

RegCM-CORDEX South Asia - Some “**very**” Preliminary Analyses

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May 8, 2019

ICTP, Italy



Climate Change
Science Institute

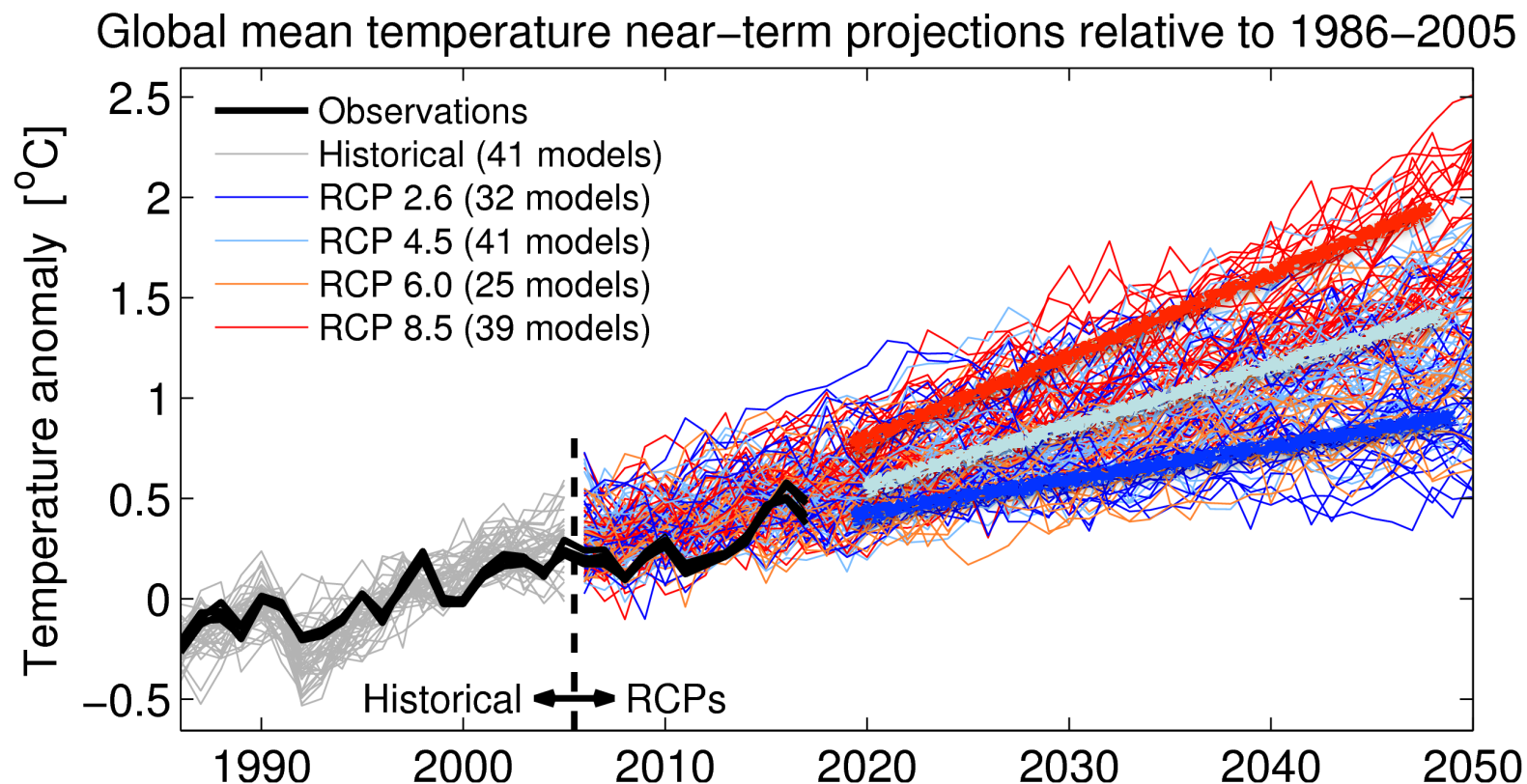
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MANAGED BY UT-BATTELLE FOR THE U.S. DEPARTMENT OF ENERGY

What did CMIP5 Project for the Present Day?



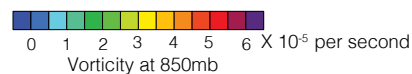
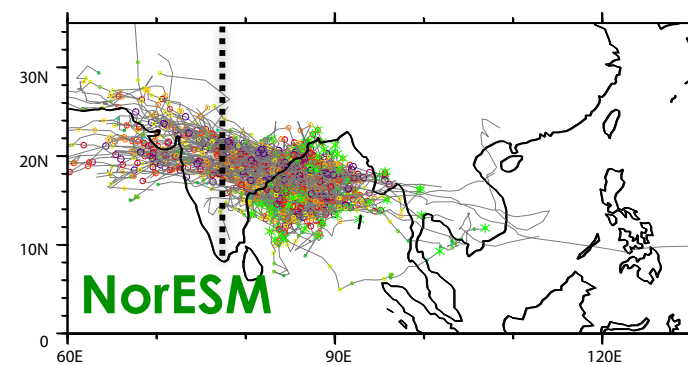
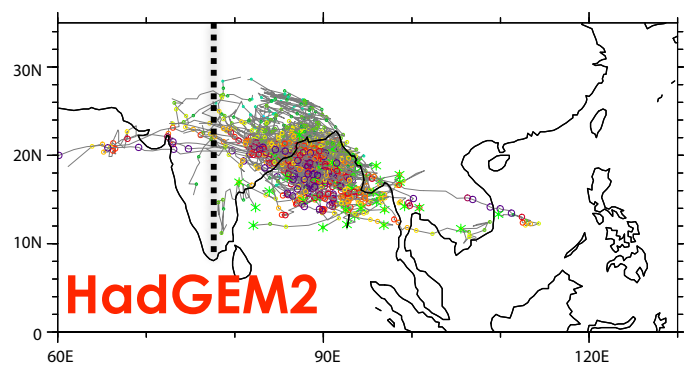
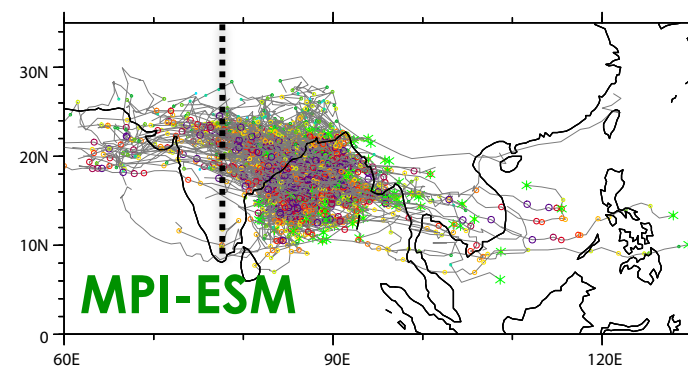
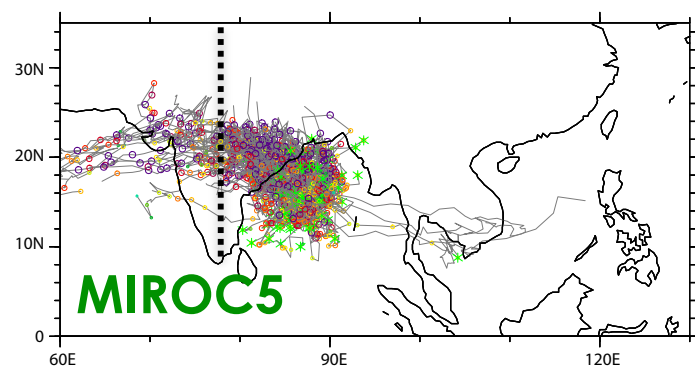
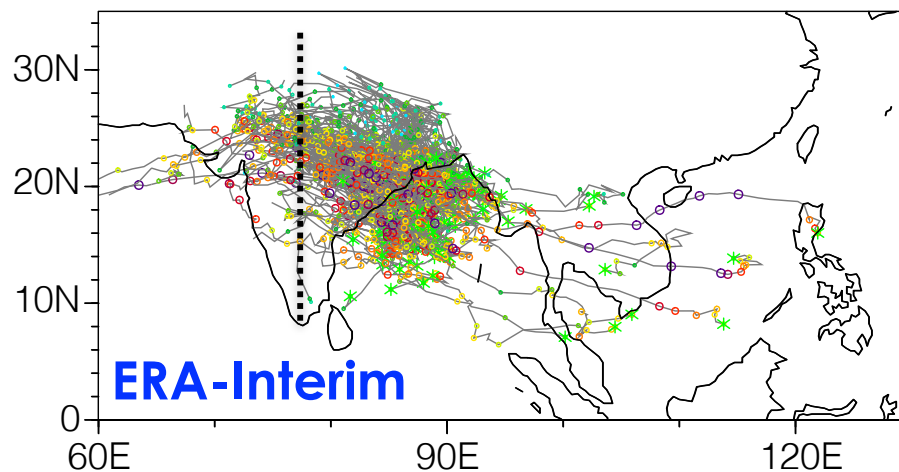
Observed and Projected CO₂ Levels

