

# Topic #2

- Topic: Observed Variability of Clouds and Precipitation
- Datasets: MODIS total cloud fraction, TRMM precipitation, AMSR-E sea surface temperature, CERES surface downwelling longwave and shortwave radiation
- Geographic foci: global, tropics (15S-15N), subtropics (15-30S/N), mid-latitude (30-50S/N) and selected regions (ITCZ, northeast Pacific and southeast Pacific)
- Questions:
  - What are the spatial distributions of clouds and precipitation? Are their distributions related to underlying sea surface temperature? (2-D maps; zonal-mean plots; scatter plots; conditional sampling plots)
  - What are the seasonal and interannual variations of clouds and precipitation over the regional above? Are there detectable trends in each region? Are these temporal evolutions correlated with underlying sea surface temperature changes?
  - What are the radiative effects of clouds? How are the cloud radiative effects varying with time?
  - What is the histogram of precipitation? Are there detectable changes of precipitation histogram over the past decade?
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