

# Summary: MJO Breakout

- Recommendations from outgoing group leaders (Mitch and Marat)
- A case to re-examine the importance of moist diabatic dynamics to the MJO (Adam Sobel)
- Examine of ISCCP cloud regimes and surface energy budget terms vs. MJO phase (Eric Tromeur)
- Update on CLIVAR MJOWG activities (Duane Waliser)
- Ongoing work with CAM3/RAS: MSE budget, minimum entrainment, aquaplanet (Eric Maloney and Walter Hannah)

# Recommendations

1. Advanced diagnosis of SP-CAM (grid-scale)
  - Further diagnosis of momentum, heat, moisture, and moist static energy budgets of the SP-CAM MJO including two-way interactions with high frequency synoptic/convectively coupled disturbances (e.g. Moncrieff, Majda, Maloney presentations)
  - Continued development of process-oriented diagnostics that include information on model vertical structure, including clouds, moist static energy, diabatic heating.

# Recommendations

## 2. Better understand what is going on at the subgrid-scale as function of MJO regime.

- Cloud regime as function of MJO phase (e.g. Eric Tromeur's work)
- Mesoscale organization in diabatic heating, winds, thermal structure, humidity versus MJO phase
- Aid parameterization development

Ideally, want to develop output diagnostics that characterize subgrid-scale behavior/organization (without having to save all CRM variables).

- First utilize existing CRM output data in SP-CAM (from existing 4-month run)
- Cluster analysis?
- Form basis vector set based on EOF or EEOF analysis from 4-month run for west Pacific sites, allowing diagnostic capability in longer runs (maybe also including propagation in the CRM?).  
Output leading PCs?
- Other statistics?

# Recommendations

- 3. Sensitivity tests to assess physical mechanisms, including the importance of wind-induced surface fluxes and others moist diabatic source terms to the MJO
  - SP-CAM
  - Already have commitment from Joshua Fu at U. Hawaii in ECHAM/UH
  - ECHAM
  - CAM3/RAS (already completed for predecessor version)
  - AM2 (already completed)

# Recommendations

- 4. More comprehensive diagnosis of boreal summer MJO
- 5. Increase coordination of varying CMMAP activities related to the MJO