Obs **410.79 ppm (Jun 2018)**

RCP8.5 **409.92 ppm (2018)**

RCP4.5 **406.64 ppm (2018)**

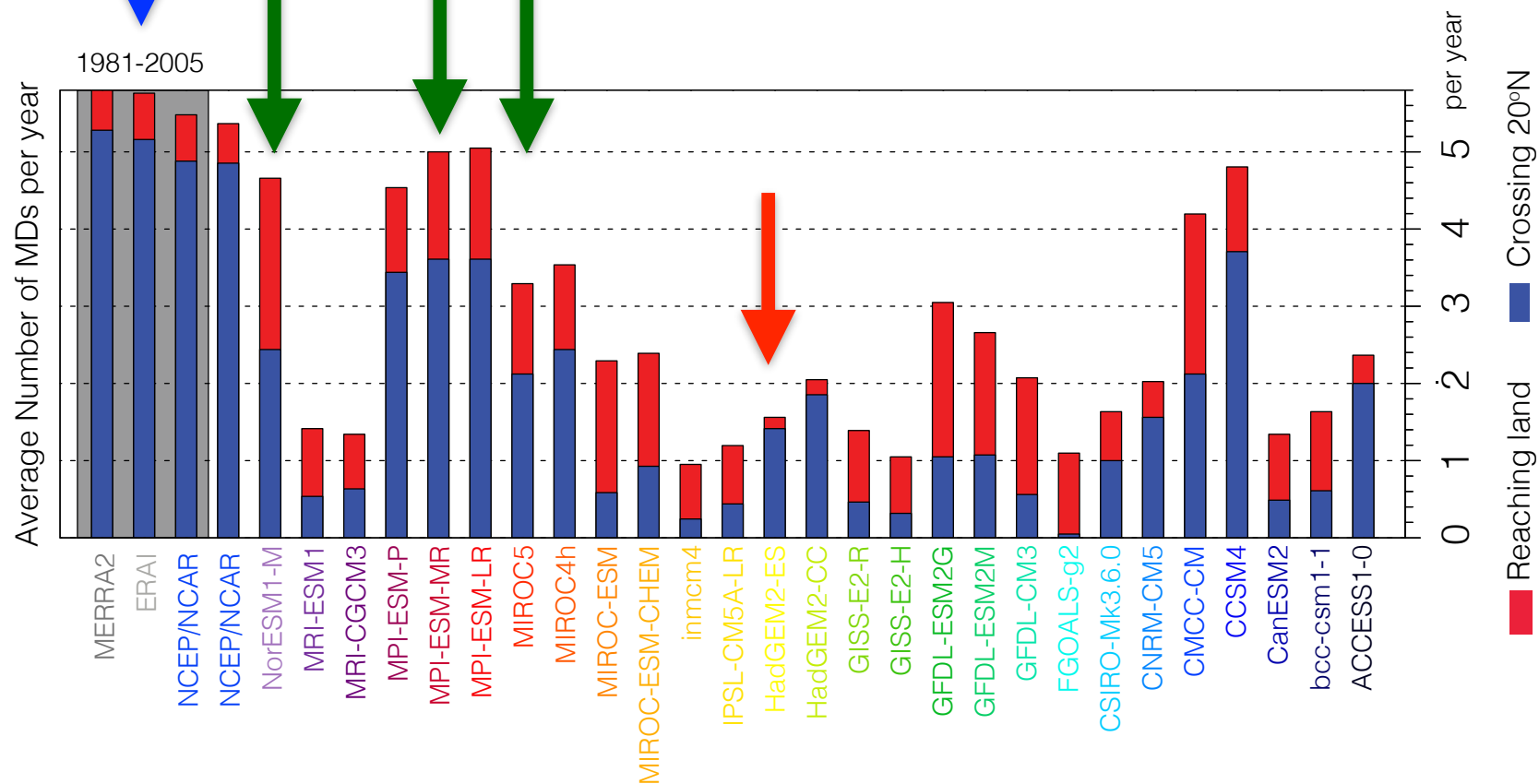
Monsoon Depressions



Reanalysis

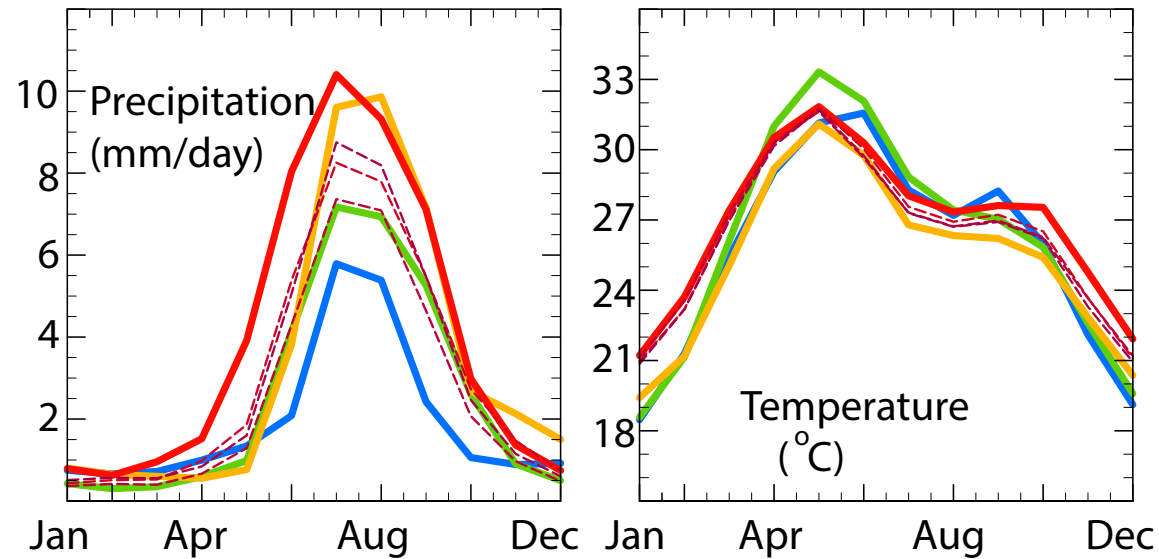


Monsoon Depressions

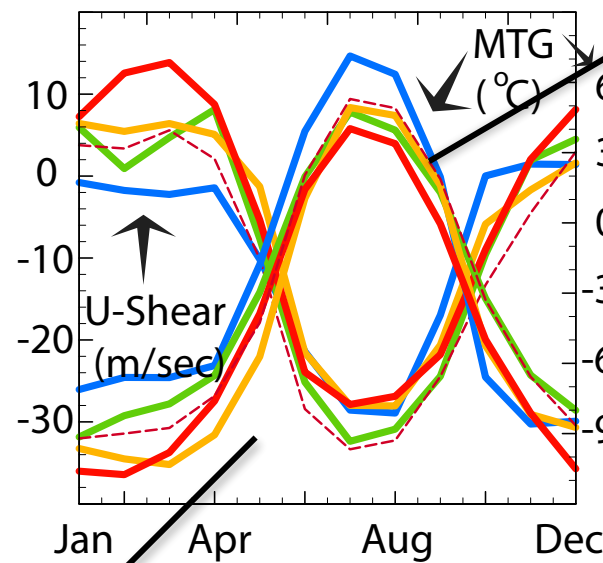


GCMs underestimate the frequency and northwestward moving monsoon depressions

Annual Cycles



Monsoon Dynamics



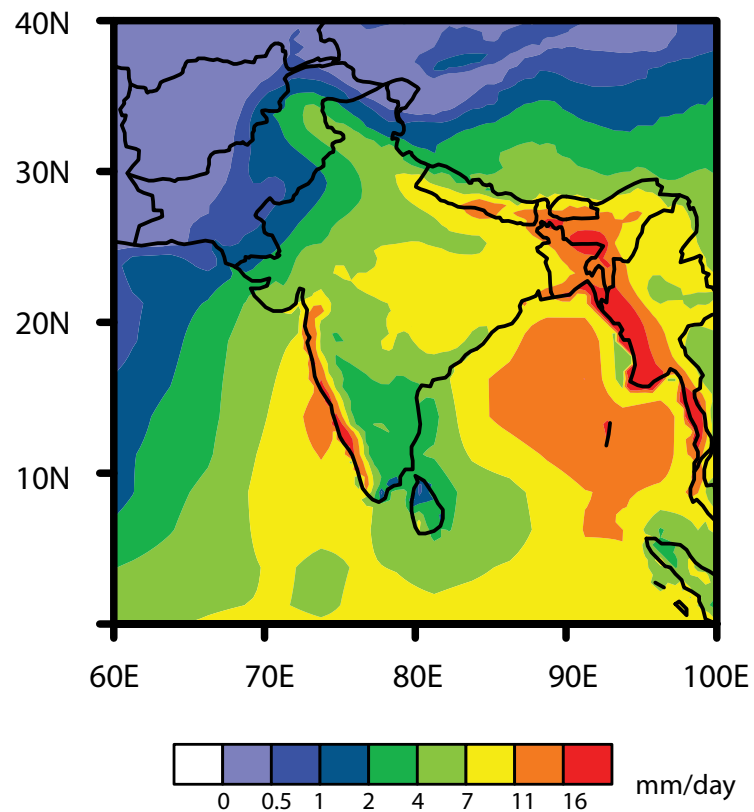
Meridional Differential Heating

- WM
- APHRODITE
- CRU
- MIROC5
- HadGEM2-ES
- NorESM1-ME
- MPI-ESM-MR

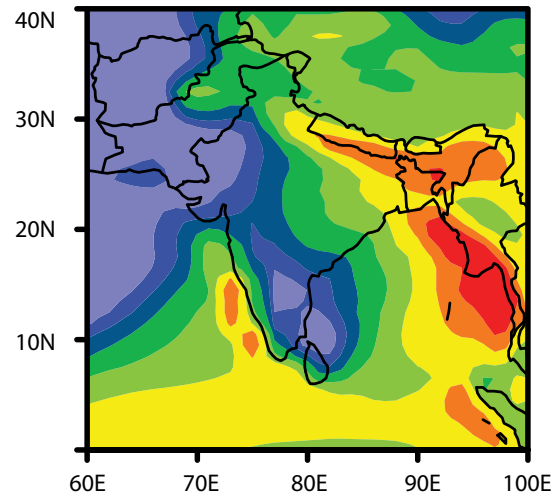
Atmospheric Wind Shear

Summer Monsoon Precipitation

