

# Conventional Observation Reanalysis for Climate Monitoring

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# Global Atmospheric Reanalyses

- ❖ Conventional Observation Reanalysis (CORe)

  - Non-radiance data assimilated

  - NCEP GFS-FV3 dynamic core

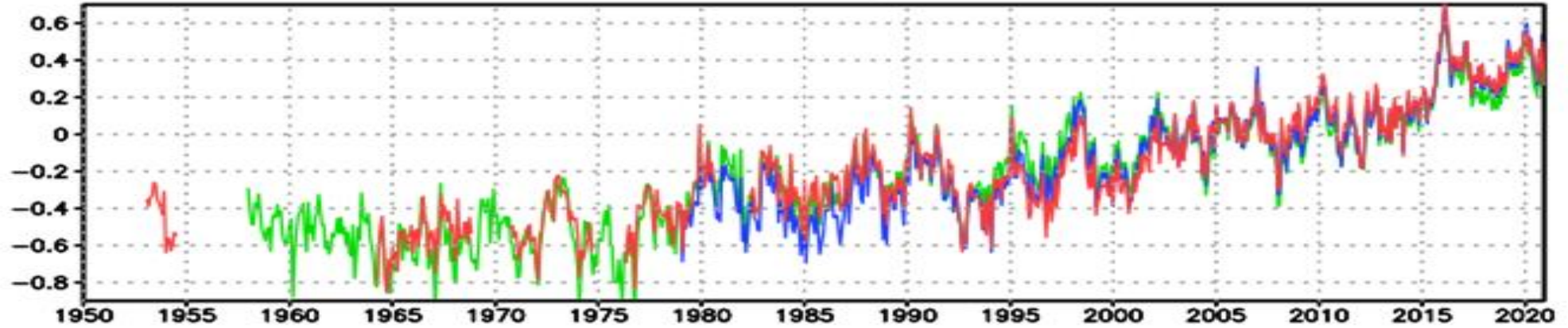
  - Period: 1950-2020 (currently 1982-2020 completed)

- ❖ Modern Reanalyses: ERA5, JRA55, MERRA2 and CFSR

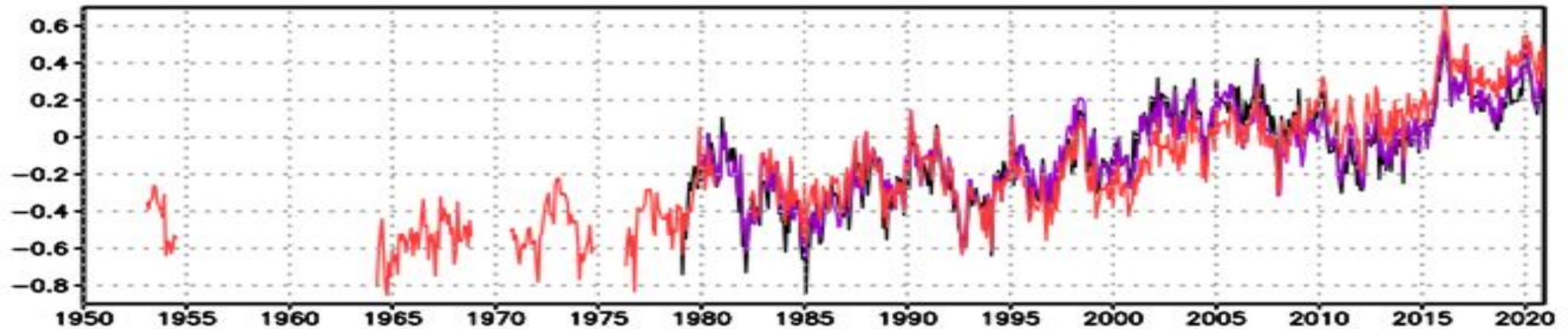
  - Monthly climatology is calculated from 1991-2020

