continuity.



# Neighborhood grid\_stat: FSS on ConUS vs. CNSRFCS



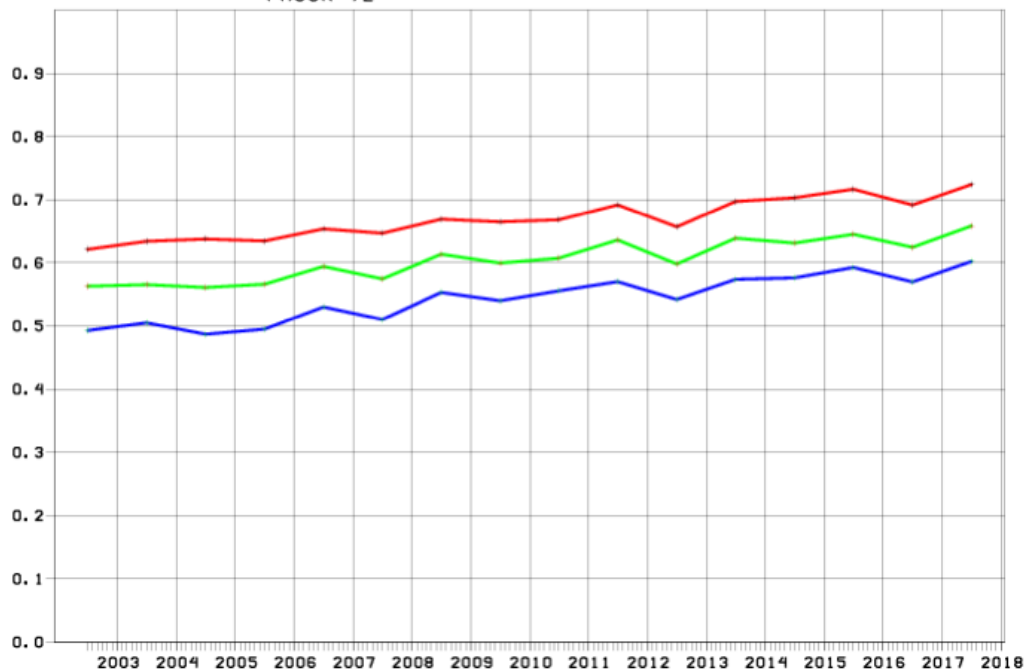
CONUSNEST FSS at 10mm/day, 24h fcst valid 12Z 9 Aug 2018 (MET)



# Transition of long term model stats from VSDB era

STAT=FSS<062 PARAM=APCP/24>010.0 MODEL=GFS V\_RGN=6240/CNS LEVEL=SFC  
VYMDH=200201010000-201712312300

— F HOUR=24  
— F HOUR=48  
— F HOUR=72



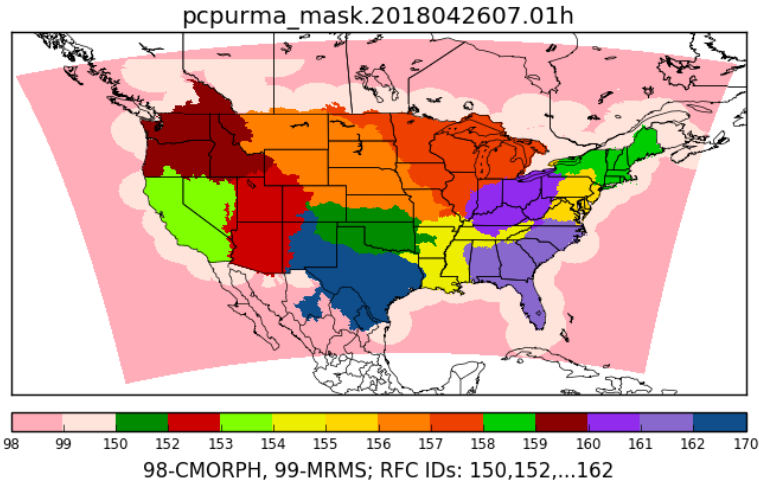
E.g. FSS of GFS 1/2/3-day forecasts at 10mm/day threshold and 62-km spatial scale for 2003-2017.

Possibly using FVS text-output option and some additional text manipulation to produce aggregate stats from VSDBs that are compatible with that from MET stat\_analysis.

