Scientist Details

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Model Name and History

Model Name: NCAR CAM3.1 with modified ice microphysics
Acronym: SCAM3_ICE

Model Type

1D

Numerical Domain:

- Domain size in x direction:
  y direction:
  z direction:

- Number of points in x direction: 1
  y direction: 1
  z direction: 26

- Grid size T42

- Time Step: 20 minutes

Numerical Technique:

- Spectral

Physical Parametrizations

- Surface fluxes: A bulk exchange formulation, Bryan et al. [1996],

- LW radiation: Collins et al. [2004]

- SW radiation: Collins et al. [2004]

- Convection Scheme (SCM/LAM): CAPE based deep convection scheme:
  Zhang and McFarlane [1995]
  Shallow Convection: bulk mass flux, Hack [1994]
- Cloud Scheme (SCM/LAM): Prognostic cloud scheme,

Rasch and Kristjansson[1998]
and Zhang et al. [2003]
with modified ice microphysics, Liu et al. [2007]

- Turbulence closure/
  Boundary Layer Scheme : Non-local ABL scheme, Holtslag and Boville [1993]

Documentaion:

Bryan, F. O., et al.,1996: The NCAR CSM Flux Coupler, Technical Report NCAR/N-424+STR, NCAR, Boulder, Colorado, pp 214.

Collins, W. D., et al.,2004: Description of the NCAR Community Atmosphere Model (CAM3.0), Technical Report NCAR/N-464+STR, NCAR, Boulder, Colorado, pp 214.

Hack,J. J., 1994: Parameterization of moist convection in the NCAR Community Climate Model (CCM2). J. Geophys. Res., 99, 5551-5568.

Holtslag, A. A., M. and B. A. Boville, 1993: Local versus nonlocal boundary-layer diffusion in a global climate model. J. Climate, 6,1825-1842.

Liu, X., J. E. Penner, S. J. Ghan, and M. Wang: Inclusion of ice microphysics in the NCAR CAM3. J. Climate, 2007, in press.

Rasch, P. J. and J. E. Kristjansson, 1998: A comparison of the CCM3 model climate using diagnosed and predicted condensate parameterizations, J. Climate, 11, 1587-1614.

Zhang, M. H., et al., 2003: A modified formulation of fractional stratiform condensation rate in the NCAR community atmospheric model CAM2, J. Geophys. Res., 108, 4035, doi:10.1029/2002JD002523.

Zhang, G. and N. A. McFarlane, 1995: Sensitivity of climate simulations to the parameterization of cumulus convection in the Canadian Climate Center general cimulation model, Atmosphere-Ocean, 33, 407-446.