# Global Monthly 2m Temperature Anomaly

CORe JRA55 ERA5

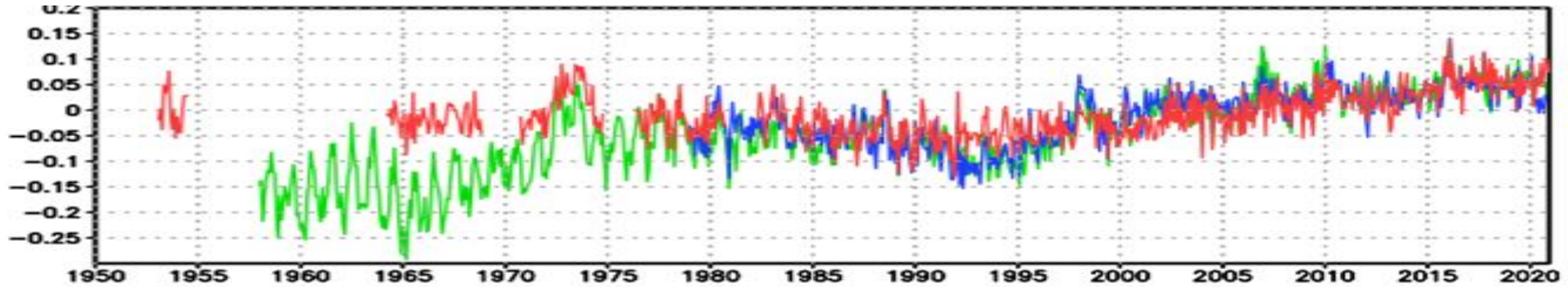


CORe CFSR MERRA2

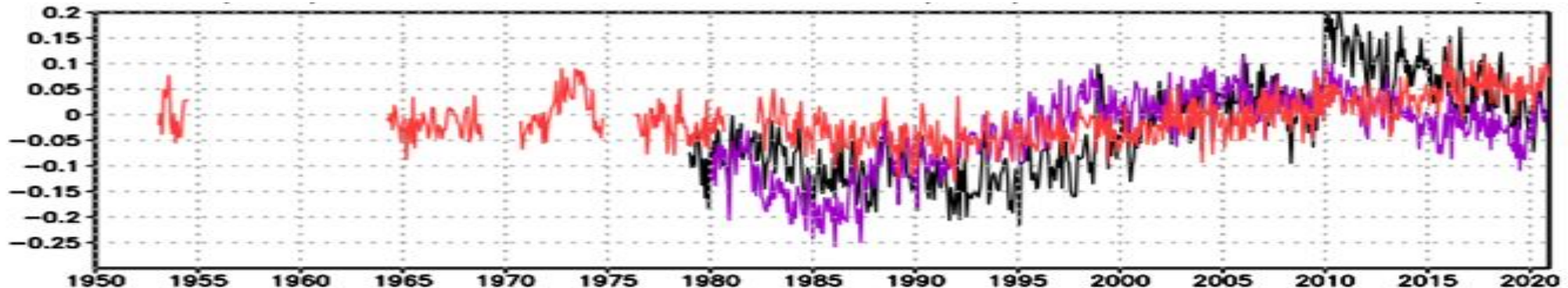


# Global Monthly Precipitation