# Results from the coupled SP-CAM

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# Models Configuration

| | | SP-CCSM | CCSM |
|---|---|---|---|
| Atmospheric Model AGCM | Horizontal res. | T42 (sld[1]) | T42 (sld[1]) |
| | Vert. levels | 30 | 26 |
| | Shallow conv. | CRM[2] | ZM |
| | Deep conv. | CRM[2] | Hack |
| Ocean Model OGCM | Horizontal res. | gx3v5 | gx3v5 |
| | Vert. levels | 25 | 25 |
| Ice model | | CSIM4 | CSIM4 |
| Land model | | CLM3.0 | CLM3.0 |

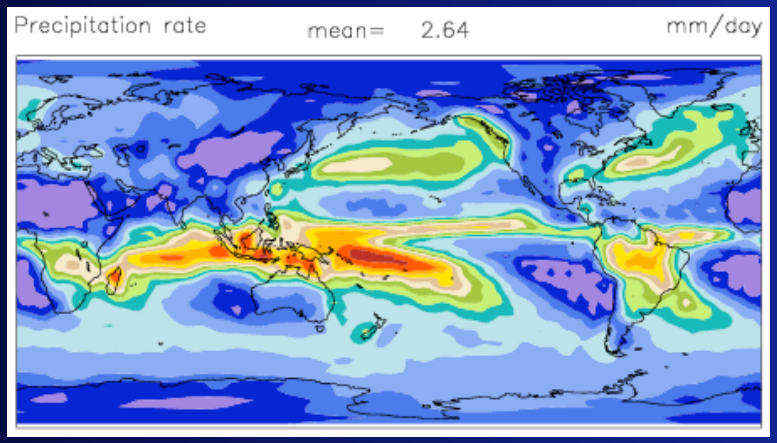
[1] semi-Lagrangian dynamical core

[2] M. Khairoutdinov and D. Randall

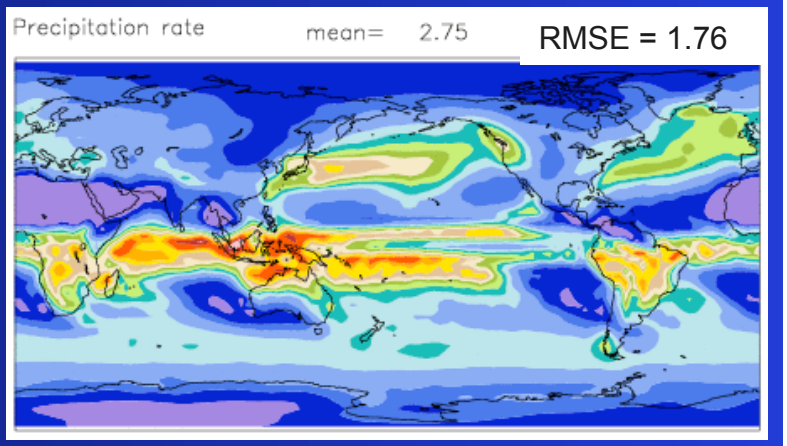
# Precipitation Simulation

## Boreal Winter Climatology

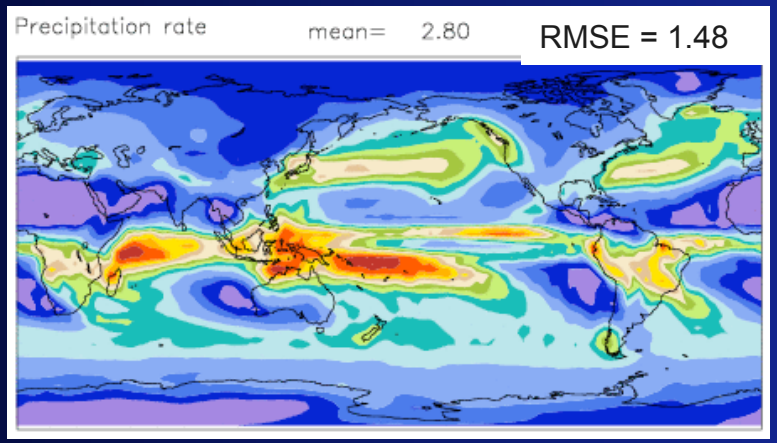
### CMAP: 1979–1998



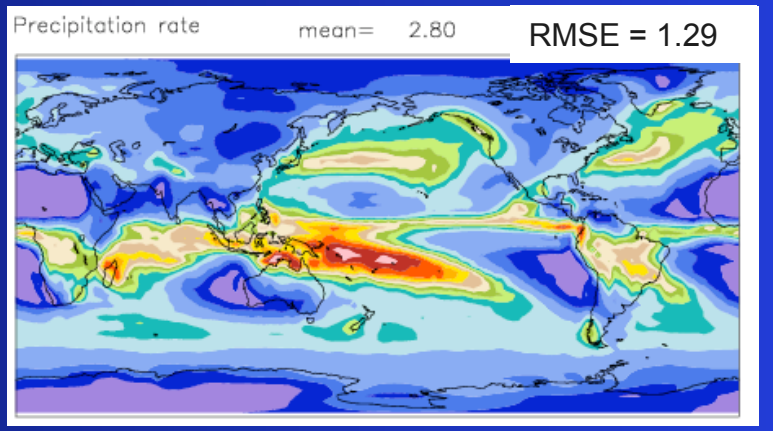

### CCSM: 0004–0023




### SP-CCSM: 0004–0023



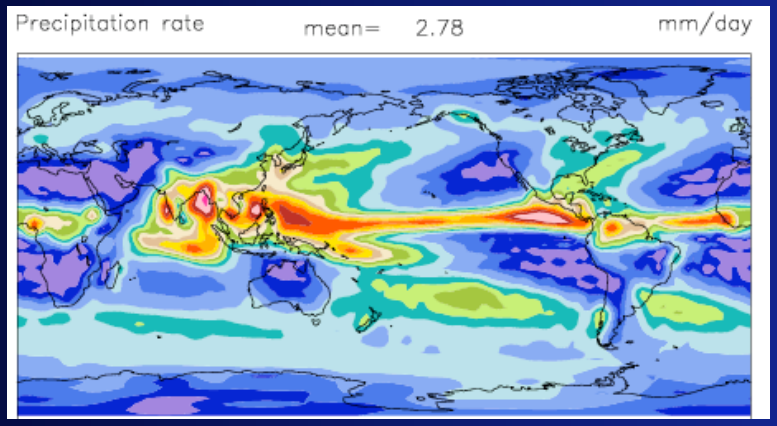

