

# **A Reanalysis Synthesis of EOS Observations at Regional Scales to support the National Climate Assessment**

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- Assimilated data sets that synthesize and integrate the existing satellite (and conventional) data streams for the EOS/Aura period – an enabling tool
- Specialized products to support the NCA
- Builds upon the ~50 km reanalysis for the satellite era generated as the Modern-Era Retrospective analysis for Research and Applications (MERRA).

➤ Use of MERRA for NCA applications.

➤ Perform a 25km GEOS-5 analysis that improves upon MERRA for NCA applications:

- Include new data streams (MLS, OMI, IASI, GPSRO) for the atmosphere
- Include aerosol and land-surface analyses, to enhance the value of the product for radiation budget studies

➤ *Use of MERRA for NCA applications:*

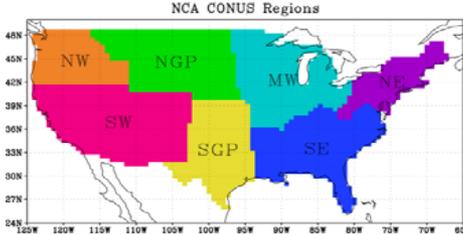
- Extract regional and sector-specific products for use in the NCA
  - Available at <ftp://gmaoftp.gsfc.nasa.gov/pub/data/mikeb/NCA/>
  - About 250 products
- Use MERRA with the ERA-Interim Reanalysis from ECMWF and NOAA's CFSR, where appropriate, to estimate uncertainties in derived products
  - Prepared a technical report for input to the NCA 2013 report – will be submitted before March 1, 2012.

➤ *Perform a 25km GEOS-5 analysis that improves upon MERRA for NCA applications:*

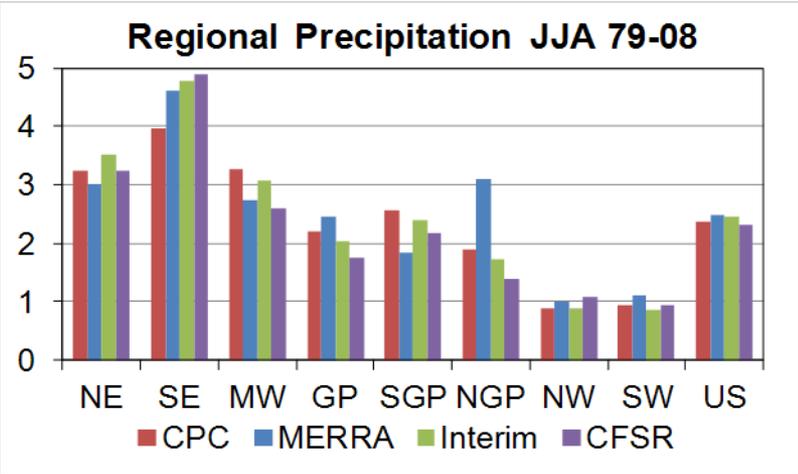
- Include new data streams (MLS, OMI, IASI, GPSRO) for the atmosphere
  - OMI, IASI, GPSRO now included in the analysis; MLS radiances under evaluation (alternative is to use MLS retrievals)
  - MLS specific humidity tests will begin in March
- Include aerosol and land-surface analyses, to enhance the value of the product for radiation budget studies
  - Aerosol analysis now standard GEOS-5 product; feeds directly into AGCM radiation calculation.
  - Land-surface analysis coupling underway; focus likely on soil moisture.

*NCA-specific derived products from MERRA – Technical Input to NCA 2013*

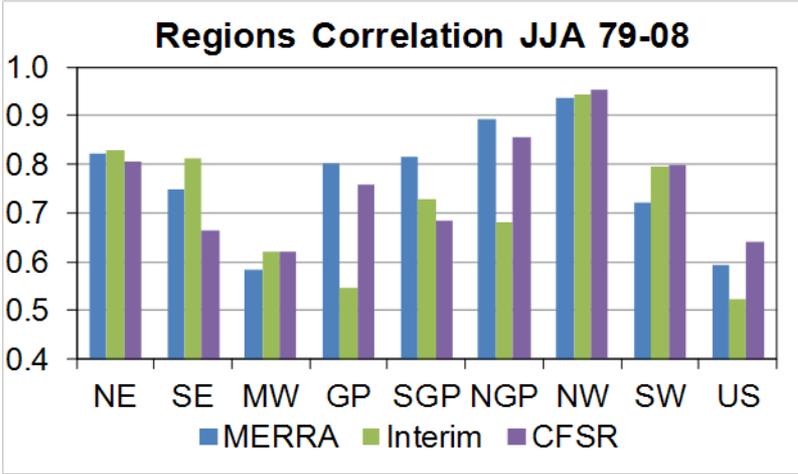
**Regional Climate and Variability in NASA MERRA and Reanalyses: Summertime Precipitation and Temperature** by Mike Bosilovich – will be submitted by March 1.



