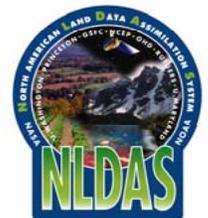
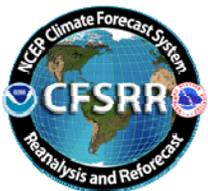




NCEP EMC need for accurate global precipitation measurements

Jesse Meng, Michael Ek, Youlong Xia
NWS/NCEP/EMC

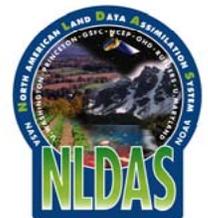
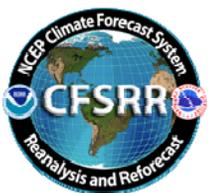




NCEP EMC need for accurate global precipitation measurements

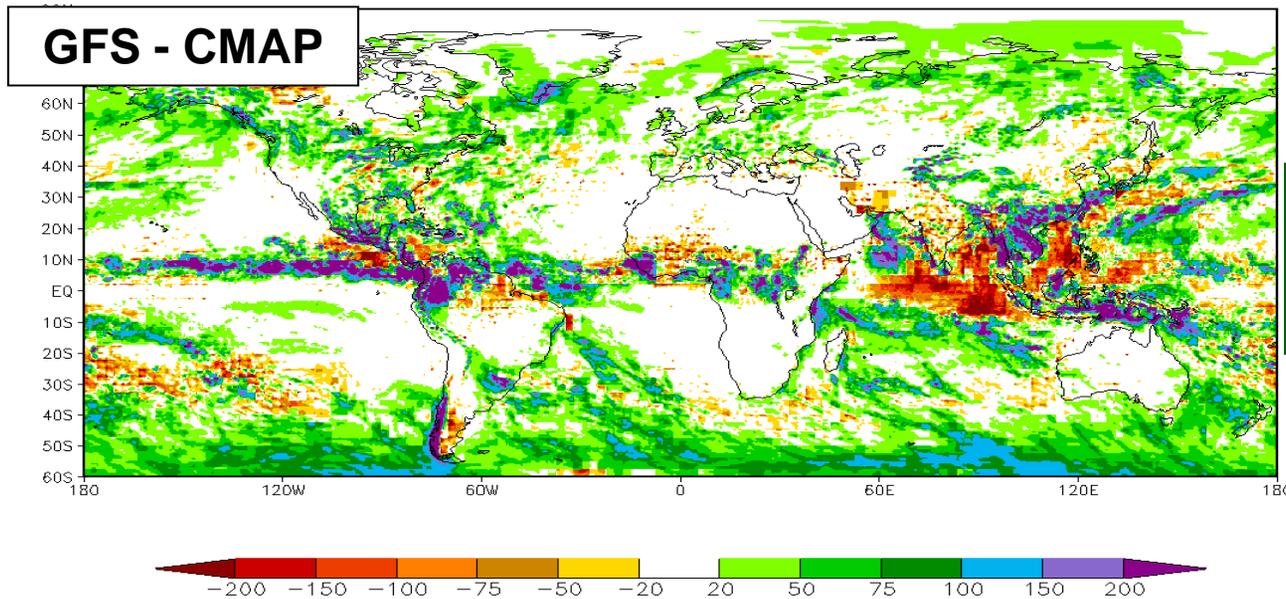
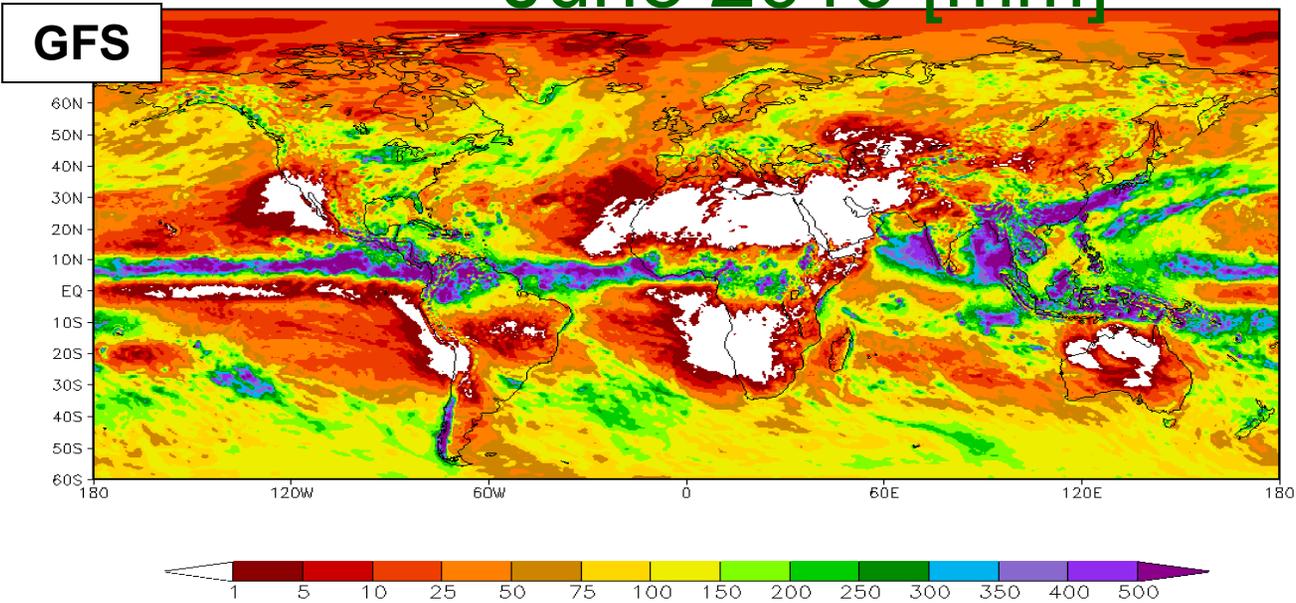