### SP-CAM: 1986–2003



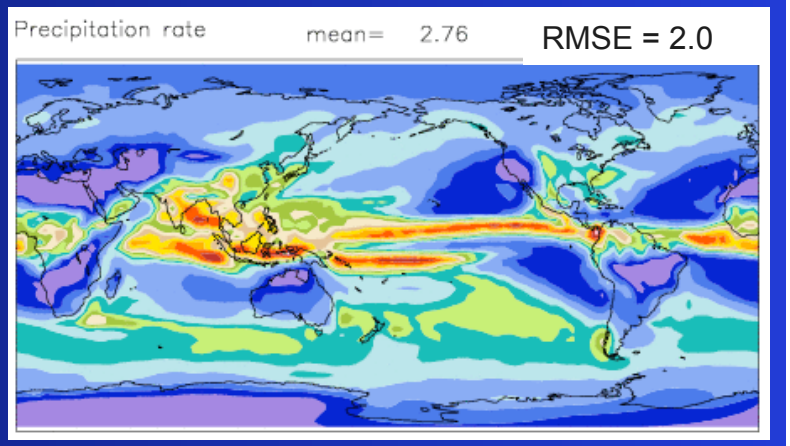
# Precipitation Simulation

## Boreal Summer Climatology

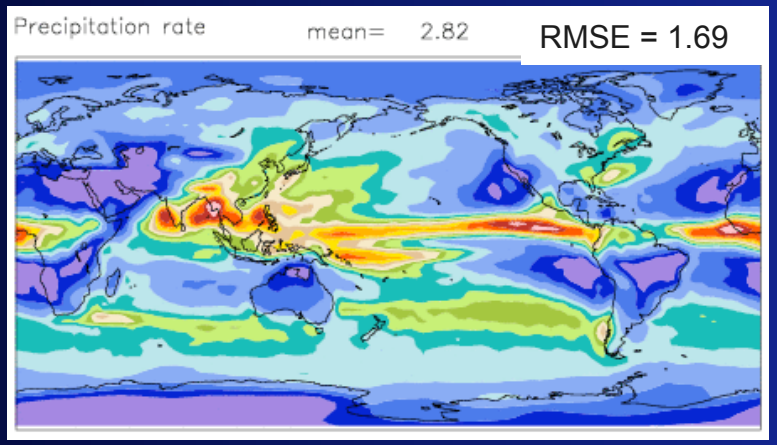
### CMAP: 1979–1998



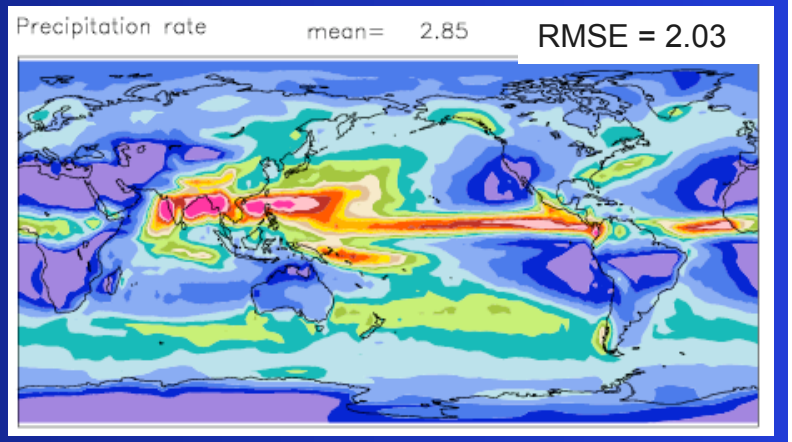

### CCSM: 0004–0023

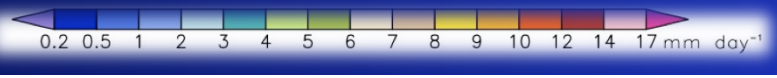



### SP-CCSM: 0004–0023




### SP-CAM: 1986–2003



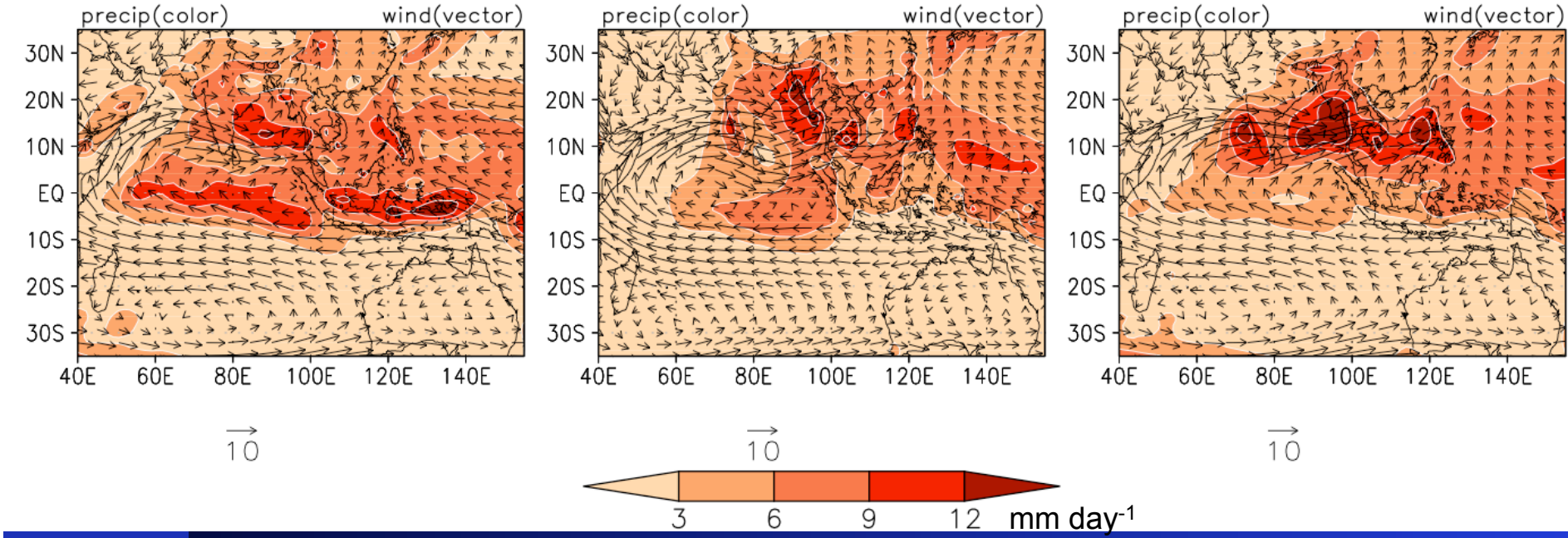
