Physical Processes

Goals:

- Better understand SGS processes (small clouds, turbulence, microphysics, radiation) in CRMs or MMF.
- Improve SGS physics in MMF.

Talks

1. Sonia Kreidenweis:
   "Prediction and impacts of global ice nuclei distributions"
2. Anning Cheng:
   "A Unified Mass Flux and Higher-order Turbulence Closure for Boundary-layer and Deep Convective Clouds"
3. Peter Bogenschutz:
   "PDF-based SGS parameterizations for MMF"
4. Chin-Hoh Moeng:
   "Giga-LES: Evaluation of SGS schemes in CRMs"
5. Eric Tromeur:
   "Cloud organization associated with frontal convection in midlatitude cyclones"
6. Tom Cram:
   "An evaluation of the radiation and turbulence parameterizations in the Vector Vorticity Model"
7. Wei-Kao Tao:
   "Three improvements of microphysics in GSFC-MMF"

Short-term plans (next year or two)

- Diurnal cycle run of Giga-LES over land?
- Implementing a new ice nuclei scheme in SAM, then in MMF once aerosols are included (DeMott/Kreigenweis).
- Improving the PBL scheme in SAM (Moeng).
- Improving radiation/turbulence schemes in VVM (Cram).
- Testing IPHOC in MMF & coupling IPHOC with 2-moment microphysics (Cheng).
- Developing a PDF-based scheme for SAM (Bogenschutz).

Long-term plans for renewal

- Develop a unified scheme of mass flux and IPHOC for clouds and test it in CRM and MMF (Cheng).
- Develop process coupled schemes, e.g.,
  PBL-low clouds,
  PBL-land surface,
  PBL-deep convection.