Use `point_stat` to validate QPE analyses  
against QC'd gauges

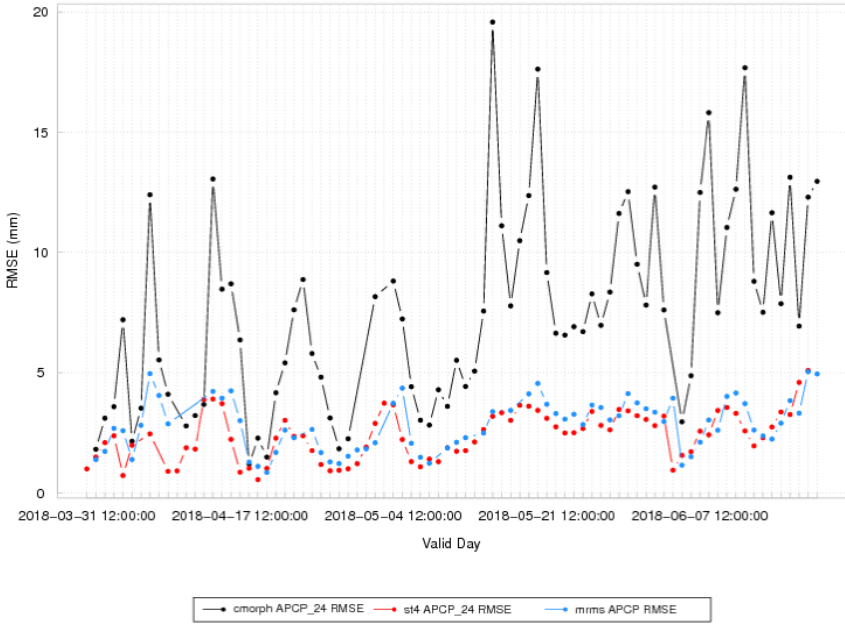


In URMA v2.7.0, for NBM:



Use 1) gauge QC'd MRMS (where Radar Quality Index  $\geq 0.1$ ) and 2) CMORPH to fill offshore coverage in the Stage IV.

RMSE of analyses 24h total vs. daily gauges, 1 Apr – 20 June 2018

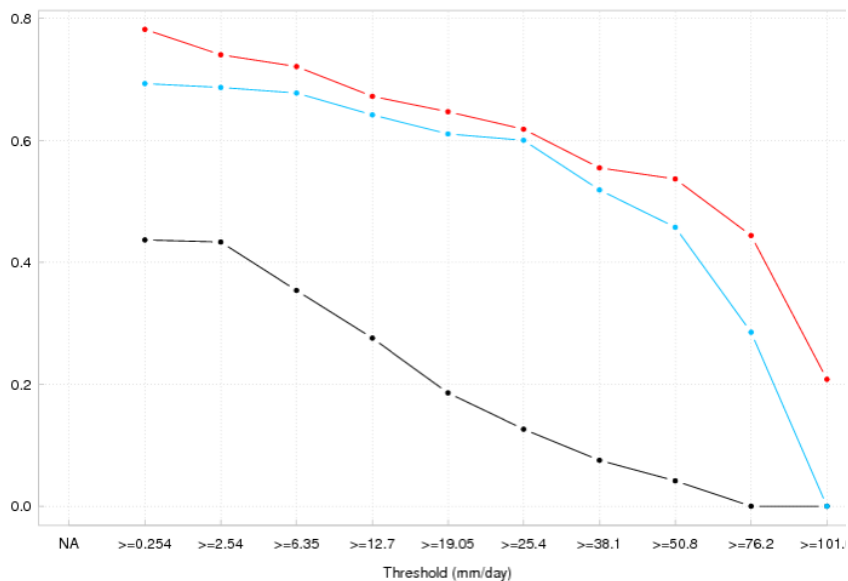


Stage 4, gauge QC'd MRMS and CMORPH, 1 Apr - 20 Jun 2018

# ConUS Validation Against Daily Gauges

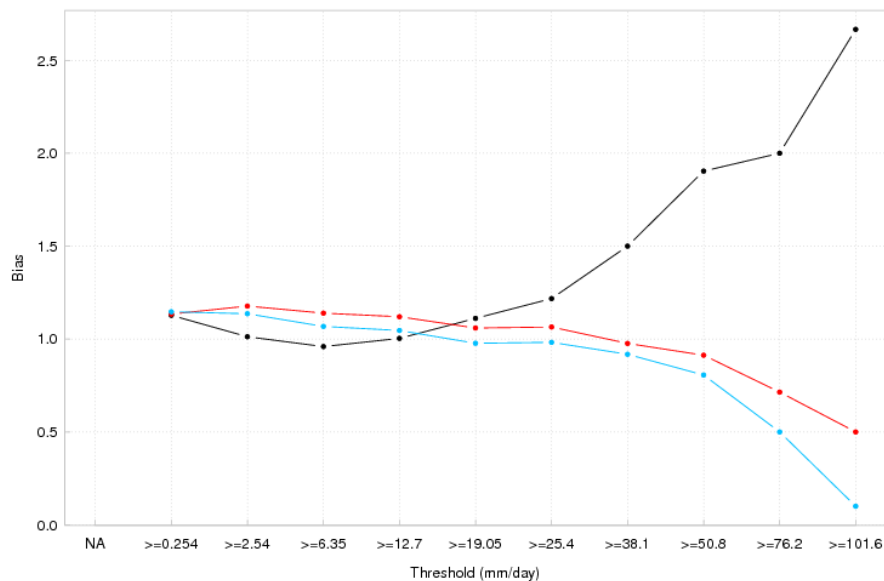
Stage 4, gauge QC'd MRMS and CMORPH, 1 Apr - 20 Jun 2018