# Indian Monsoon

## JJAS Climatology (Precipitation, 850-hPa Wind)

***CCSM (0004–0023)***

***GPCP/NCEP Rean (1979–2003)***

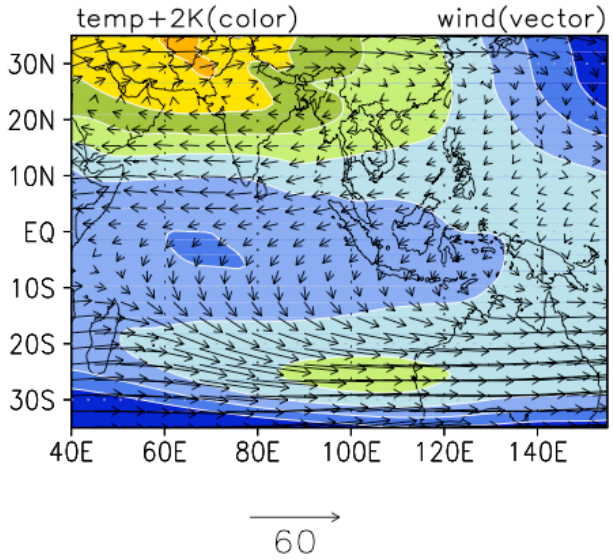
***SP-CCSM (0004–0023)***



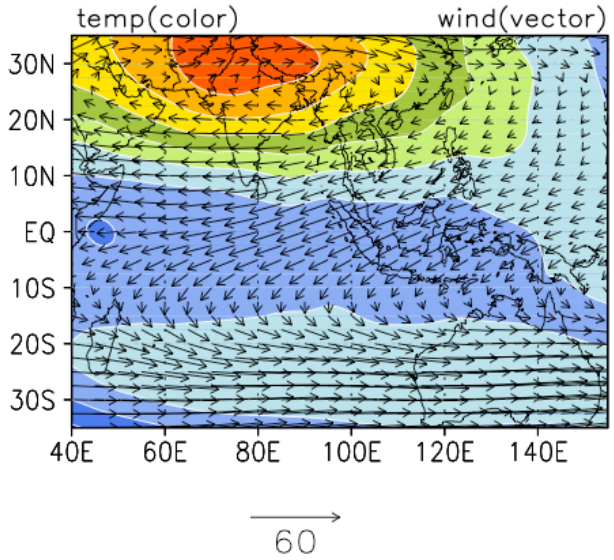
# Indian Monsoon

## JJAS Climatology (200-hPa Temperature, Wind)

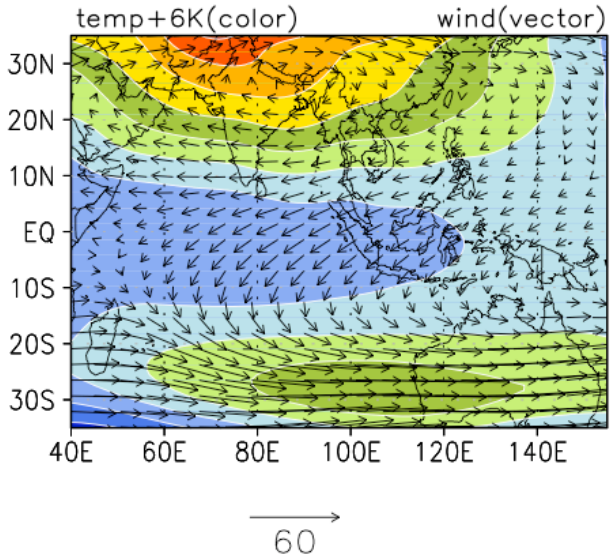
***CCSM (0004–0023)***

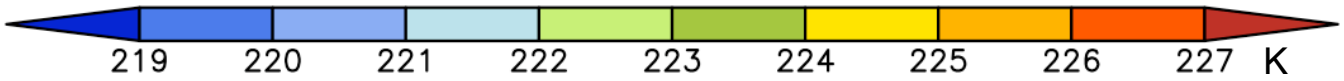



***NCEP Rean (1979–2003)***




***SP-CCSM (0004–0023)***

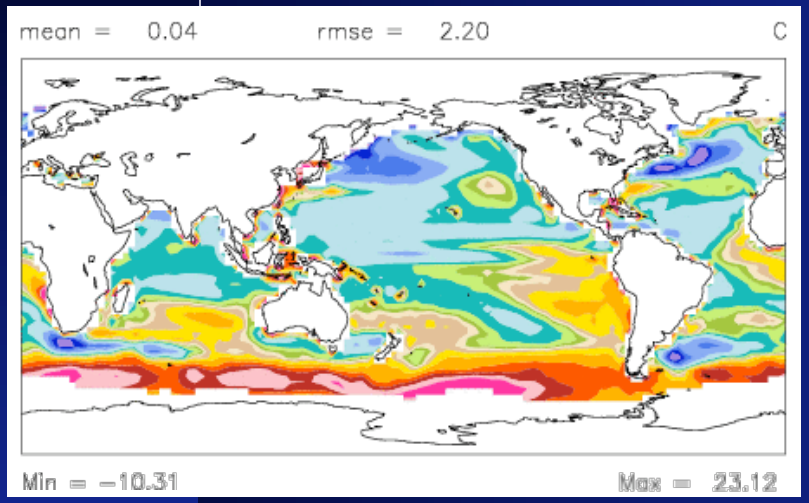


