Summary for the *Atmospheric and Coupled Modeling* poster session

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Forecast experiments using GCMs, regional models, and NWP models

• MJO forecast experiments using CAM3. Emphasize the role of daily SST. Nudging experiments indicate moisture and temperature increment is the largest (Subramanian and Zhang)

• The observational data during DYANMO over IO has limited impact on the analyses and forecasts of the ECMWF system. Nudging experiments indicate importance of SST and humidity. (Ling et al.)

• WRF can simulate DYNAMO: not sensitive to lateral boundary conditions, but significant sensitivities to SST. Importance of SST for the Nov event. (Ulate & Zhang)

• GFS, GEFS and CFSv2. Coupled versus uncoupled forecasts of MJO during DYNAMO. Important role of SST variability (Vintzileons and Gottschalck)

Ocean coupling

- Effective in enhancing forecast skills of UH model during CINDY/DYNAMO. Potential skill beyond 40 days? (X. Fu)
- The coupled regional modeling system can improve MJO with the interactive SST; lateral boundary conditions not important for the MJO events during DYNAMO (Seo et al.)
- Regional coupled modeling system: ocean response to MJO with DA in the atmospheric component. Active phase of MJO: negative heating flux into the ocean due to solar radiation and evaporation; cools the upper ocean, deepens the mixed layer, and damps the diurnal SST amplitude. (Jensen et al)

Ocean modeling

- Quantify the effects of diurnal cycle on the upper Indian Ocean thermal structure during different stages of the MJO events, examine the spatial structures and seasonal dependence of the diurnal cycle effects. (Li et al.)

CSRM simulations

- New large-scale forcing dataset in the same Radar domain using the variational method and the ECMWR data (Zhang et al)
- WRF-CRM simulations of the northern sounding array using the preliminary CSU dataset. Explored method of parameterized large scale dynamics. (Wang et al.)
- Convection in a 100-m mesh in a small domain. Extensive discussions on these issues: feedback from finest mesh to coarse meshes; the grid spacing 3 km versus 1 km (Takemi)
- High resolution WRF simulations. The extended cloud lifecycle is found to be related to 1 - 3 day waves (Hagos et al).

NICAM

- Winter MJO prediction skill of NICAM assessed in a case sweep simulation (cor > 0.6 : 27 days), powered by peta-flops computer. (T. Miyakawa).

- RMM errors of “stretched” NICAM in real time forecast of CINDY/DYNAMO diagnosed. PC2 error due to model drift? (T. Nasuno)

Statistical modeling

- Linear stochastic model can have forecast lead time of around 2 weeks. How should the non-Gaussian noise be determined? (N. Cavanaugh)

Impact of convective parameterization on MJO simulation/forecast

- Compare and access the deterministic and stochastic convective models. Multicloud statistical model captures key features of organized topical convection, including MJO. (Khouider et al.)

- Larger cumulus entrainment improves MJO hindcast skill by allowing the model to exhibit negative gross moist stability. Their results support the hypothesis that the MJO is fundamentally a moisture mode. (Hannah and Maloney)

- Perturbed parameter ensemble for CAM5 shows direction for tuning. Model is sensitive to deep convection parameters. (Boyle J.)

Triggering/Initialization of the MJO

- COAMPS model shows that late November case was triggered by interaction of TD and Kelvin. Kelvin may be forced by diurnal SST. WISHE play role in rapid amplification. (M. Flatau)

- Additional heating can initiate MJO in CAM4. Too much heating is not good. Existence of a threshold value? (F. Ahmed)

MJO under global warming

- Good MJO climatology in CCSM4. Under global warming, less moderate but more extreme MJO events, “dry gets drier, moist gets moister” during various MJO phases. (Subramanian et al.)