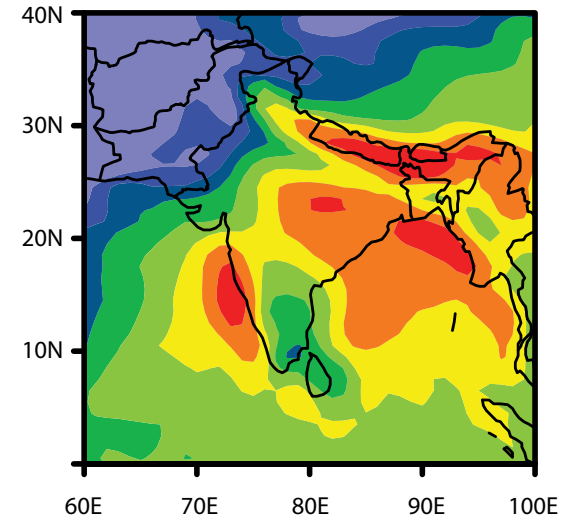
CRU Observations



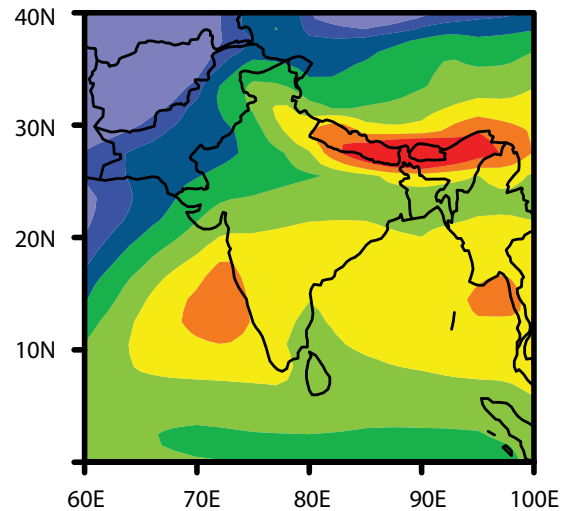
HadGEM2



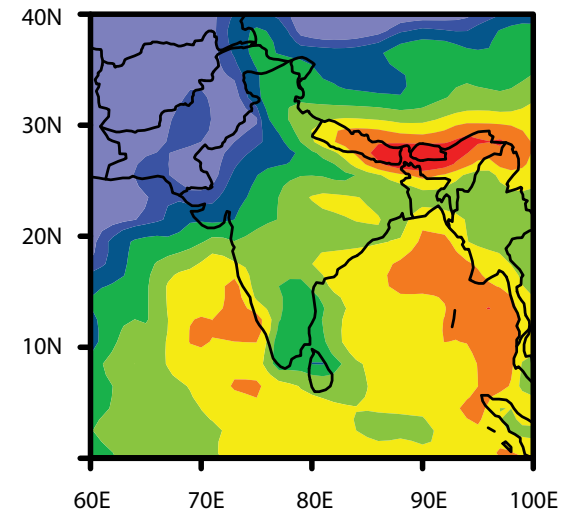
MIROC5



NorESM

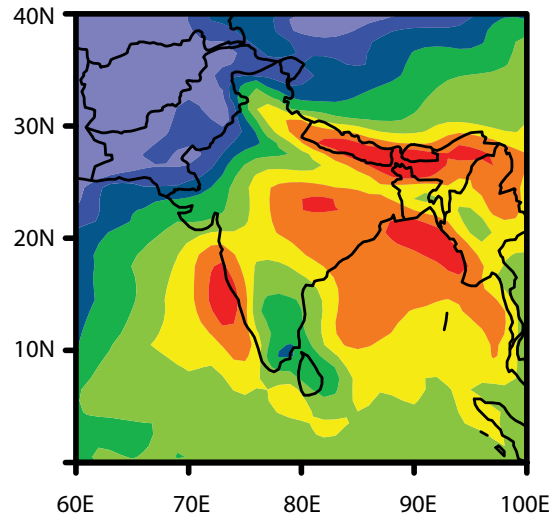


MPI-ESM

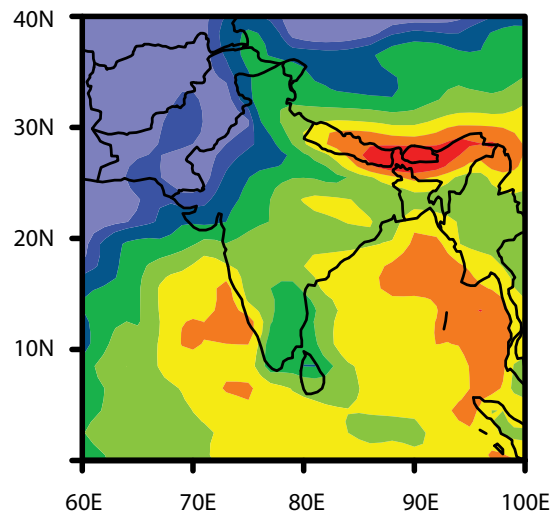


Summer Monsoon Precipitation

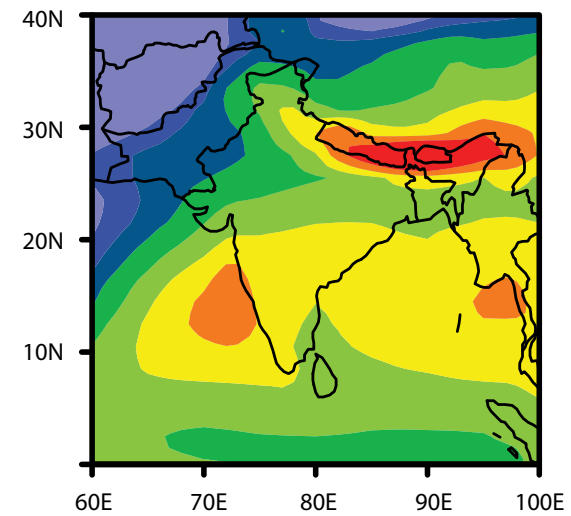
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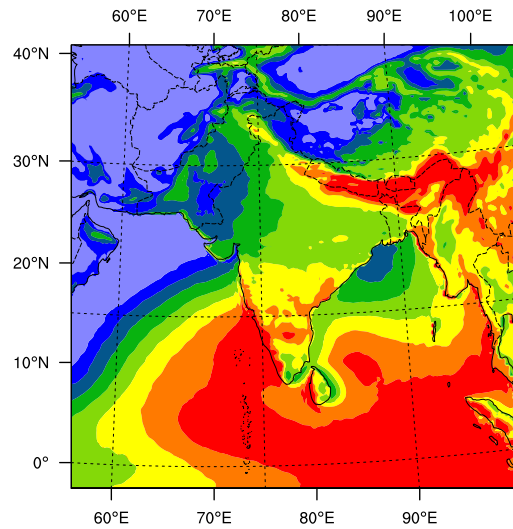
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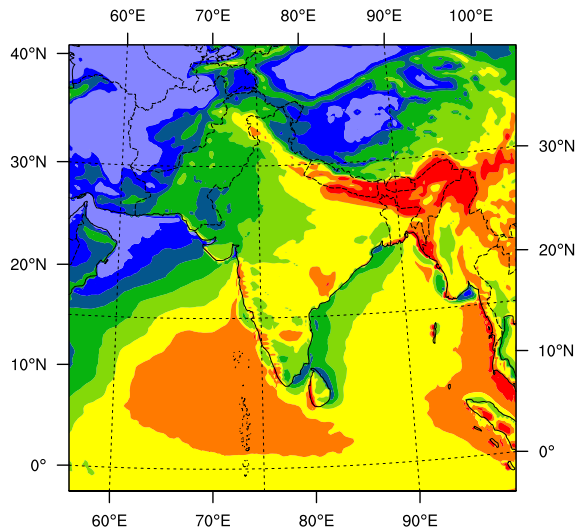
NorESM



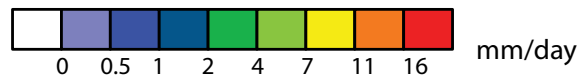
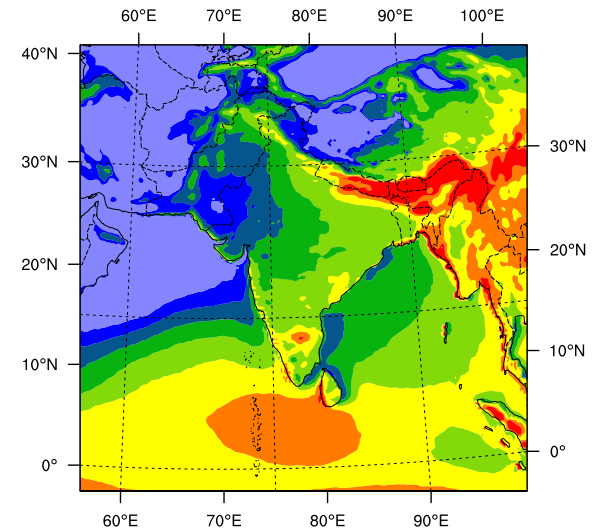
RegCM-MIROC5



