Knowledge Transfer Working Group

Tuesday, July 29, 2008

- MJO experiment from Jan. 2008 WG meeting
- Progress in MJO experiments and other collaborations
- Potential interactions of KT WG and model development

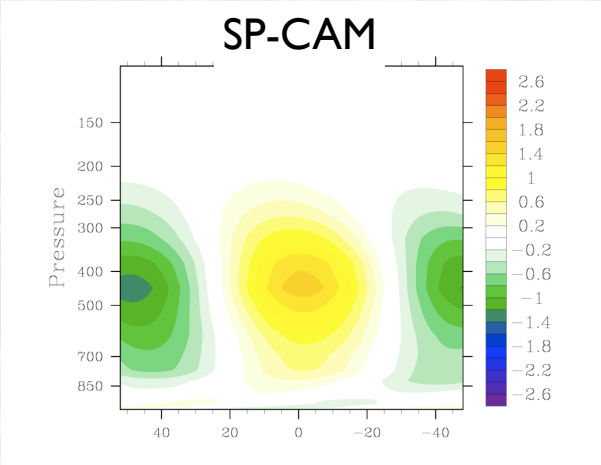
Objective from January 2008 Workshop:

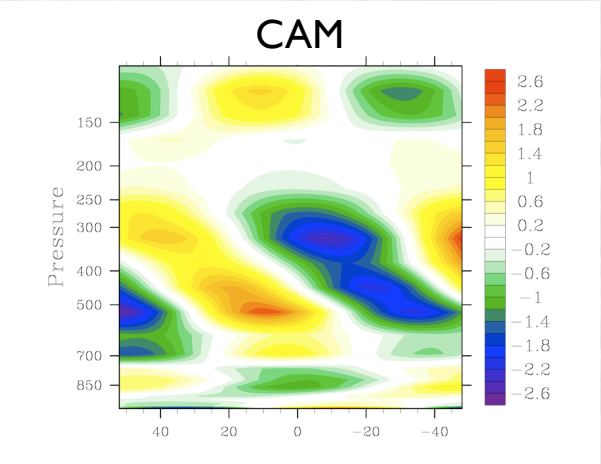
Conduct experiment for understanding differences between standard CAM and MMF physics

- ***Objective:*** Understand how do MMF and standard physics differ throughout life cycle of MJO event?
- ***Methodology:*** run MMF and standard physics side-by-side on same atmosphere.
- ***Readiness:*** Marat has developed methodology -- exploit for this problem in new runs
- ***Action items:*** Design experiments with Marat.
- ***Recommendation:*** Assign postdoc to this problem.

Status of MJO Experiment

- ***Status:*** Marat has finished 1st experiments:
  - Control
  - 4 x CO_2
- ***Diagnostics:***
  - Tendencies in q, T, LWP
  - Parallel MMF & CAM
- ***Analysis:***
  - MJO compositing methods





Extensions to MJO Experiment

- Test other convective schemes ported to CAM?
  - Donner
  - Relaxed Arakawa Schubert (RAS)
  - Emanuel
- Test other physics besides convection?
- Test other cloud types beside deep convective?

Projects at NCEP and COLA

- ***Giga-LES with physics from NCEP SCM***
  - Objective: Diagnose physics at sub-mesoscales
  - Configuration: SAM dynamics, SCM parameterizations
  - Benchmark: Giga-LES
- ***Super-parameterized CCSM (SP-CCSM) at COLA***
  - Initial coupled experiments with SP-CAM underway.

Knowledge Transfer for Statistical Parameterizations

- CMMAP LES parameterization is designed for MMF physics.
  - CMMAP could "easily" adapt LES schemes for lower resolution GCMs.
- GCM application: Aerosol-cloud interactions
  - Requirement: PDFs of vertical velocities to compute super saturations for aerosol activation.

Statistical Parameterization

- GFDL trying to use cloud models to test PDFs. However, these models have been subjected to limited observational tests.
- ARM might tackle the observational issue for non-precipitating clouds.
- SAM and Giga-LES, if "good", could be useful for generating PDFs of vertical velocity for GCM parameterizations.

Statistical Parameterizations:
Action Items

- Doppler radar might have promise for tests.
- Suggestion for observational evaluation: Sample Giga-LES or SAM using same strategy used for aircraft data from GATE, etc.
- KT Working Group next steps for velocity PDFs

1. Generate Lemone-Zipser style PDFs from Giga-LES
2. Generate PDFs from Kwajex, other field programs
3. Objective: Evaluate model PDFs relative to data.