ETS (GSS) of analyses 24h total vs. daily gauges, 1 Apr - 20 June 2018



—●— cmorph APCP\_24 GSS —●— st4 APCP\_24 GSS —●— mrms APCP\_24 GSS

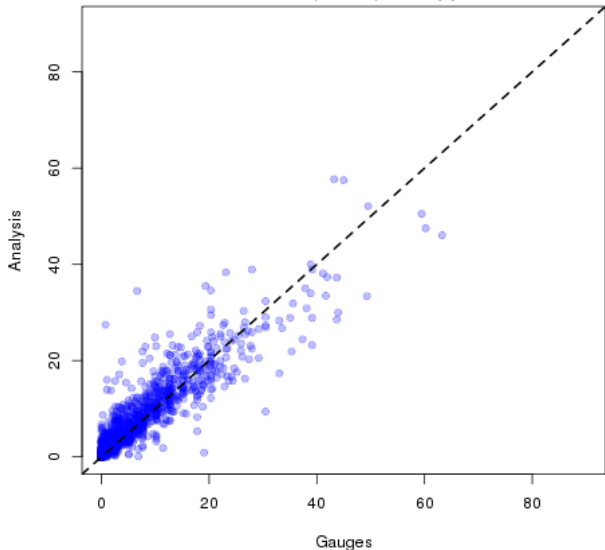
FBIAS of analyses 24h total vs. daily gauges, 1 Apr - 20 June 2018



—●— cmorph APCP\_24 FBIAS —●— st4 APCP\_24 FBIAS —●— mrms APCP\_24 FBIAS

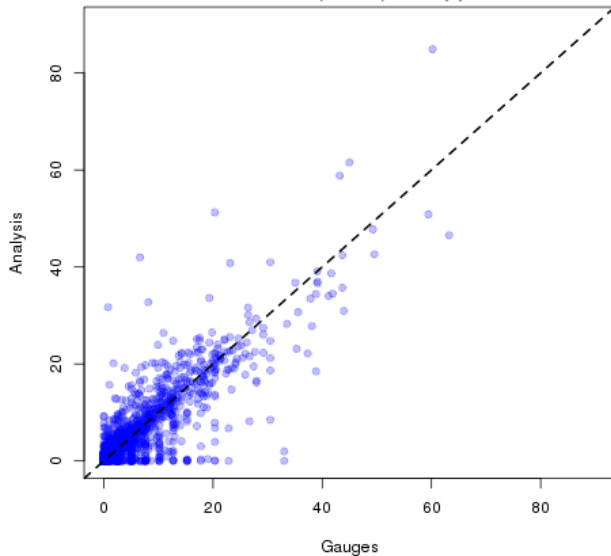
# Analyses vs. gauges scatter plots, 24h ending 12Z 12 May 2018

Scatter Plot of 6068 points  
st4: APCP\_24 at A24  
ADPSFC, FULL, BILIN(4)



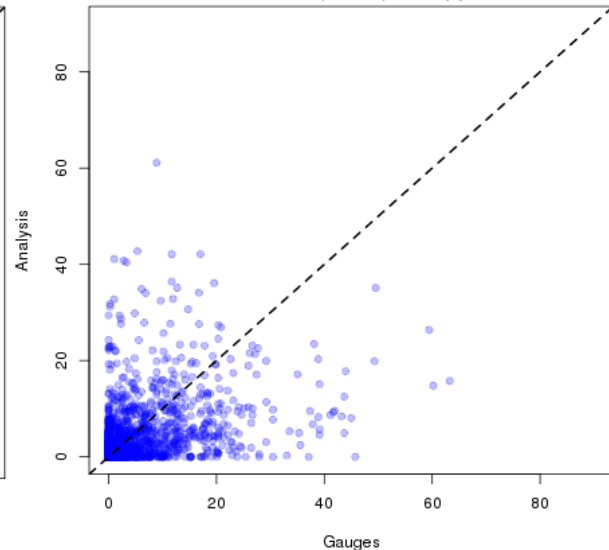
Stage IV

Scatter Plot of 6101 points  
mrms: APCP at A24  
ADPSFC, FULL, BILIN(4)