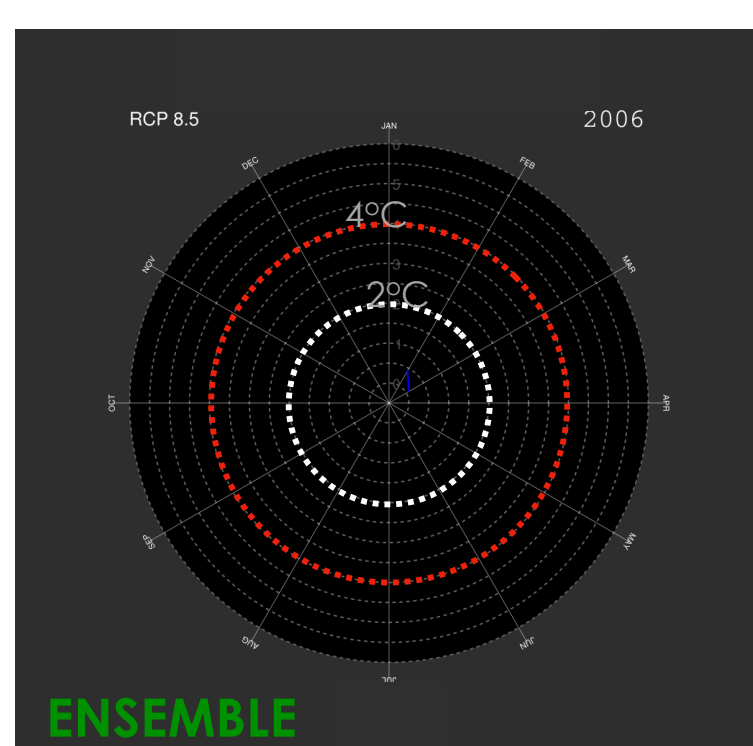
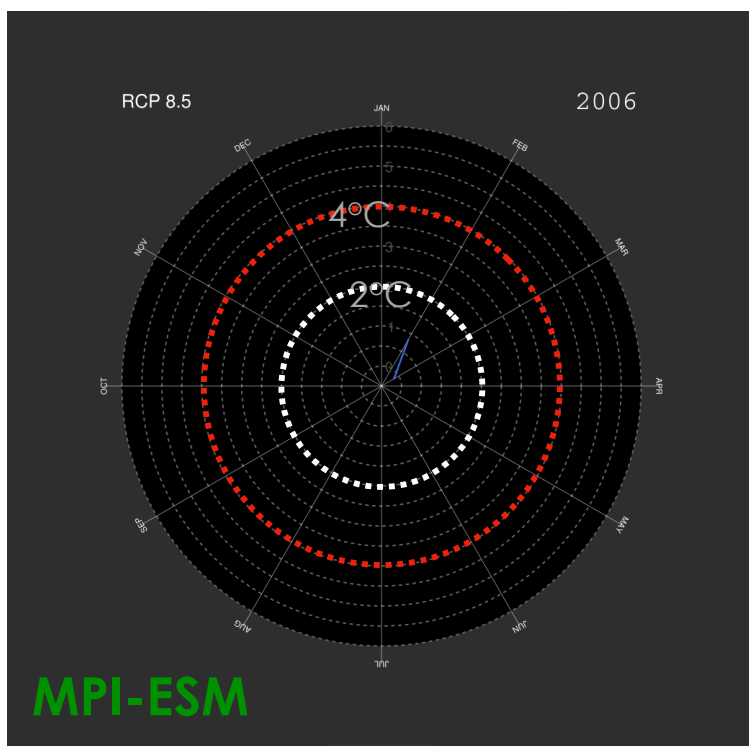
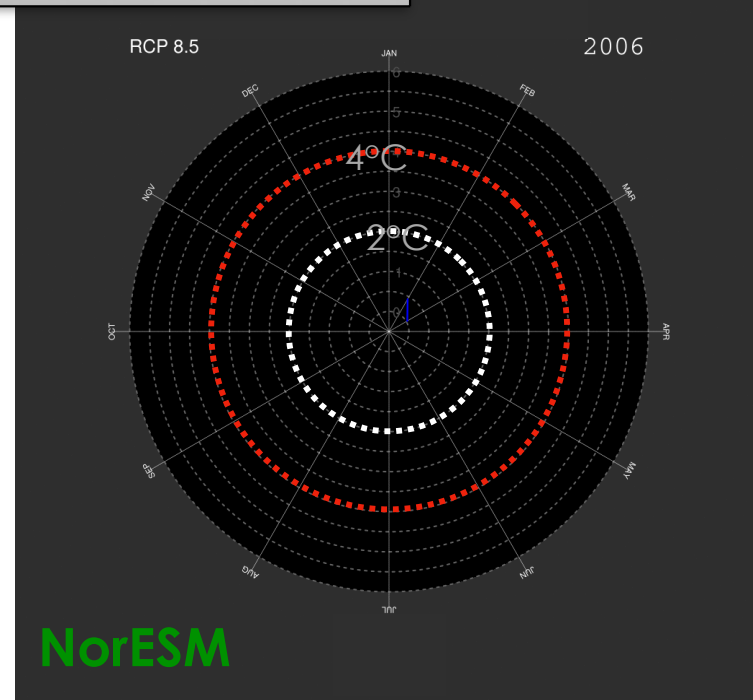
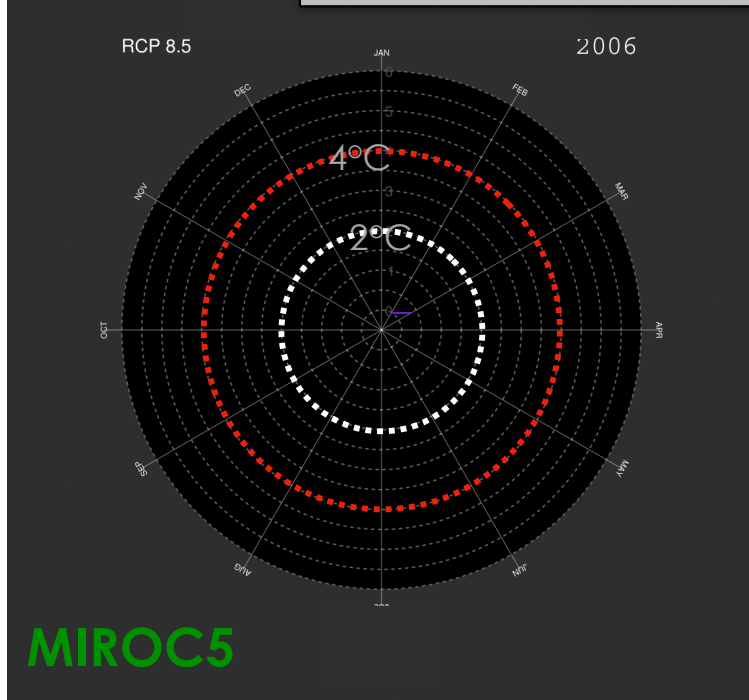
RegCM-MPI-ESM



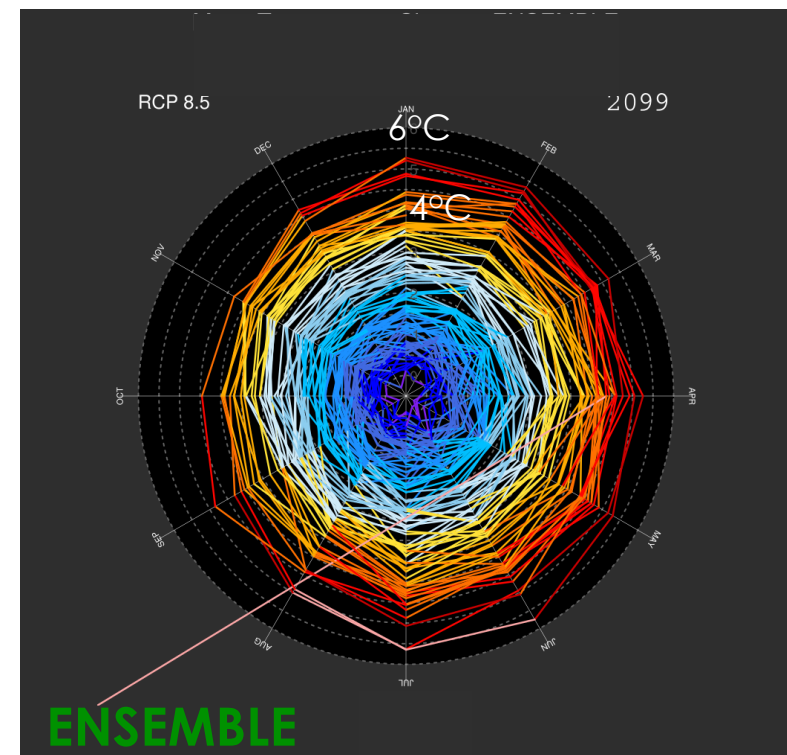
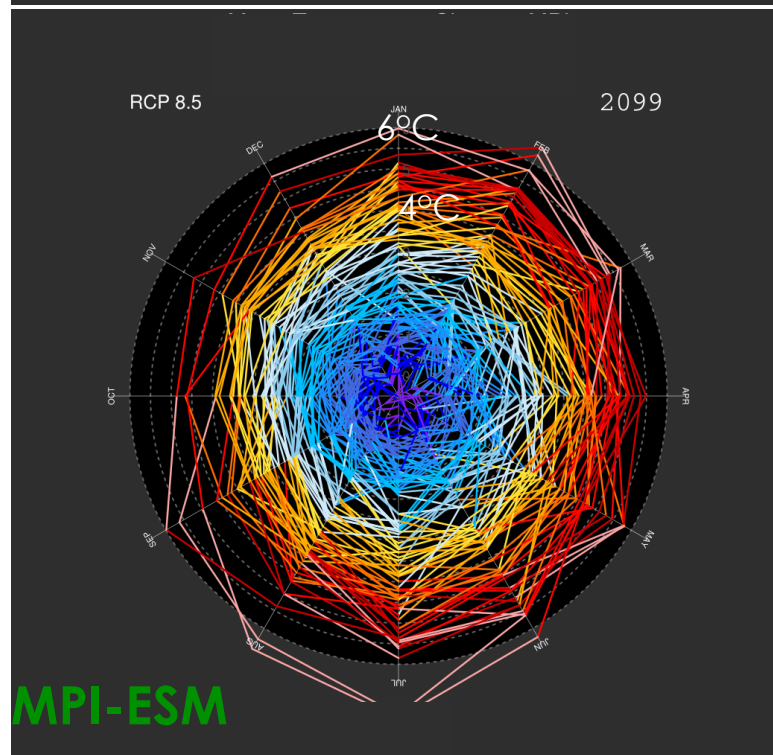
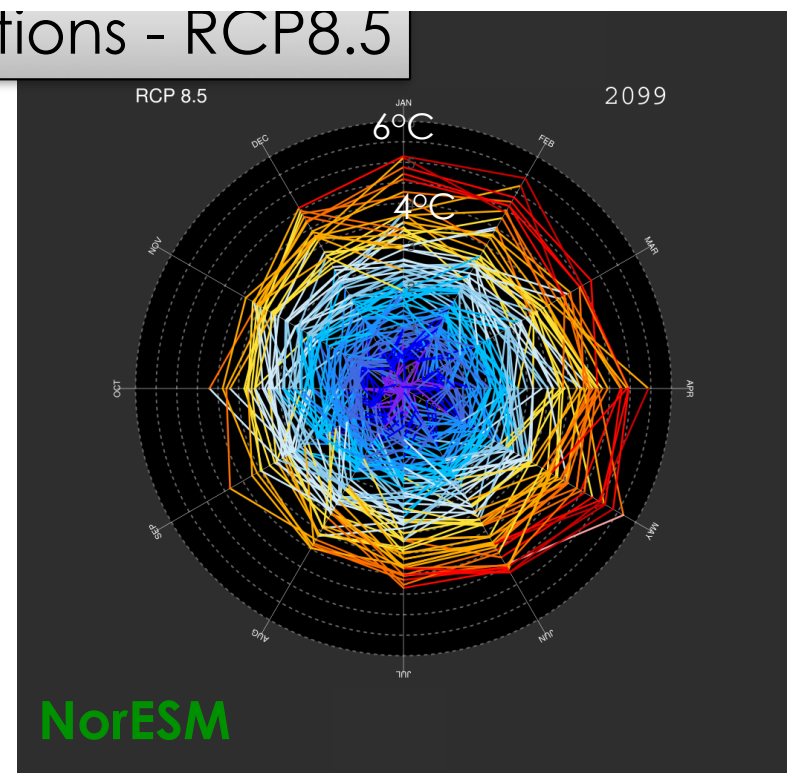
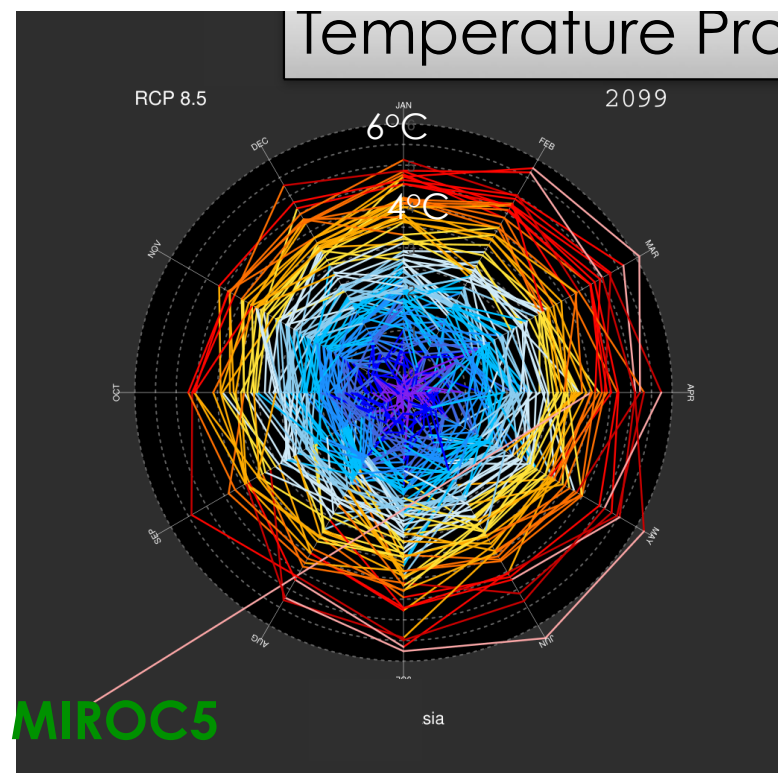
RegCM-NorESM