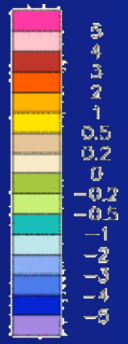
# SST Bias

## (models:0004–0023; HadISST:1982–2001)

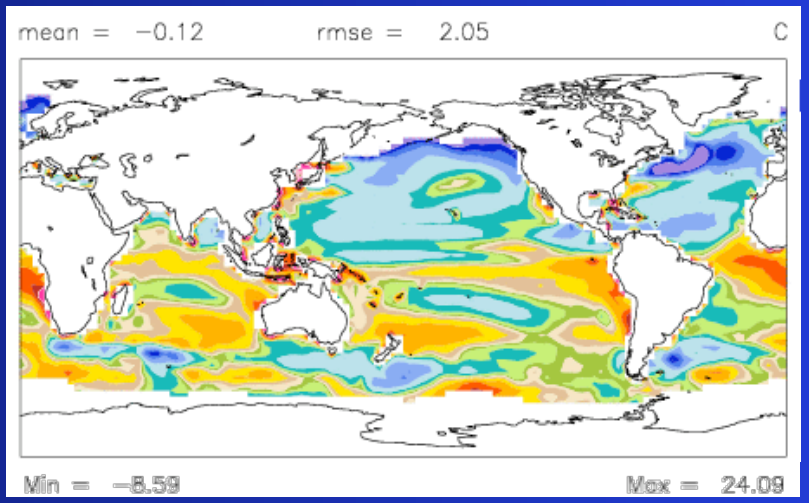
***SP-CCSM–HadISST***

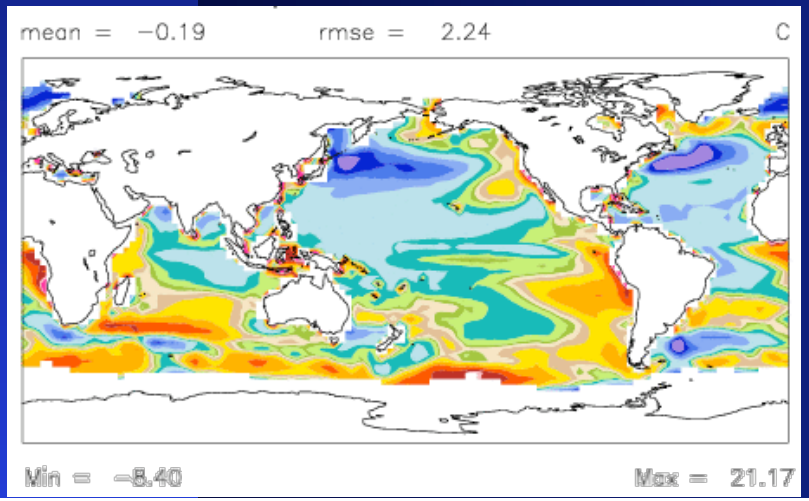



*DJF*

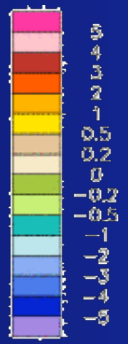


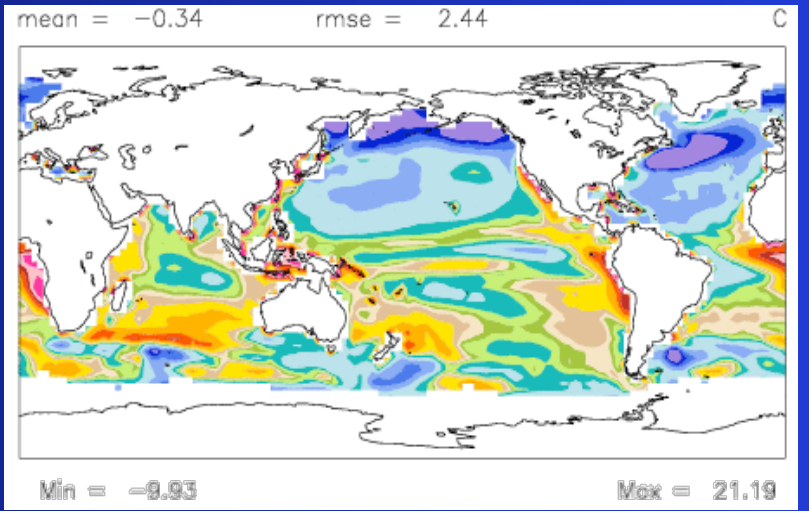

***CCSM–HadISST***



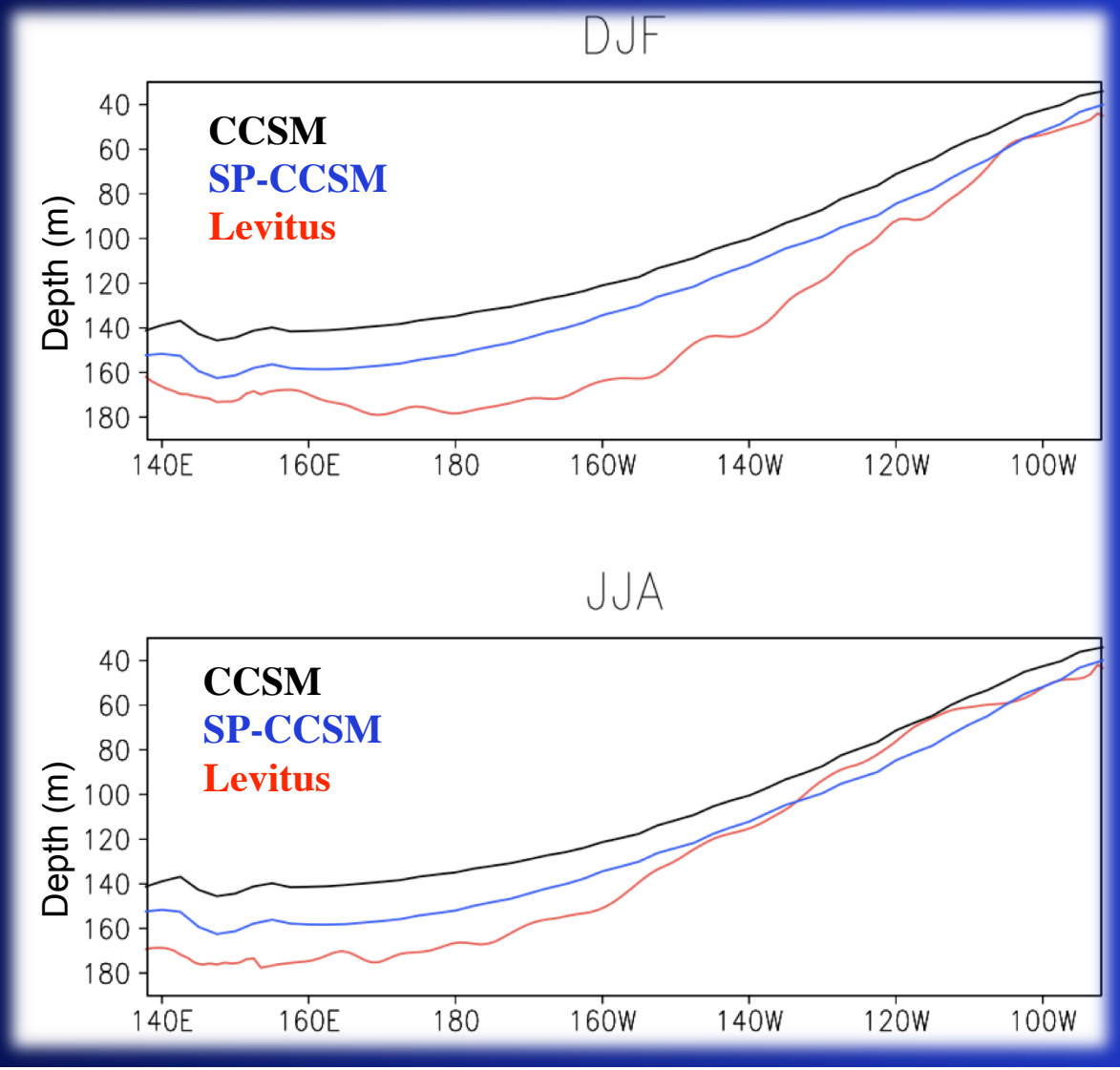

*JJA*



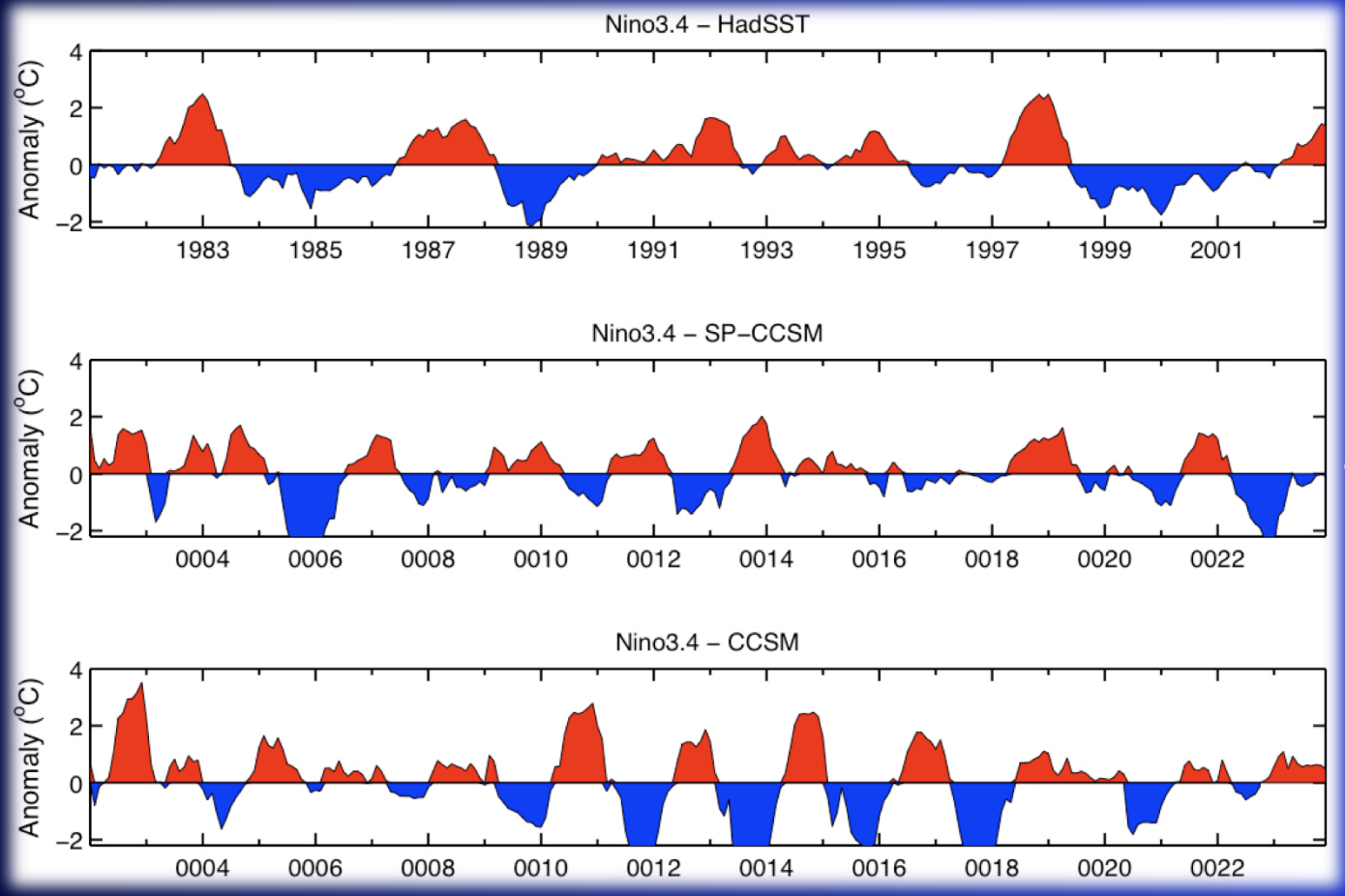