Anomaly

CORe JRA55 ERA5



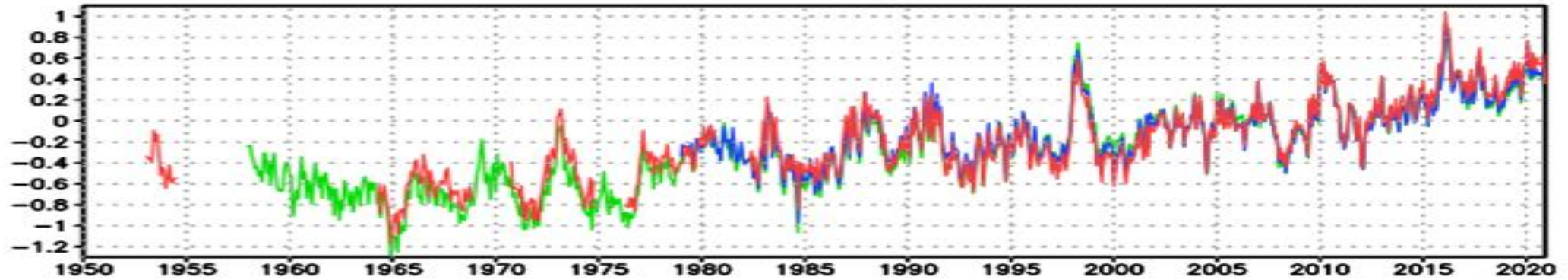
CORe CFSR MERRA2



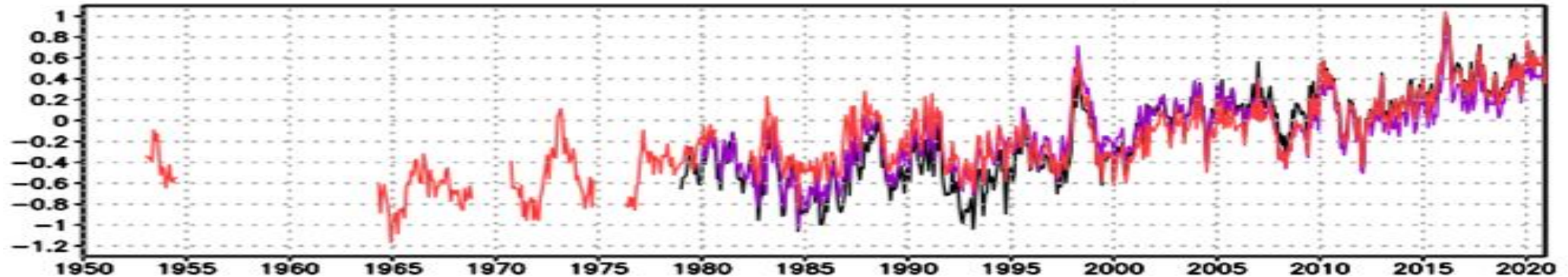
CORe precip trend is the smallest of the modern reanalyses