- Verification for operational precipitation forecast
- Land Data Assimilation System (LDAS)
 - Global LDAS
Global climate and weather forecast and assimilation systems
 - North American LDAS
NLDAS drought monitor and forecast

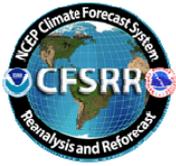




Verification for operational precip forecast June 2010 [mm]



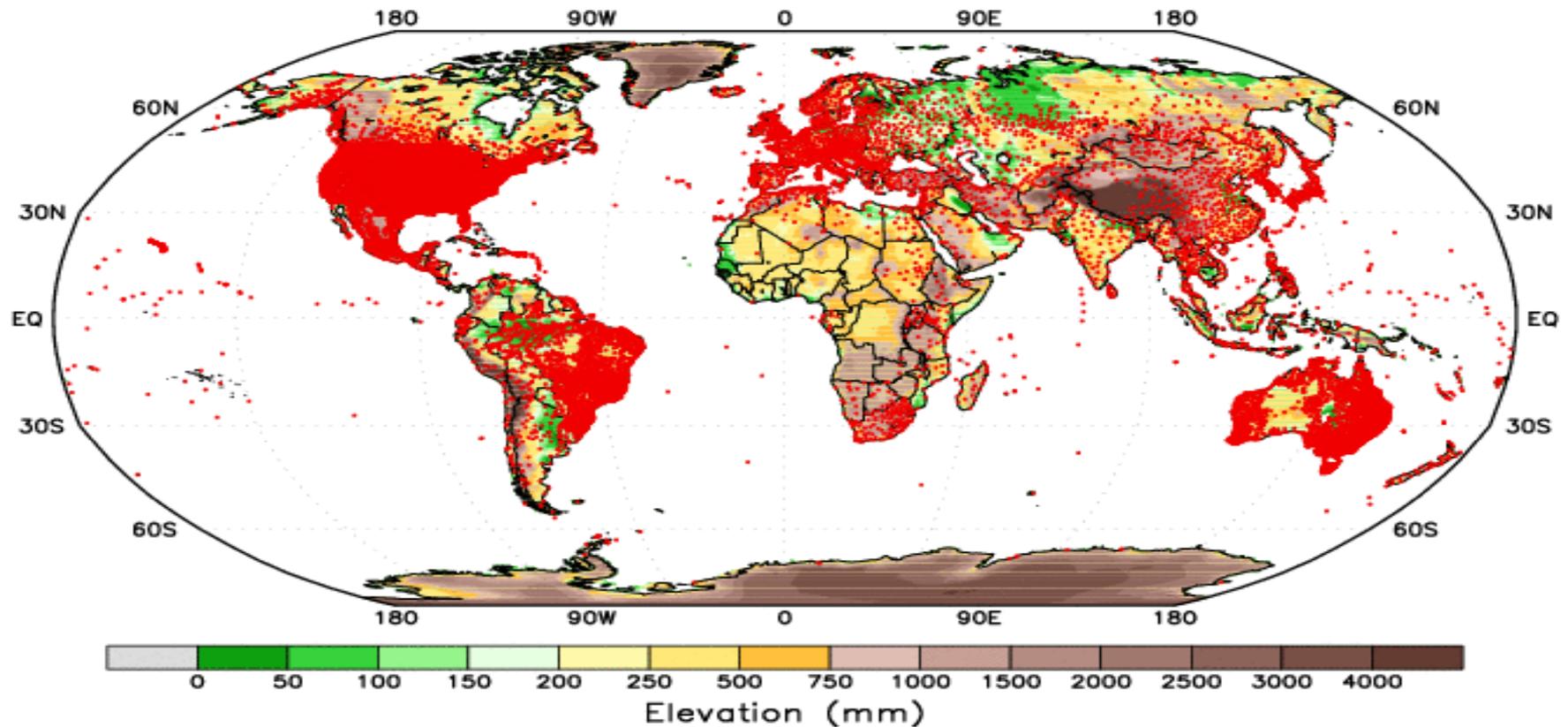
**GFS yields
high precip
bias in tropics.**