# 20-degree Isotherm, 5S-5N

## (models: 0004–0023, Levitus: WAO 1998)



# ENSO Simulation

## Niño 3.4 (5S-5N,170W-120W)



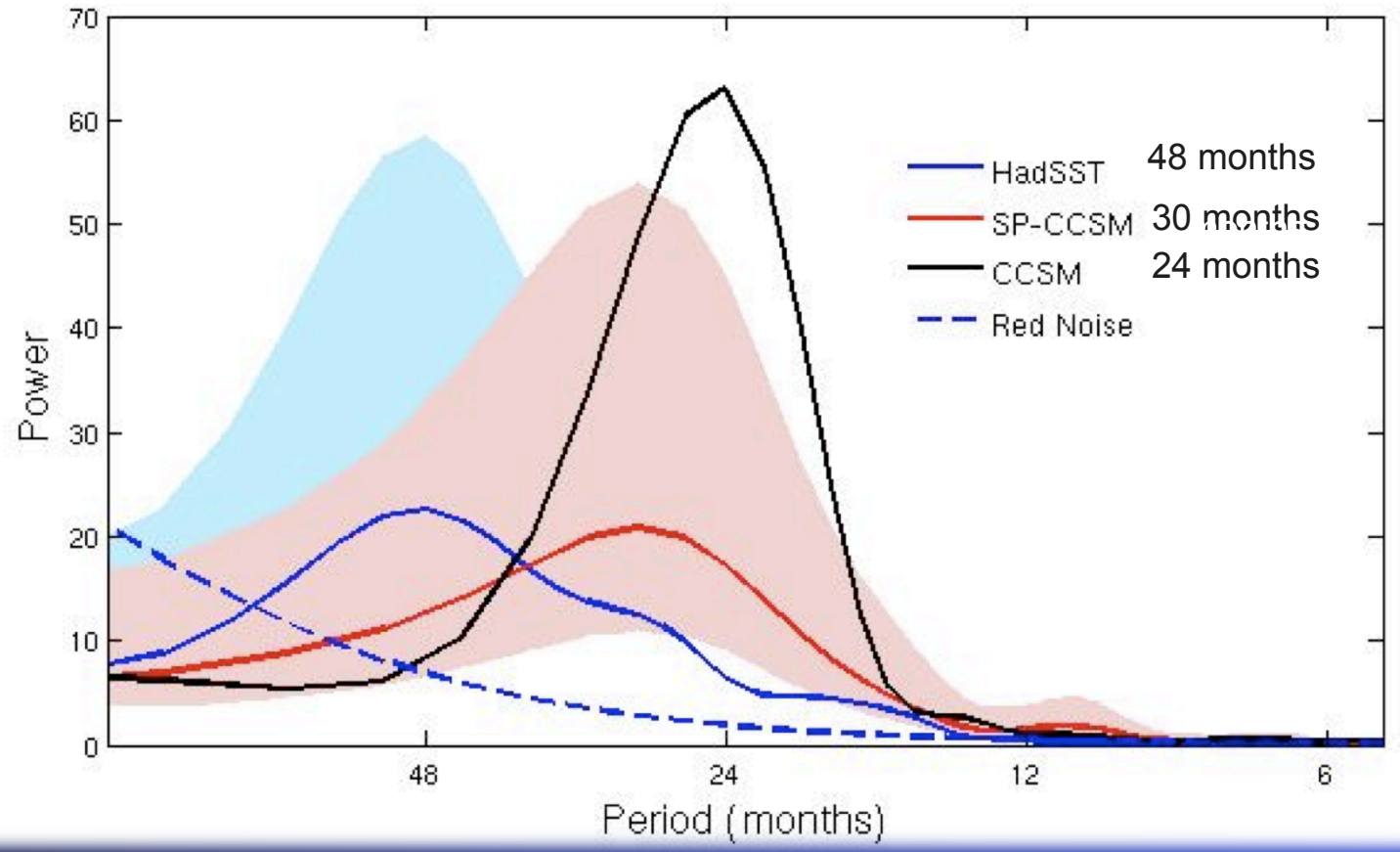

***OBS***

***SP-CCSM***

***CCSM***

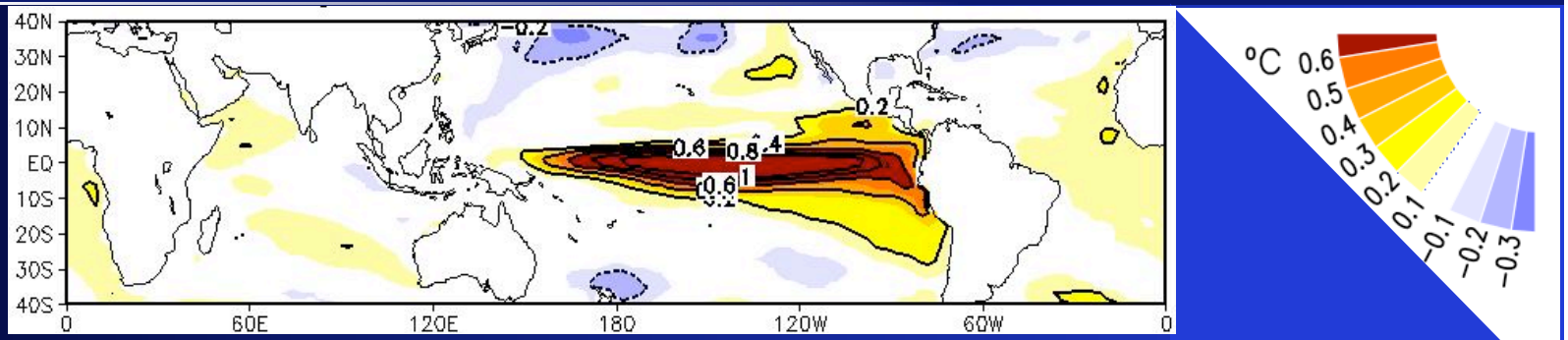
# ENSO Simulation

## Niño 3.4 (5S-5N,170W-120W)

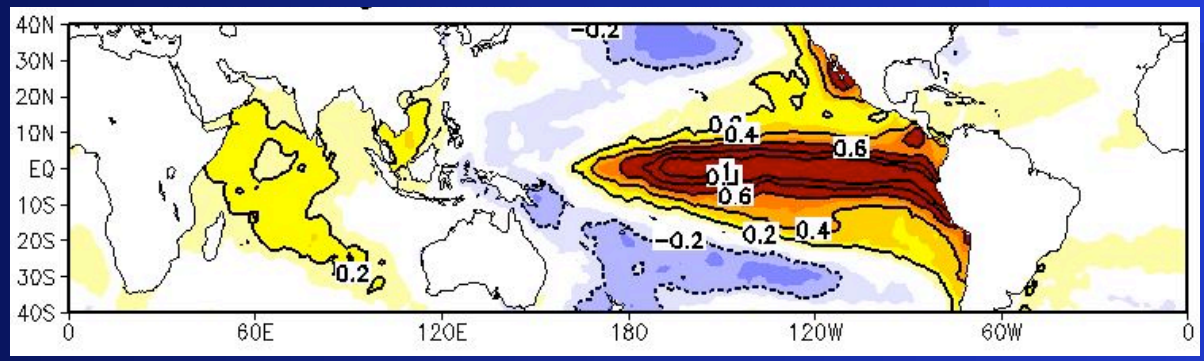


# SSTA Regression with Niño3.4

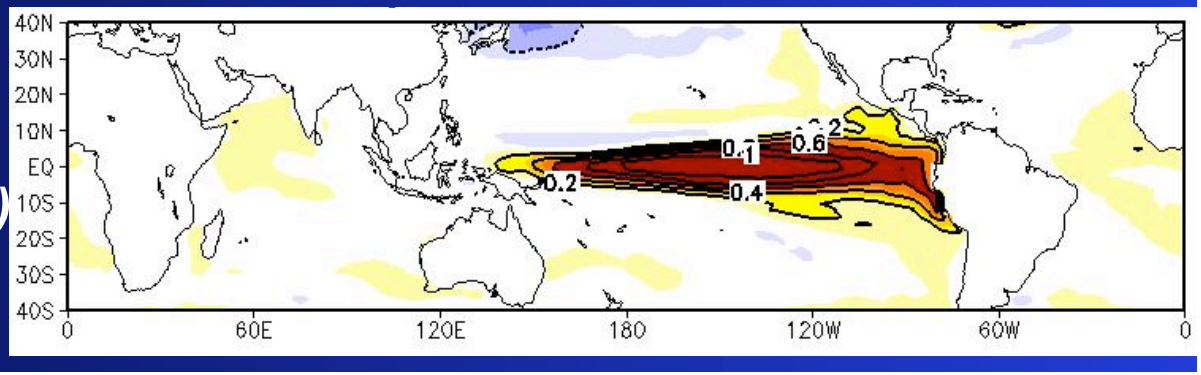
***SP-CCSM***
***(0002–0023)***




***HadISST***
***(1948–1998)***



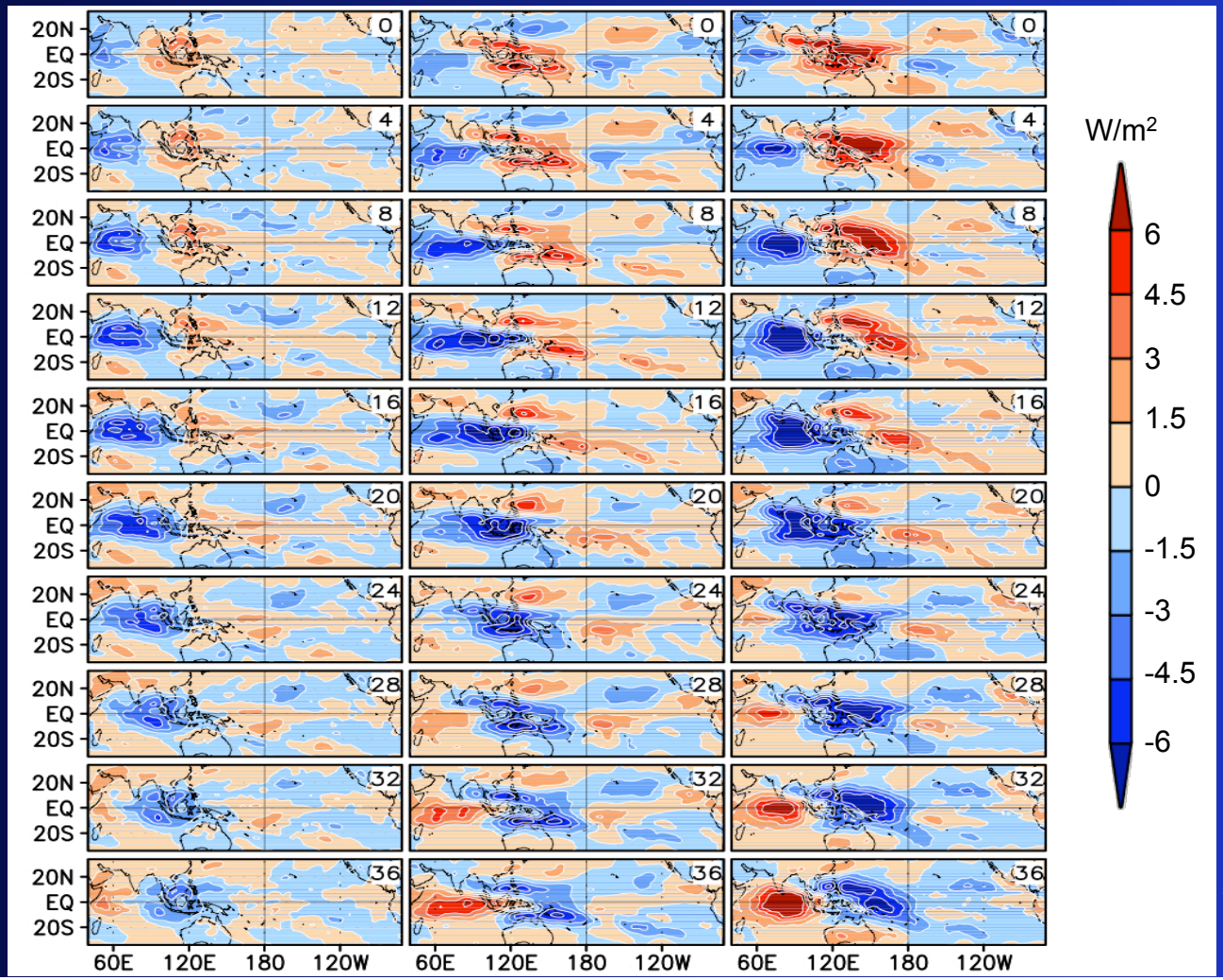