**Mean Precipitation (mm/day)**

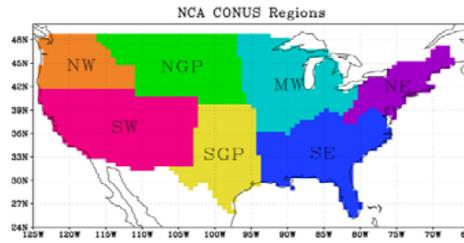


**Correlation with CPC obs**

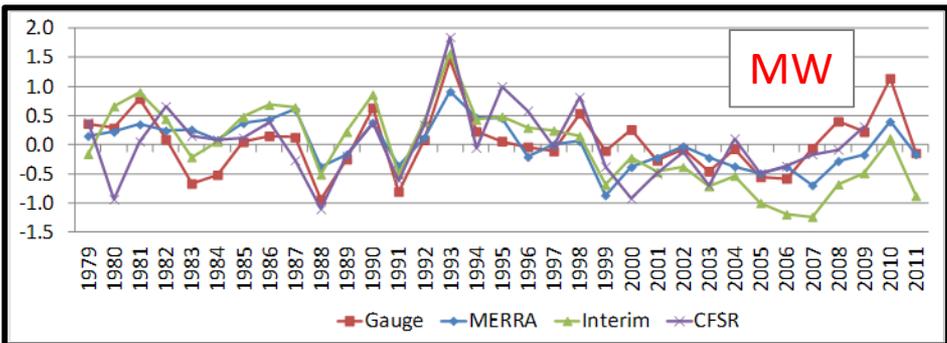
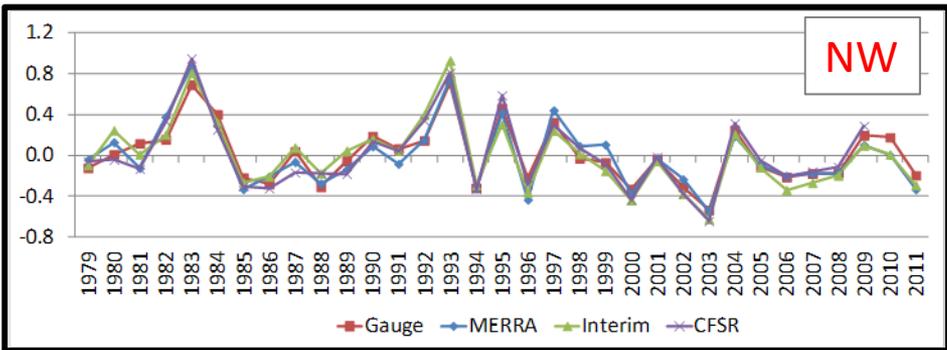


Comparison of regional precipitation for June, July, August (JJA) from CPC gauge observations with reanalyses: NASA’s MERRA, ECMWF’s ERA-Interim and NCEP’s CSFR.

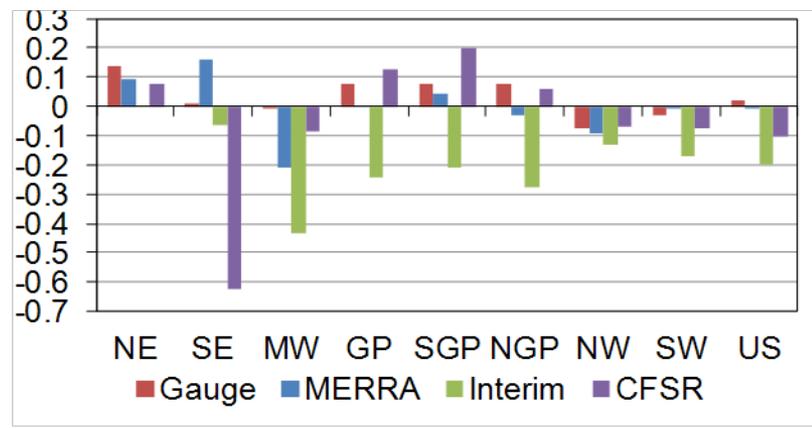
# NCA-specific derived products from MERRA – Technical Input to NCA 2013 Report



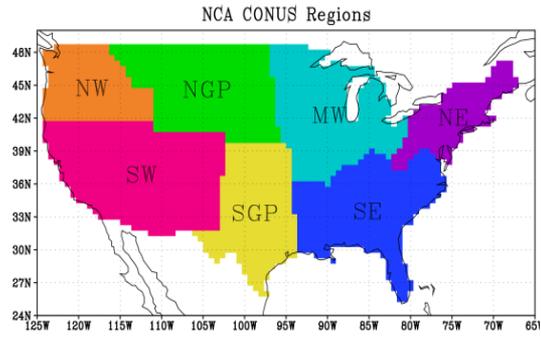
### JJA Precipitation Anomalies (mm/day)



### Precipitation Trends (mm/day/decade)



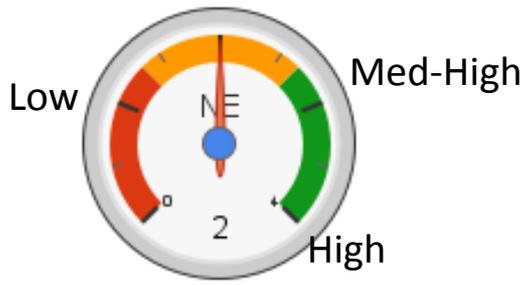
*NCA-specific derived products from MERRA – Technical Input to NCA 2013*



**Precipitation Confidence Indicator**



Med-Low



*MERRA-Land Reanalysis:*

- A supplemental and improved set of land-surface hydrological fields, including soil moisture, snow, and run off - corrects some limitations of MERRA in a land-only post-processing system.
- Now complete and being transferred to the GES DISC.