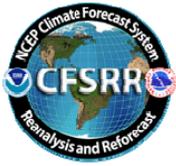
GLDAS for CFS Reanalysis

CPC Unified Daily Gauge Data

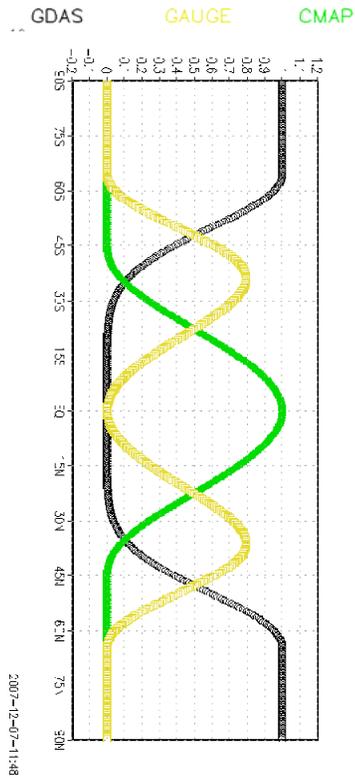
- Dense gauge networks from special CPC collections over US, Mexico, and S. America;
- GTS gauge network elsewhere
- Daily reports available from ~17,000 stations



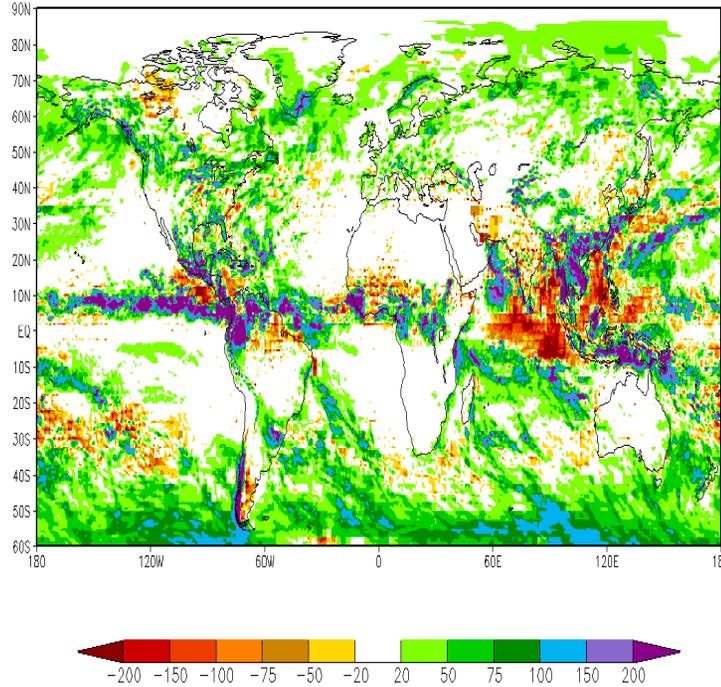
Mingyue Chen and Pingping Xie, NOAA/NCEP/CPC