# Global Monthly 500hPa Temperature Anomaly

CORe JRA55 ERA5



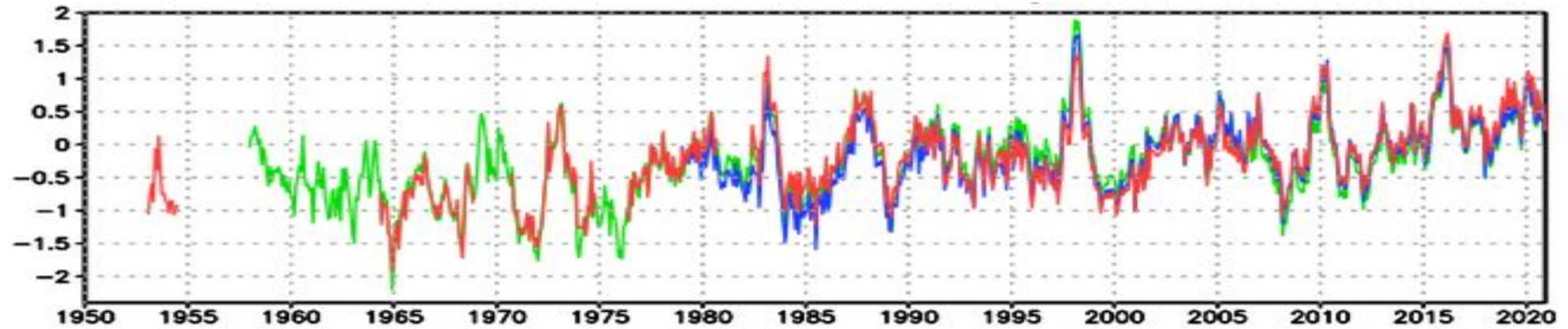
CORe CFSR MERRA2



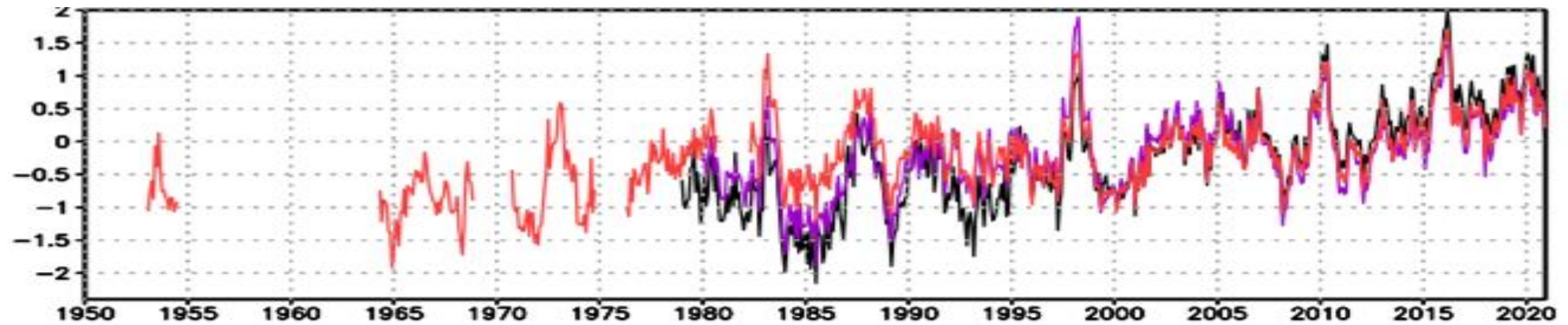
CORe, JRA-55, and ERA-5 more alike, while MERRA-2 and CFSR relative larger differences

