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Model Name and History:

System for Atmospheric Modeling version 6.4.1
SAM_CSU
No generic predecessor

Model TYPe: 3D, CRMs(case A)/LES(case B)

case	A1	A2	A3	B1	B2	B3
Domain size in x-direction (km):	63.5	63.5	63.5	12.7	12.7	12.7
Domain size in y-direction (km):	63.5	63.5	63.5	12.7	12.7	12.7
Domain size in z-direction (km):	18.4	18.4	18.4	4.0	4.0	4.0
Number of grid point in x-direction:	128	128	128	128	128	128
Number of grid point in y-direction:	128	128	128	128	128	128
Number of grid point in z-direction:	45	45	69	80	80	161
Grid size in x-direction (m):	500	500	500	100	100	100
Grid size in y-direction (m):	500	500	500	100	100	100
Grid size in z-direction (m):	vary	vary	vary	50	50	25
Time step (s):	10	10	10	2	2	2

note:

grid size in z direction for case A1 and A2 increases with heigh in the lower 15 levels from 75m to 473m below 3459m, while it is 500m above 3459m.

grid size in z direction for case A3 increases with heigh in the lower 49 levels from 35m to 251m below 8459m, while it is 500m above 8459m.

Numerical Techique:

Finite-difference method using a fully staggered Arakawa C-type grid with stretched vertical and uniform horizontal grids;
The advection of momentum is computed with the second order finite differences in the flux form with kinectic energy conservation.

The equations of motion are intergrated using the third order Adam-Bashforth scheme with a variable time step.

Anelastic dynamical core;

1.5-order sub-grid scale closure (prognostic SGS TKE) or Smagorinsky-type closure;

Periodical lateral boundaries with the option of solid lateral wall (for beta-plane runs) and a rigid lid at the top of thr domain;

Newtonian damping is applied to all prognostic variables in the upper third of thr model domain;

Surface fluxes based on Monin-Obukhov similarity;

Simple mixed-layer ocean;

Parallel (MPI).

Physical Parameterization:

Surface fluxes based on Monin-Obukhov similarity;

Bulk microphysics with ice-microphysics processes;

Prognostic liquid/ice water static energy, total non-precipitating (cloud water/ice) and total precipitating water(rain/snow/graupel);

Diagnostic cloud water, cloud ice, rain, snow, and graupel;

The conversion rates among the hydrometers are parameterized;

Radiation from CCM3, CAM3, or CSU BUGS;

CAM3 physical parameterizations as an option for low-resolution runs;

ISCCP cloud simulator;

Documentation:

Khairoutdinov, M. F., and D.A. Randall, 2003: Cloud-resolving modeling of the ARM summer 1997 IOP: Model formulation, results, uncertainties and sensitivities. *J. Atmos. Sci.*, 60, 607-625