MJO Focus Theme

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Why the MJO?

- Key mode of tropical intraseasonal variability: directly affects seasonal variability (monsoons), possibly interannual variability (ENSO)
- Poses vexing difficulties for weather and climate prediction
- Powerful socio-economic impact - ½ world's population in S/SE Asia affected – agriculture, floods, droughts – by interrupted/delayed monsoons caused by MJO interactions

Agenda: MJO Breakout Session

10:15 Contextual remarks

10:20 Kate Thayer-Calder (CSU): MJO and Tropical Convection in CAM and SP-CAM
10:35 Jim Benedict (CSU): Characteristics of the MJO in a CSU MMF Simulation
10:50 Wei-Kuo Tao (NASA Goddard): MJO simulation using high-resolution GCM
11:05 Marat Khairoutdinov (SUNY/CSU): Hindcast and aquaplanet MJO simulations with MMF
11: 20 Hongyan Zhu, Harry Hendon, Christian Jacob (BMRC): Diagnosing MJO/ convection in MMF and CAM
11: 35 Bill Rossow (CUNY): Diagnosing cloud regimes

11:50 Discussion/Future plans
12:15 End of session

Big questions

- **What's the relative importance of: i) upscale effects of convection; ii) effects of the extratropics in MJO prediction**
- **Is the MJO a natural mode of interseasonal tropical variability, in which case what's the scale-selection mechanism?**
- **Can the MJO be properly and consistently represented in (parameterized) global models?**
- **Is the MJO a significant mechanism in the genesis and demise of El Nino Southern Oscillation (ENSO)?**

Related activities

- NCAR's *Prediction Across Scales* Initiative (WRF-based MMM-CGD collaborative)
- UK's NERC *Cascade* initiative (tropical convection)
- NICAM (global cloud-system resolving models)
- US CLIVAR MJO Working Group (new metrics)
- Year of Tropical Convection (YOTC; integrated multi-sensor datasets)
- THORPEX (extended prediction, weather-climate interface, tropical-extratropical interaction)

MMF science drivers

- Role of convection and its multi-scale organization in the context of the MJO.
- Evaluate MMF e.g., vertical structure, multiscale properties transports, etc.
- Improve the MMF

Progress since February

- Began evaluation of MMF in detail (e.g., vertical structure, distribution of cloud types, multiscale properties etc
- Began hindcasts using MMF (AMIP-type climate resolution) of observed MJO events and comparison with CAM
- Began numerical case studies of organized convection and the MJO lifecycle
- Completed aquaplanet simulations with Cess-type climate sensitivity experiments

Next 6 months

- Continue present MMF-CAM evaluation as well as using new diagnostics:
  - CLIVAR MJO WG metrics
  - Cloud categorization
  - CSU precip structure categorization

- Weather-forecast- mode studies:
  - collaborate with PCMDI on MMF hindcasts
  - case-study simulations of MJO events

- Foster collaboration between CMMAP and related tropical convection activities e.g., UK's Cascade, NCAR's WRF-based modeling, Japan's NICAM