Temperature Projections - RCP8.5



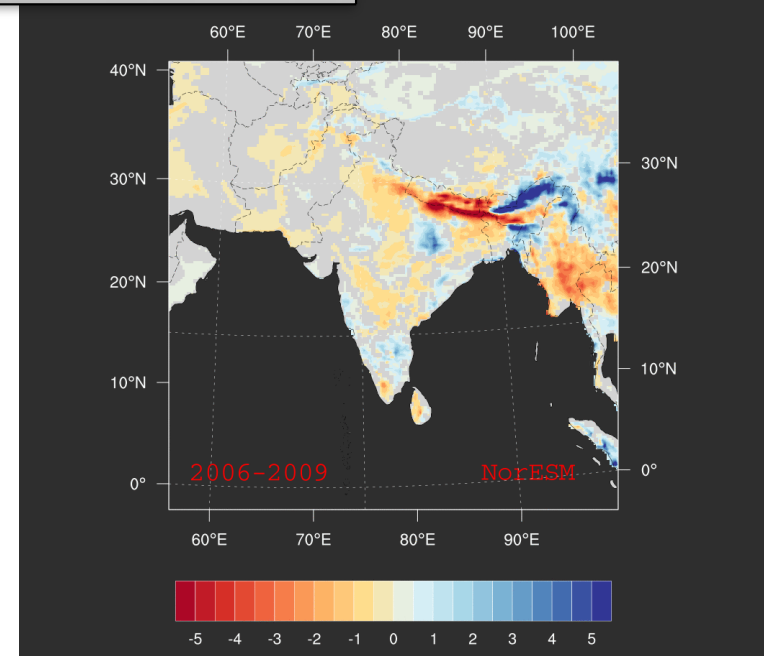
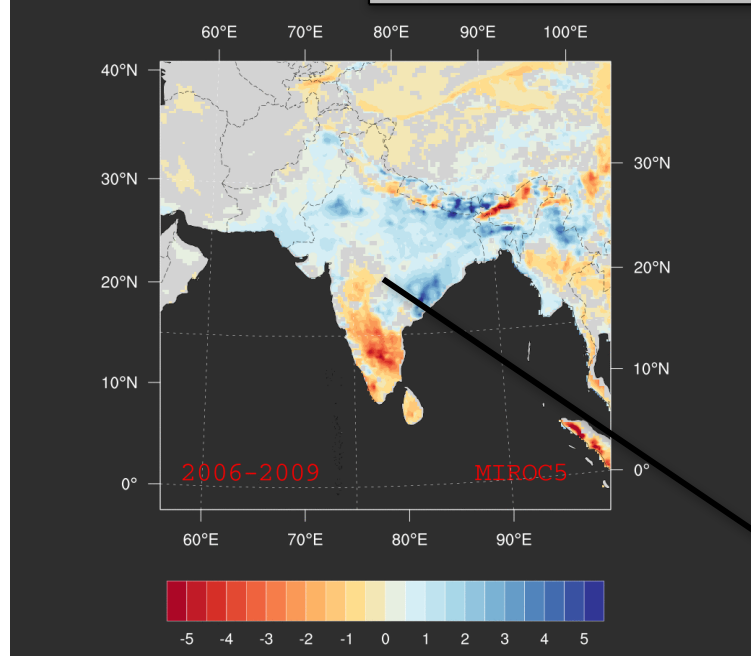
Temperature Projections - RCP8.5



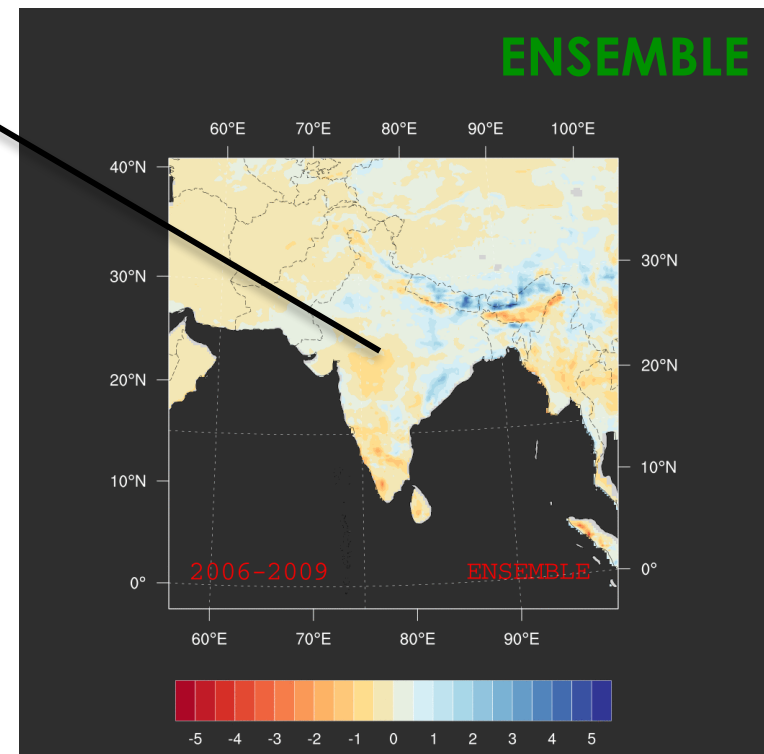
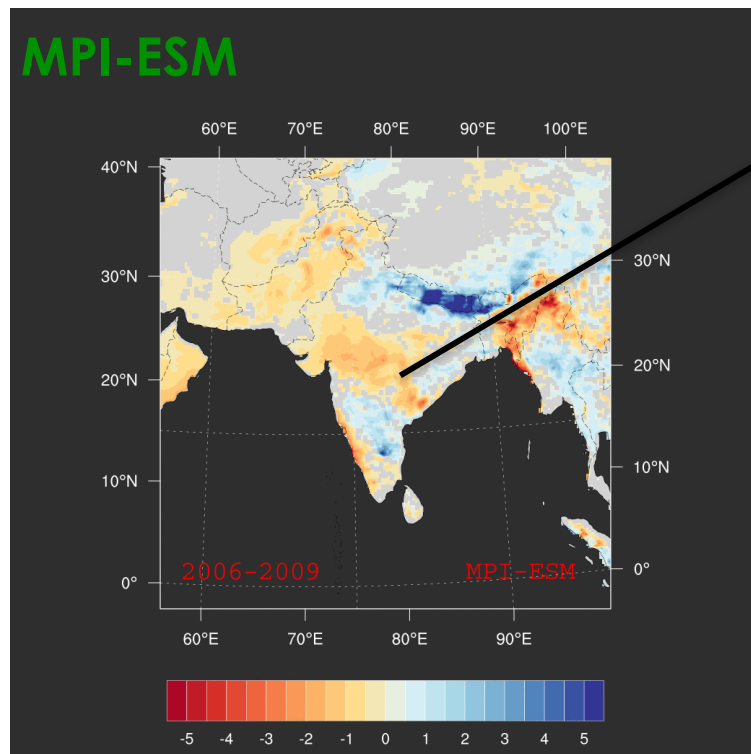
MIROC5