***CCSM***
***(0002–0023)***



# MJO Simulation

## Phase composites of the OLR dominant MJO mode

### (models: 0004–0023; NOAA: 1979–2007)



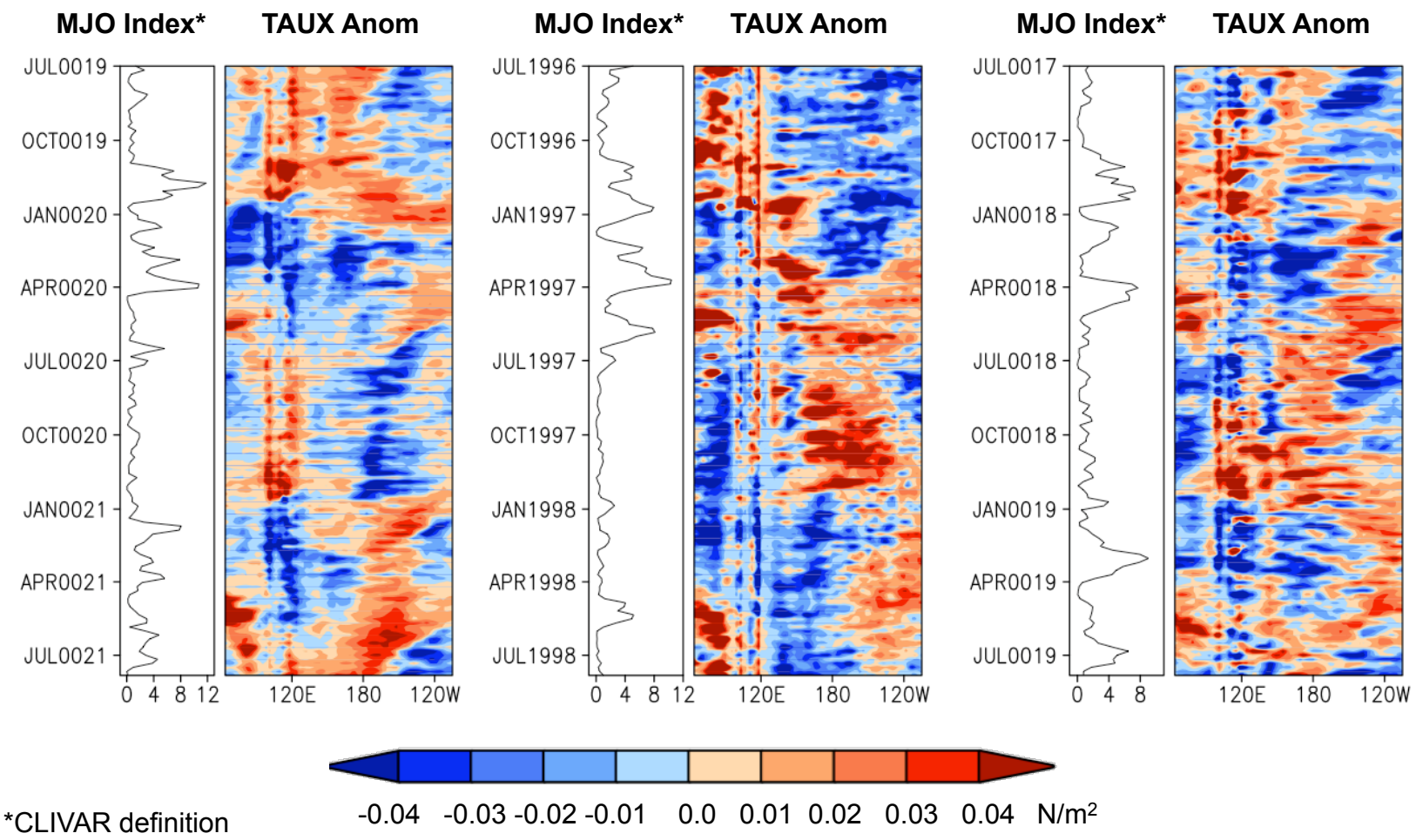

courtesy of
V. Krishnamurthy

# MJO-ENSO Relation

## CCSM

## OBS

## SP-CCSM

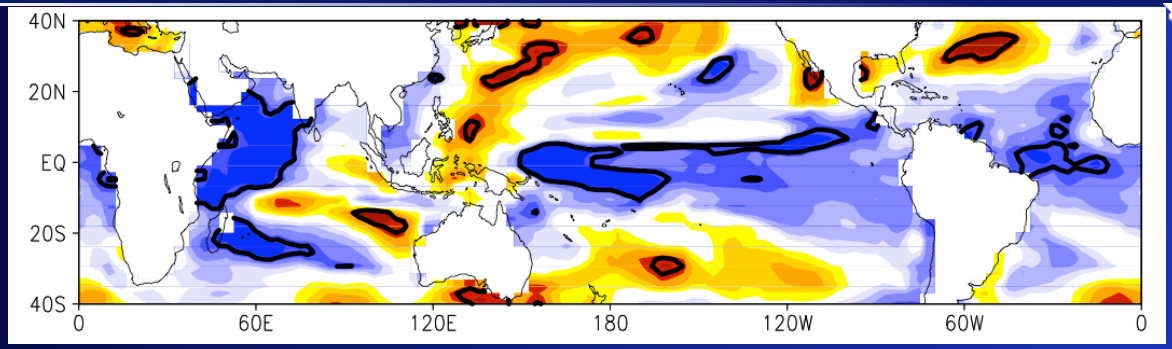


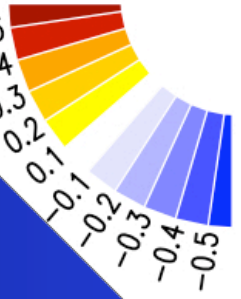

*CLIVAR definition