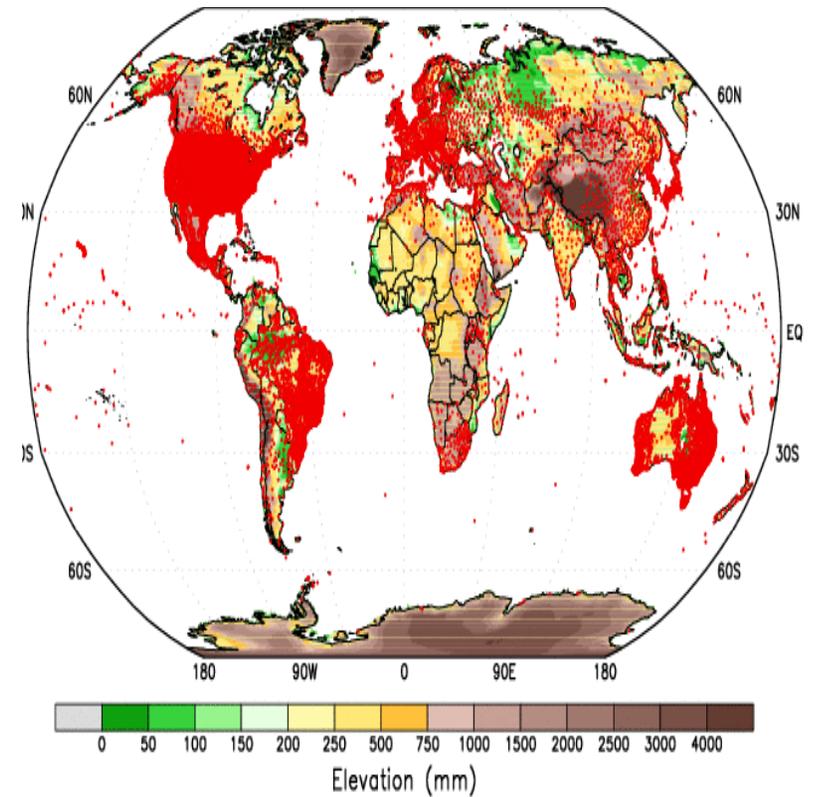
Blended precip forcing for CFSR GLDAS



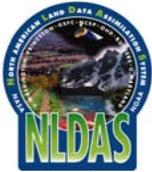
Precip difference (GFS-CMAP)



Global Gauge Distribution



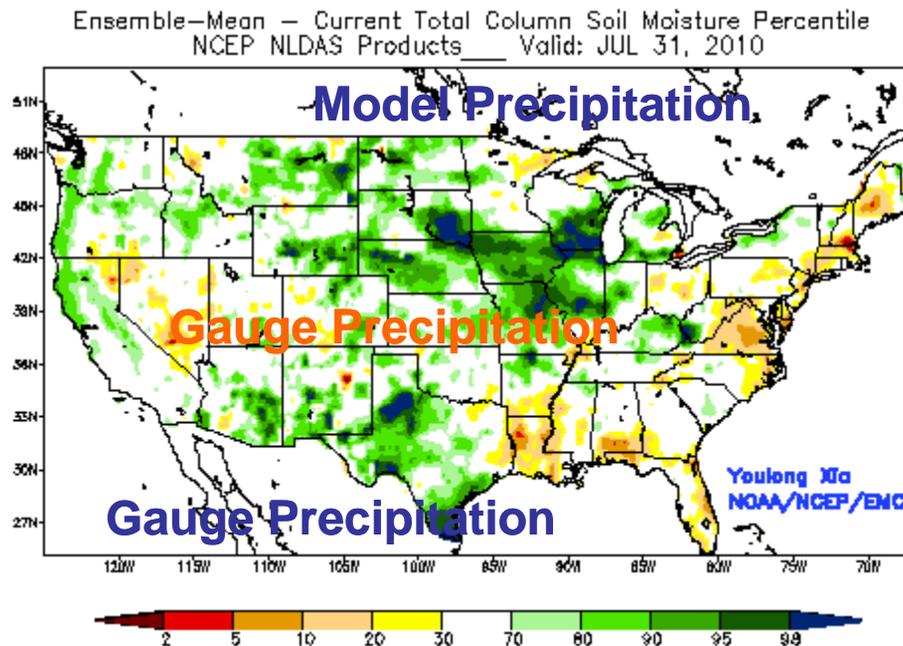
A blended precip forcing is used in CFSR with the heavier weights of CFS/GDAS – high lats
Gauge – mid lats
CMAP – tropics.



NLDAS for drought monitor

NLDAS Drought Monitor

→ *NLDAS North America Drought Monitor*



Except for total precipitation, a separation of rain and snow is also important for NLDAS research because it controls snow process and affects streamflow peak, further affects hydrological drought monitoring.

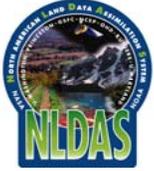
CONUS – daily gauge precipitation with monthly PRISM correction, temporally disaggregate to hourly using Stage II radar precipitation

Problem: no undercatch correction for solid P over mountainous regions

Canada – no gauge precipitation
only model P from NARR

Requirements: Gauge, satellite, radar

Mexico: CPC 1-degree daily gauge precipitation without PRISM correction temporally disaggregated using CMORPH and CPC's Hourly Precipitation Data (HPD, 2X2.5 deg)



NLDAS for drought monitor (continue)

Mexico P requirements

1. high- spatial resolution (e.g., 12 km) and temporal resolution (hour) gauge P or hybrid product with gauge, satellite, radar and reanalysis
2. topographic effect on precipitation corrected
3. snow undercatch at gauge sites corrected

High resolution (4 km) NLDAS U.S. (North American) drought monitor

State Drought Monitor, Stareflow Forecast

CONUS: Stage II and IV radar precipitation

Mexico: Satellite ??

Canada: Satellite ??



Conclusion

Accurate global precipitation measurements are desired to enhance NCEP's operation in assessing, monitoring, and predicting regional/global hydrology, weather, and climate.