Precipitation Projections - RCP8.5

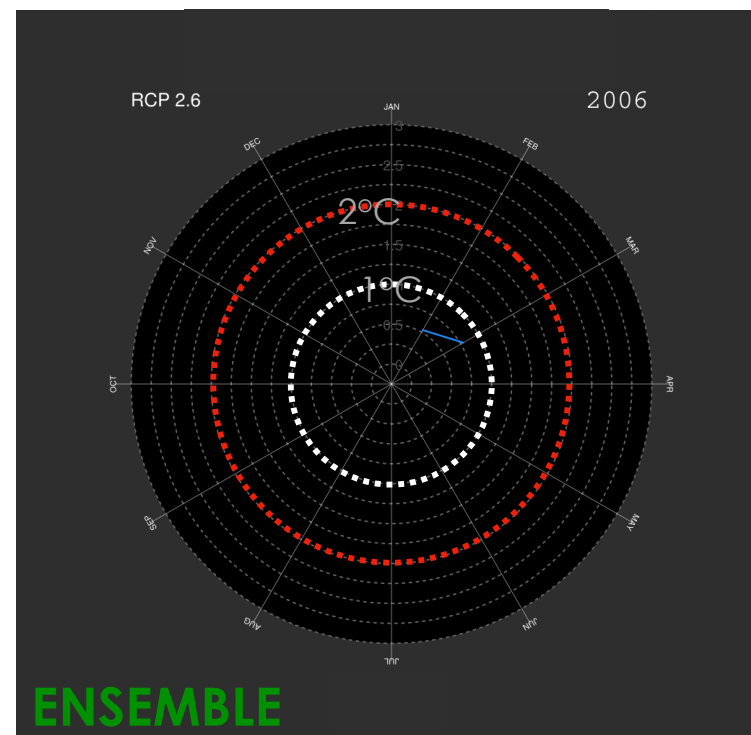
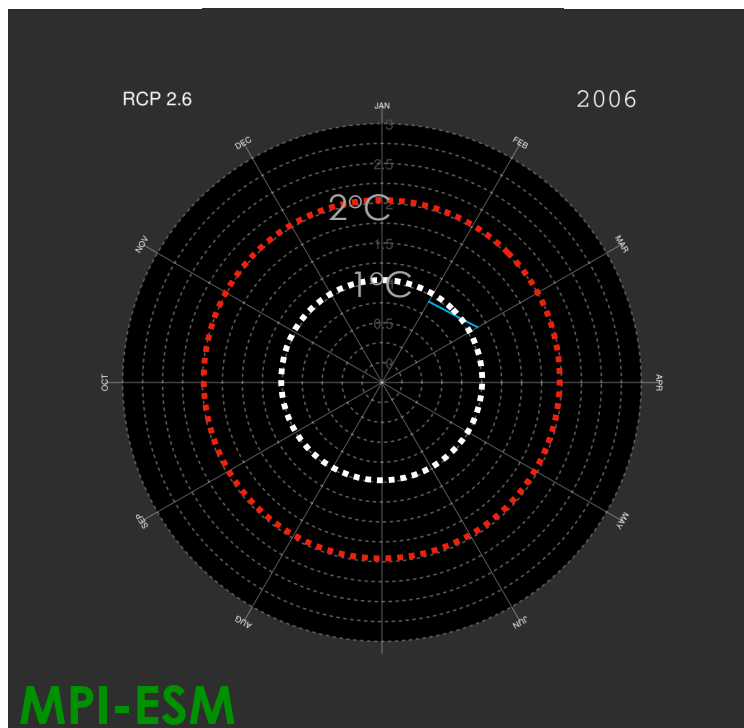
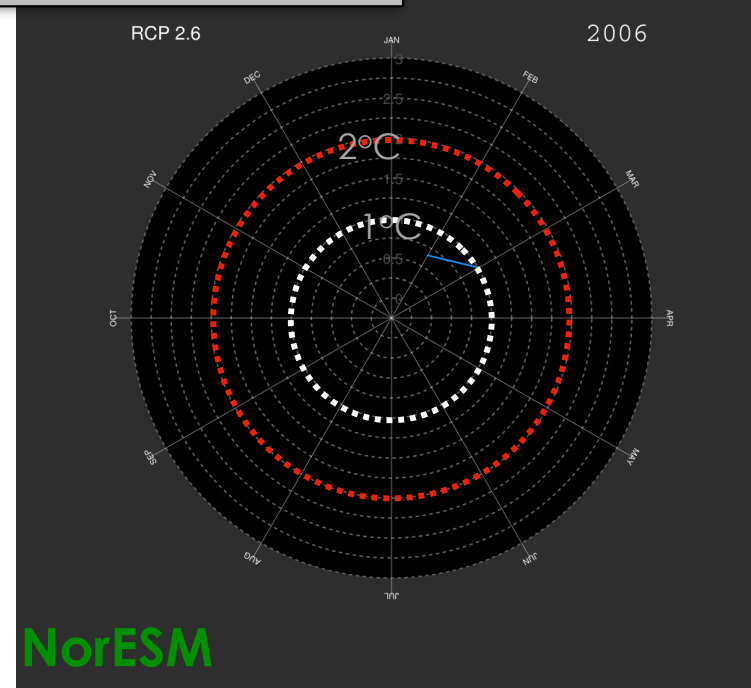
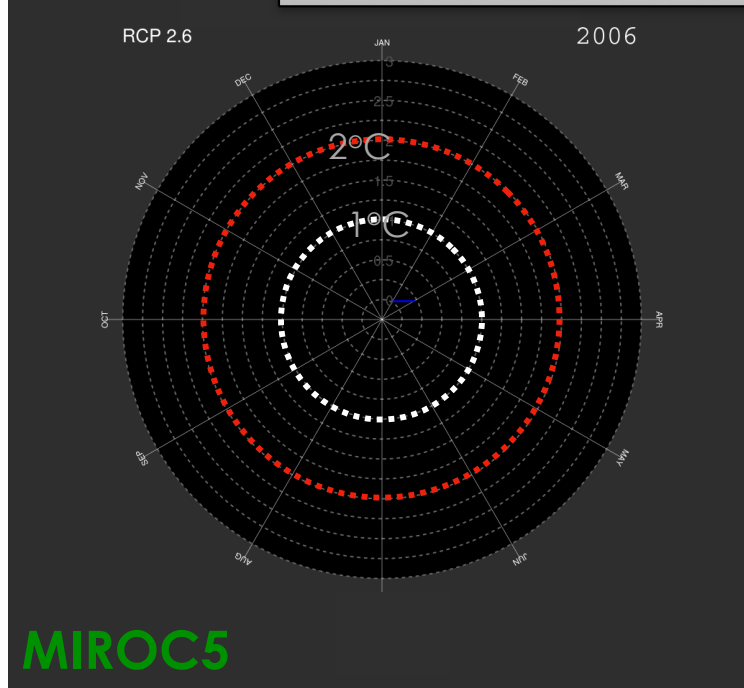
NorESM