# Equatorial 200hPa Temperature Anomaly

CORe JRA55 ERA5



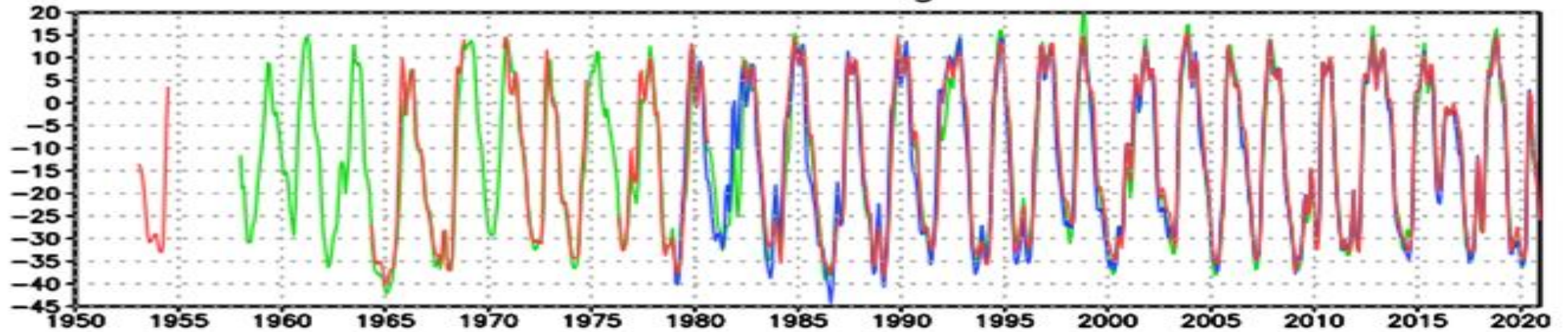
CORe CFSR MERRA2



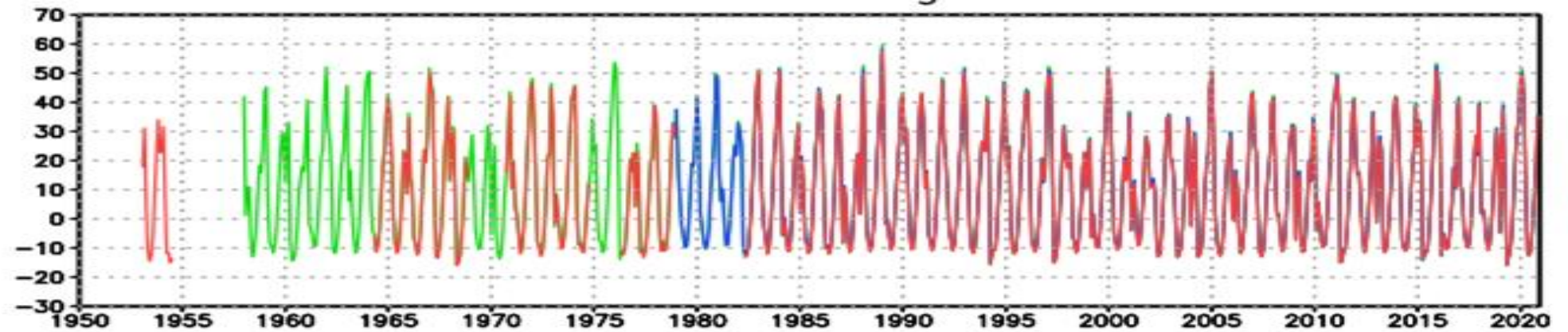
# 10hPa Monthly Zonal Wind

CORe JRA55 ERA5

Equatorial  
region

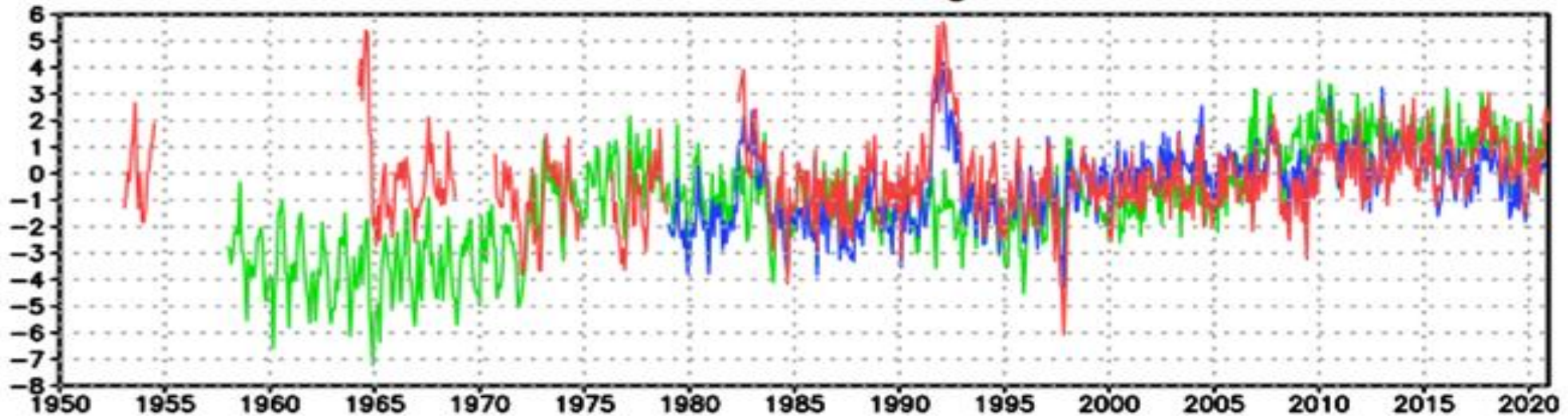


60N-70N  
region



# Equatorial USWtoa Monthly Anomaly

CORe JRA55 ERA5



The three strong peaks <--> the Agung, El Chichon, and Mt Pinatubo volcano eruptions



# Early Conclusions

- ❖ CORe shows the similar trends (during 1982-2020) with ERA-5 and JRA-55, despite not using radiance data.