



NAME Climate Process and Modeling Team/Issues for Warm Season Prediction



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Introduction

NAME Climate Process and Modeling Team

- Coordinated activities among NAME Diurnal Cycle Project, NAMAP2 and NCEP forecast system improvement effort.

Issues addressed for warm season precipitation prediction over NAME region:

1. Model sensitivity on horizontal resolution.
2. Temporal scales of precipitation variability.

Acknowledgement: Myong-In Lee, NASA/GSFC

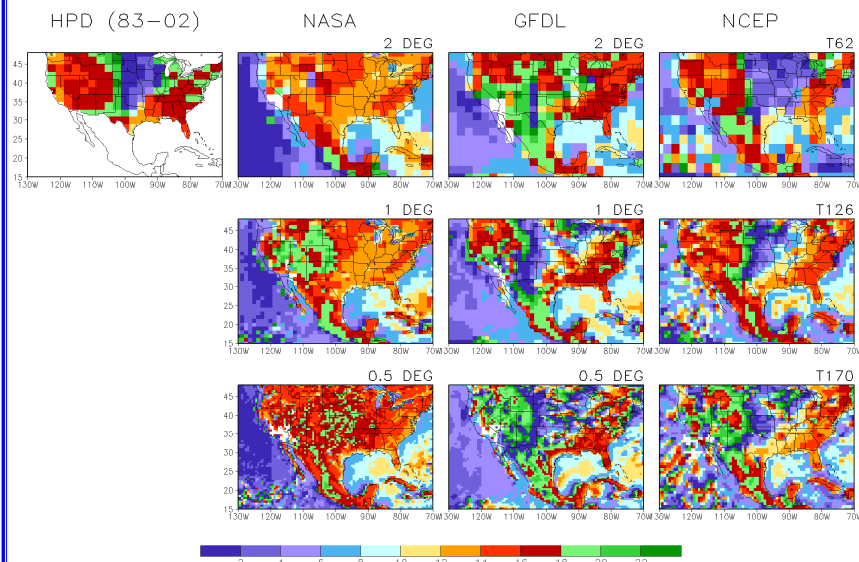
Summer simulation runs with GFS/CFS

1. 2004 version of GFS, very close to the operational CFS.
2. 5 member ensemble runs initialized in May, 1984, 1988, 1990, 1991, 1993.
3. Climatological SST used as ocean boundary condition.
4. Spatial resolution in T62L64, T126L28 and T170L42.
5. Special 2-member runs in T382L64 with CFS and the current operational GFS, and 1998, 2003 SST analyses.

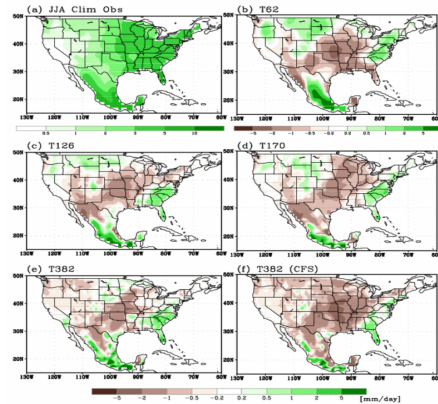
Precipitation variability over Arizona and New Mexico region

1. Observational analyses based on the CPC Climate Division Precipitation dataset and the reconstructed SST dataset of Smith, et al. (1996) for 1931-2005.
2. Two 100-year simulations with NCEP CFS coupled GCM in T126 resolution (CMIP1 and CMIP2).
3. Comparisons of variability of precipitation index over Arizona and New Mexico region in interannual and decadal time scales.
4. Comparisons of regressed patterns of SST accompanying the precipitation variability.

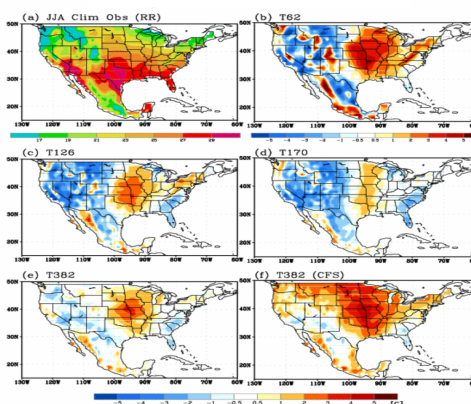
Phase of Precipitation Diurnal Cycle (JJA)