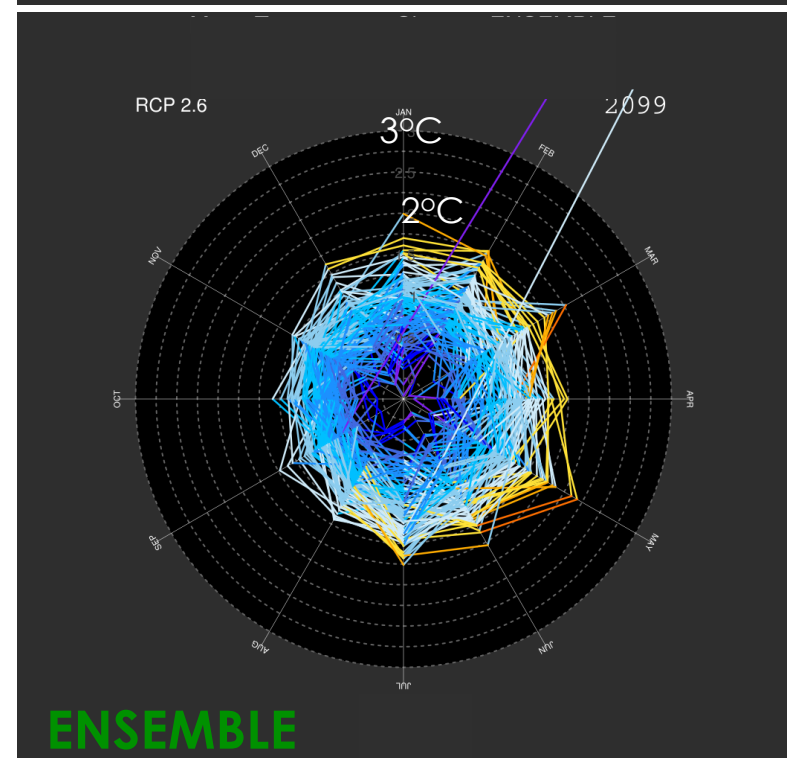
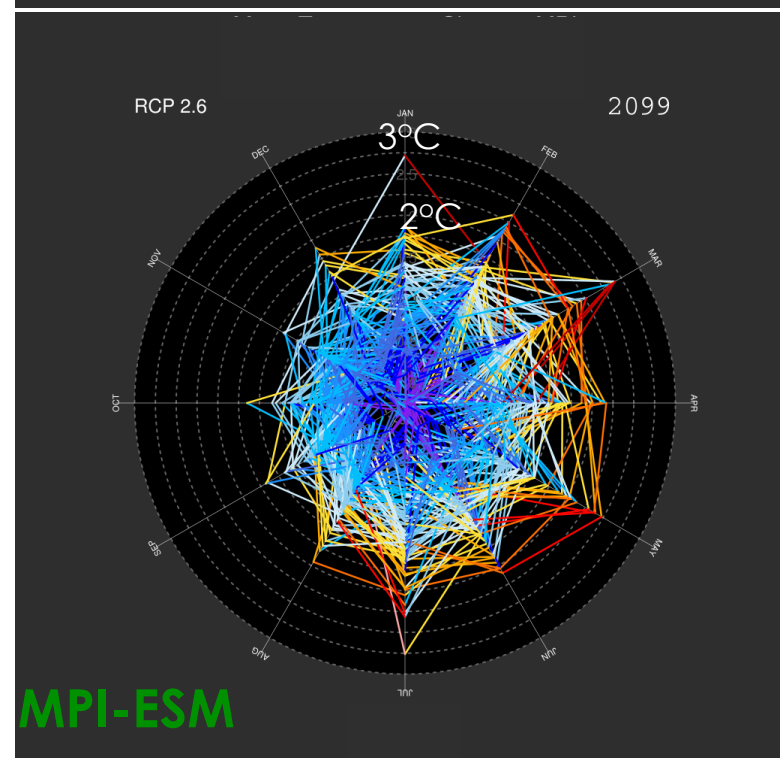
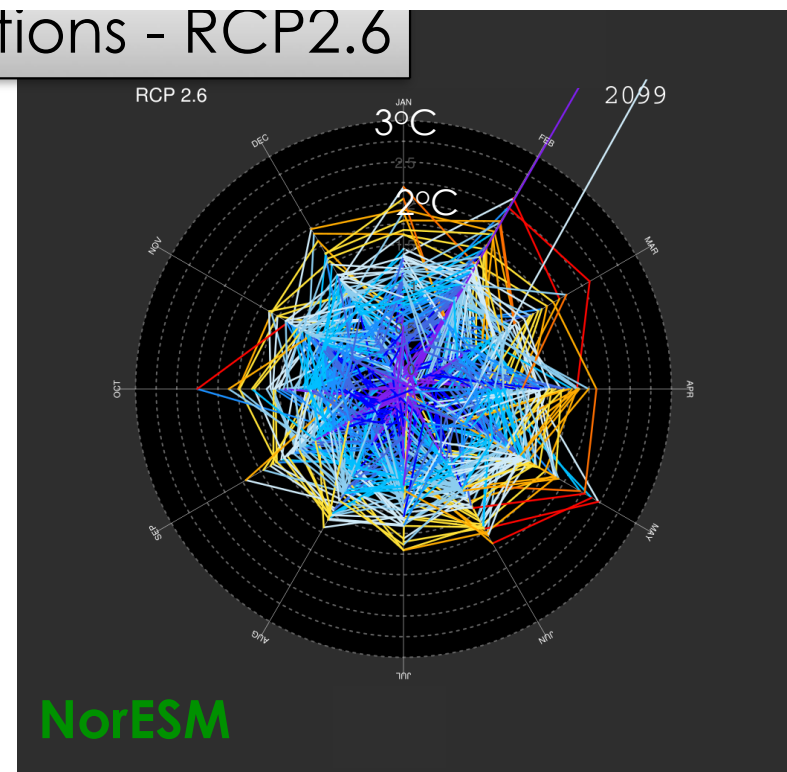
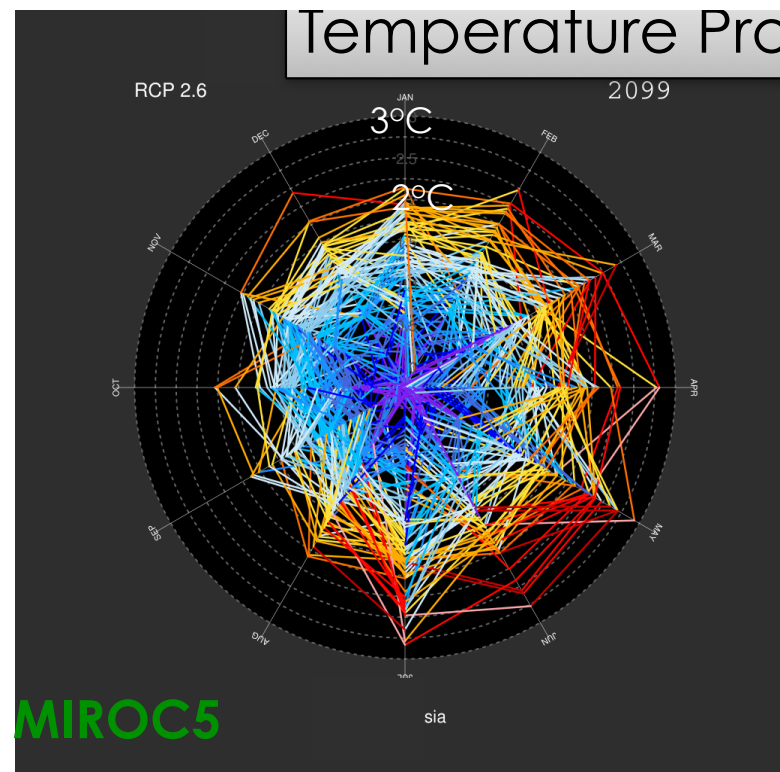
Drying



Temperature Projections - RCP2.6



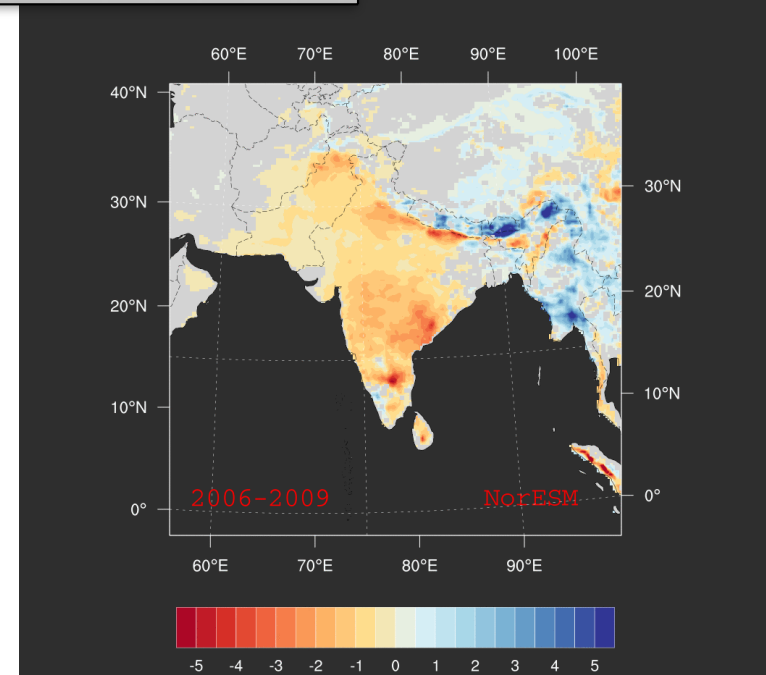
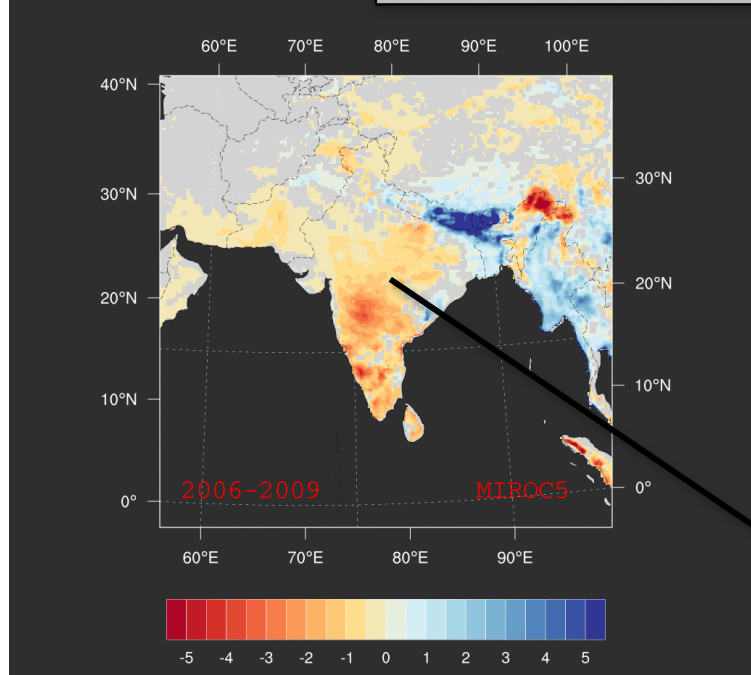
Temperature Projections - RCP2.6