MRMS

Scatter Plot of 5938 points  
cmorph: APCP\_24 at A24  
ADPSFC, FULL, BILIN(4)

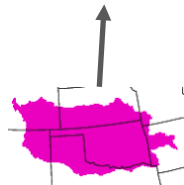
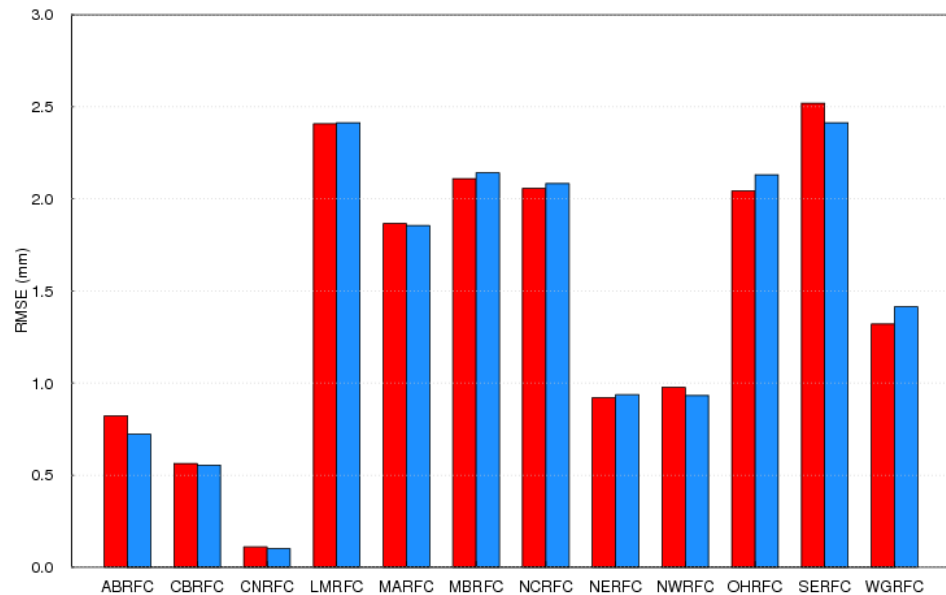
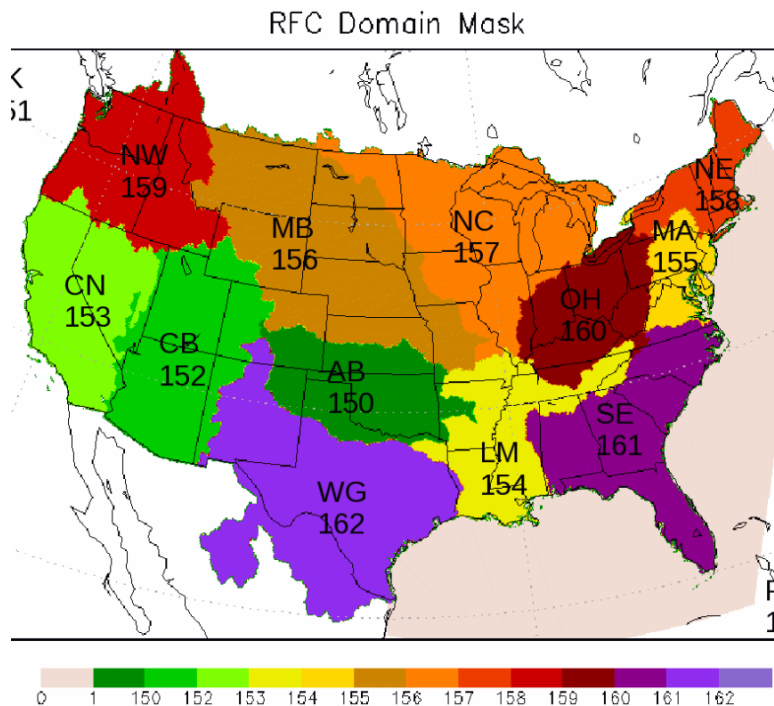


CMORPH

From matched pair output, plotted using R script from John's plot\_mpr.R.

# Use RFC domains on HRAP grid for vx mask for point\_stat

RMSE of CCPA/ST4 validated against QC'd daily gauges, 1 Jan - 12 Sep 2018



Legend: █ CCPA ACP24 RMSE █ ST4 ACP24 RMSE