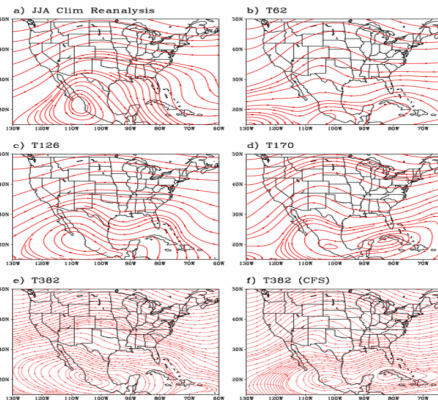
JJA Precipitation Difference from Obs



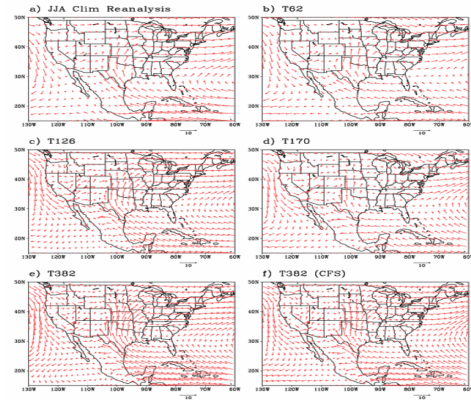
JJA 2m Temperature Difference from Obs



JJA 200 mb Streamlines

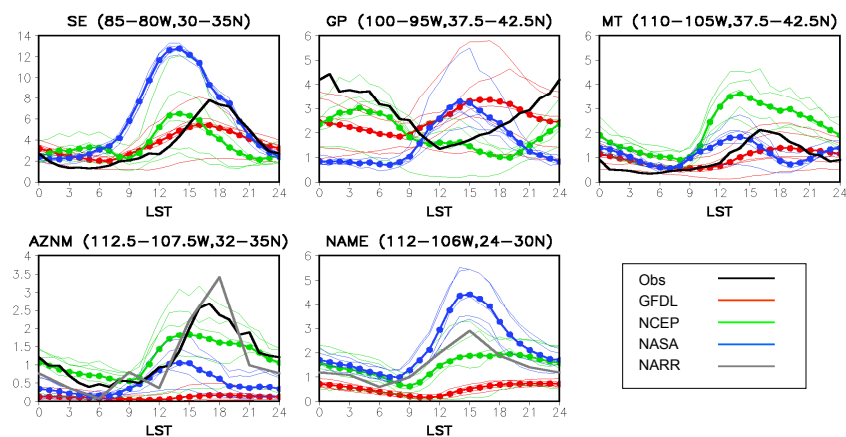


JJA 850 mb Wind

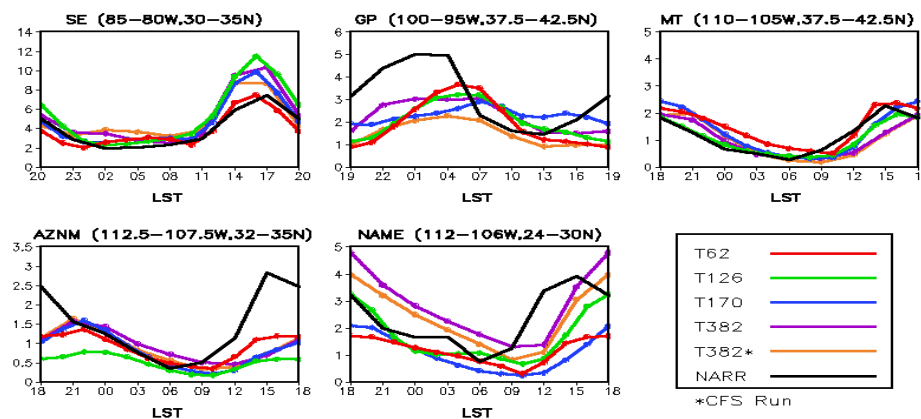


JJA Precipitation Diurnal Cycle Climatology

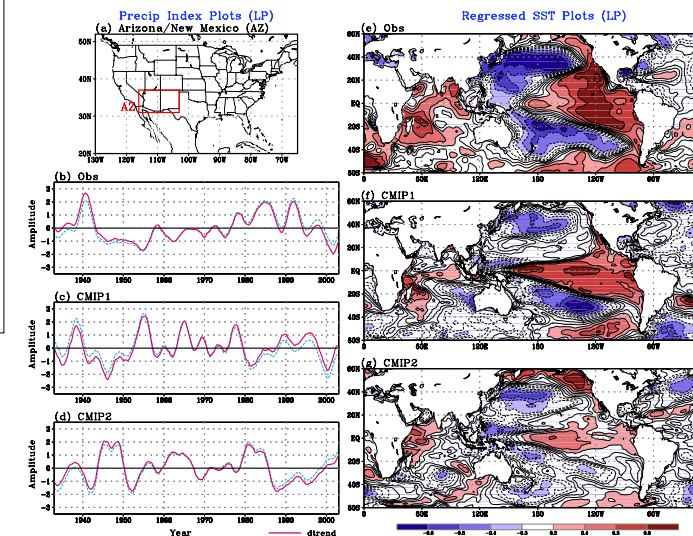
Hourly Precipitation Rates (mm/day) – Ensemble Mean



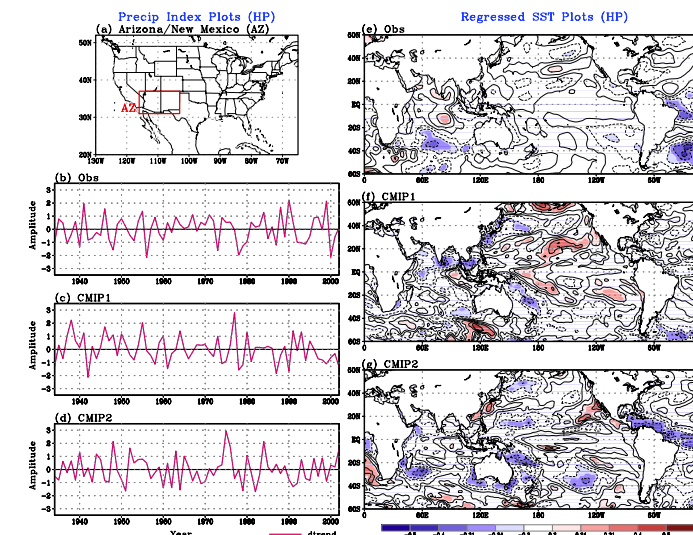
JJA Precipitation Diurnal Cycle (mm/day)



Decadal Variability



Interannual Variability (JJA)



Summary

1. Coordinated with the NAME Diurnal Cycle Project, impact of GCM horizontal resolution on warm season precipitation over NA has been examined.
2. General improvement of diurnal cycle and climatology of precipitation indicated with increasing horizontal resolution. Improvement most appreciable when the resolution increased from T62 (~2 degrees) to T126 (~1 degree).
3. Influence of SST on precipitation variability of NAME region more pronounced in decadal time scale and NCEP CFS GCM capable of reproducing time scales and SST spatial patterns.