# ENSO-Monsoon Relationship

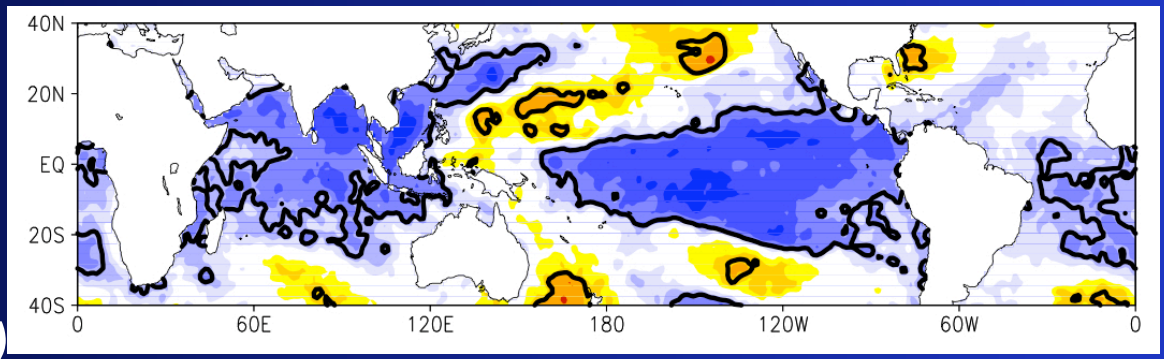
## IMR (JJA), SSTA(DJF+1)

***SP-CCSM (0002–0023)***

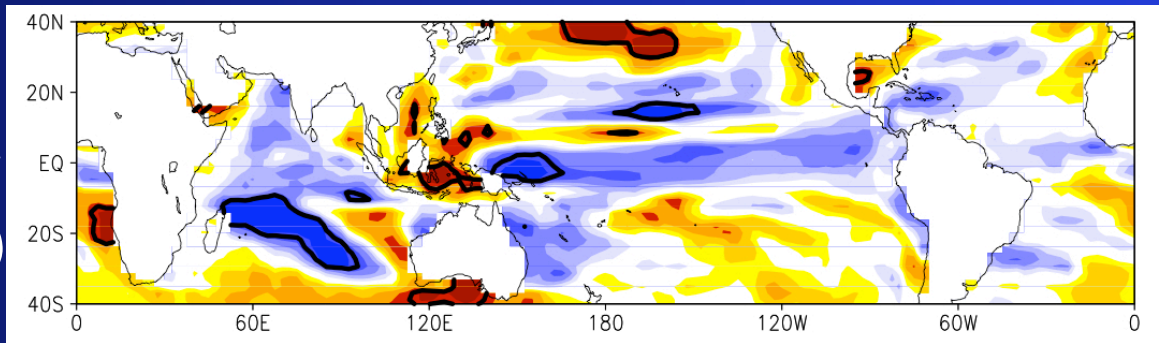



***HadISST/ GPCP (1951–2004)***




***Ctl-CCSM (0002–0023)***



# Future Plans

- Better understanding of the mechanisms that trigger and maintain MJO
- Use SP-CCSM as a prediction tool
- Simulate a CMIP 5 climate-change scenario
- New simulation with high resolution ocean and fv dyn core in the AGCM