Low Cloud Theme discussion

Leaders: Chris Bretherton & Bjorn Stevens

Overall: How can CMMAP lead the way to more realistic simulation of the global distribution of low cloud and low cloud feedbacks on climate?

Tradeoffs: Resolution/CPUs vs. parameterization; large vs. small scales.

Threads:

1. Column modeling of low cloud feedbacks
2. Proto-MMF development toward better low cloud climatology
3. CMMAP LCT/PPG should participate in GCSS, CFMIP and related international efforts, perhaps including joint meetings.

1. Column modeling of cloud feedbacks

- Good short-term strategy for better using CRMs to understand low-cloud feedbacks, because we can use adequate grid resolution.
- Useful for testing sensitivity of MMF low cloud feedbacks to changes in SAM physics/resolution?
- Need to keep threads coordinated:
  - Rectified effects of transients in column forcing (Lappen/Meideros/Blossey/Zhang)?
  - Observational tests relevant to CRM-suggested low cloud feedback mechanisms (Rossow)?
  - SAM participation in 6/08 GCSS/CFMIP intercomp.

2. Proto-MMF development efforts

- Marat will finalize a FV SP-CAM version compatible with current SAM (1-2 months), which will be available to CMMAP. A diversity of further SP-CAM simulations with changes to SAM can then be run with Mark Branson's help.
- Use this for new microphys (Morrison) and SGS turbulence sensitivity (Cheng) studies (by summer?)
- 7-day 'Giga-MMF' with 200 m hor x high vert res. (exact specs TBD by U. Washington groups) run as proof of concept that it can make realistic Sc and shallow Cu and Sc. Spin up? Use forecast mode? How to best use Mark Branson? CPU cycles?
- Revive mini-LES within MMF (Khairoudinov/Blossey)