MIROC5

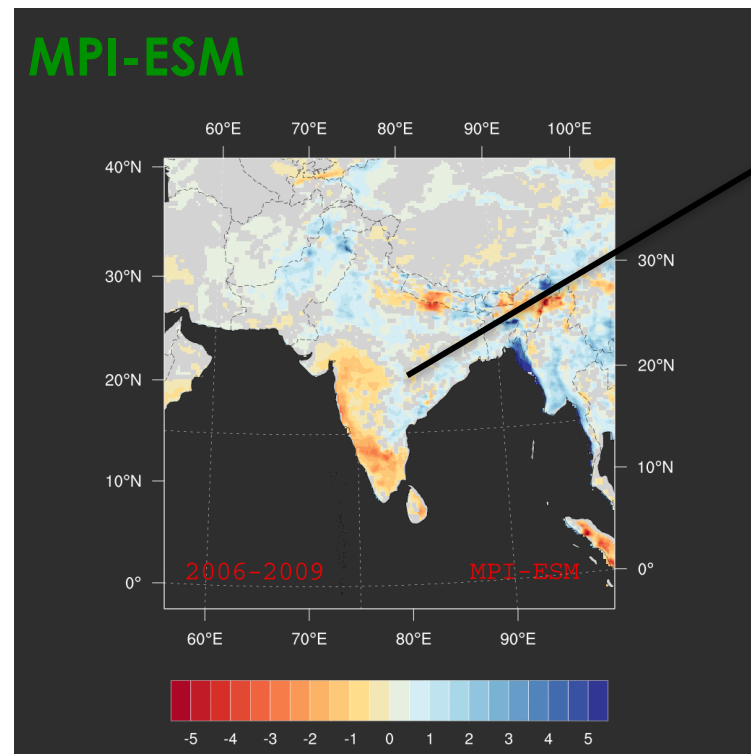
Precipitation Projections - RCP2.6

NorESM

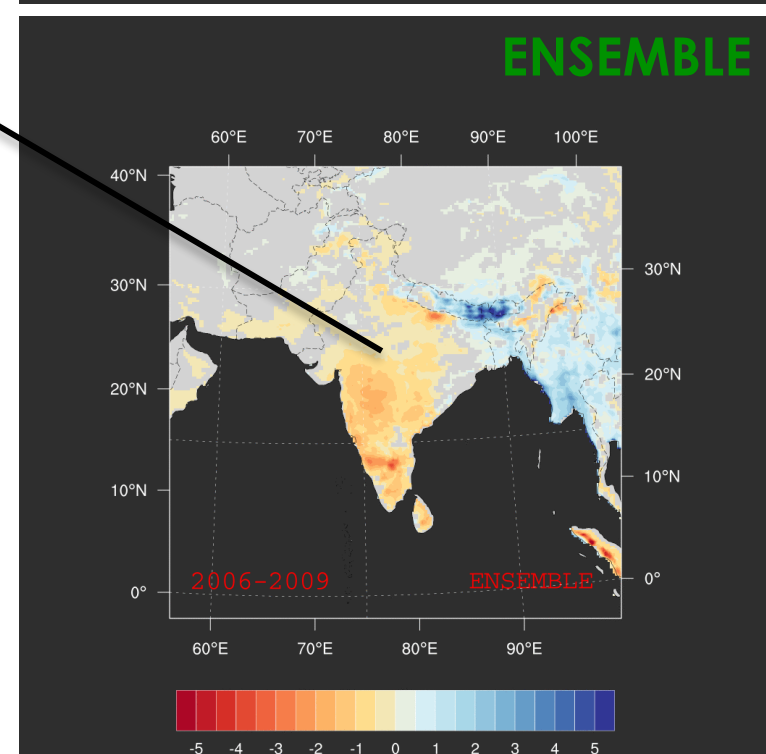


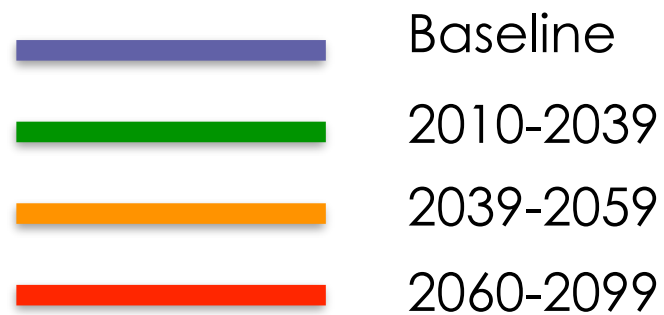
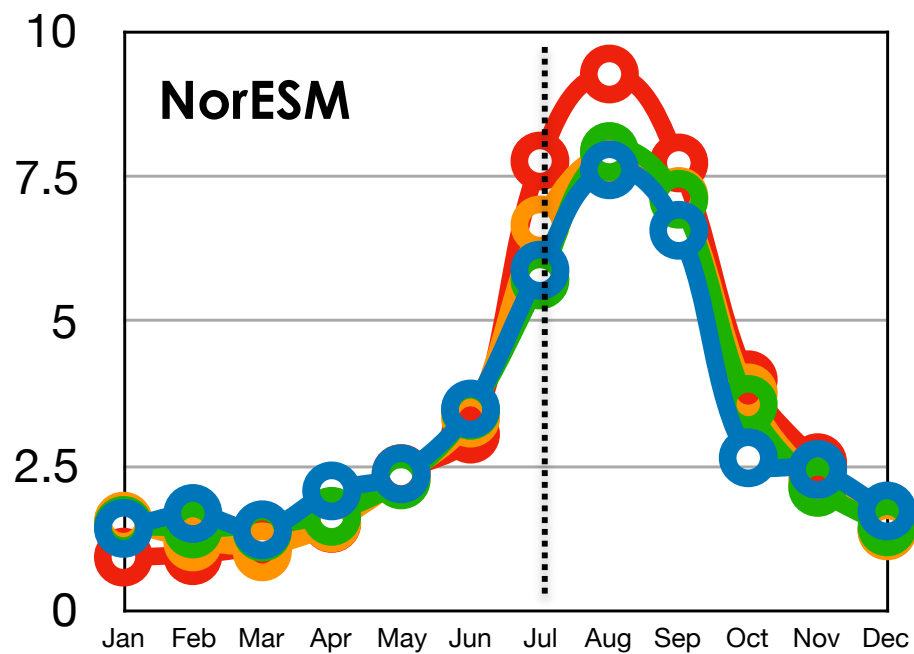
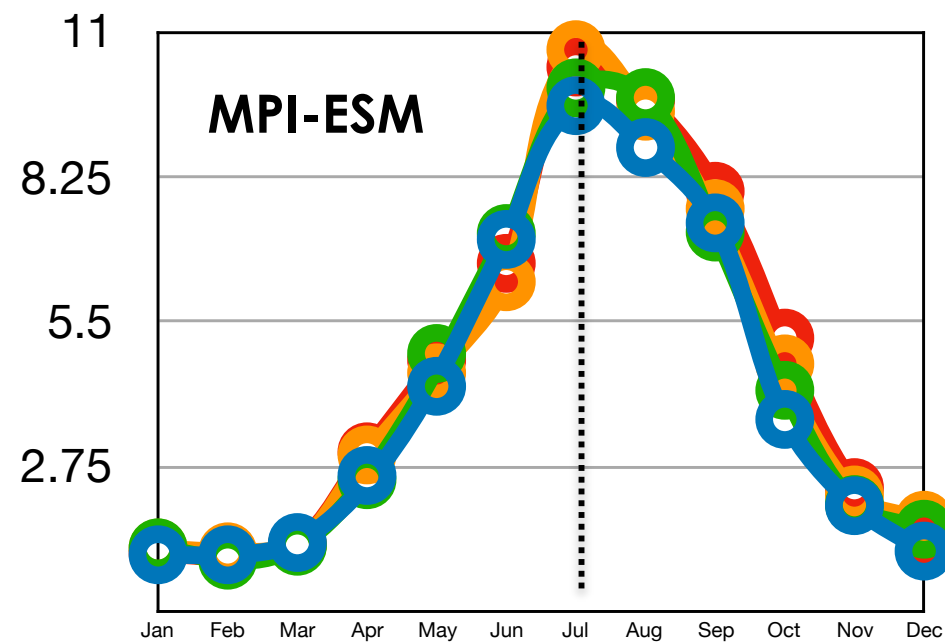
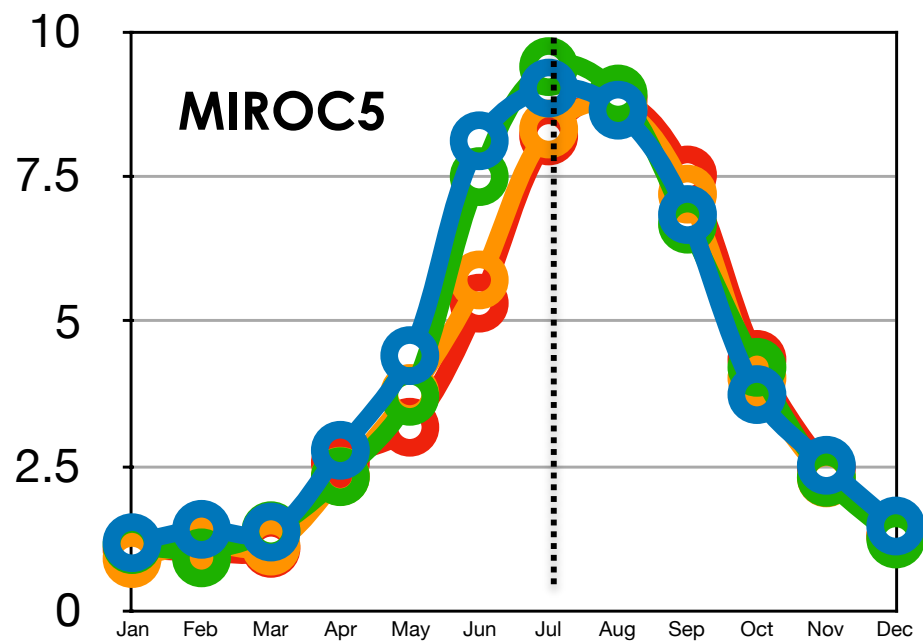
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MPI-ESM



ENSEMBLE





Precipitation
Annual Cycle
RCP8.5

