

Version 3.1 Updates

To be released March 2009

Physics Options

- Boundary Layer
 - QNSE PBL (Quasi-Normal Scale Elimination, Galperin and Sukoriansky)
 - MYNN PBL (Level 2, Nakanishi and Niino)
 - BouLac PBL (Bougeault and Lacarrere)

Physics

- Surface
 - MODIS landuse map
 - Snow albedo improvement in Noah
 - Multi-layer Urban model (BEP)
 - Sea-ice fraction
 - GFDL surface and slab LSM (NMM)
 - Veg-frac dependent z_0 , albedo, emissivity

Physics

- Radiation
 - RRTMG longwave and shortwave (from AER, Inc.)
- Microphysics
 - New Thompson (double-moment rain added)
 - WDM5 and WDM6 (double-moment rain and cloud and CCN added to WSM5 and WSM6)

Regional Climate Options

- Water skin-temperature diurnal cycle prediction (Zheng)
- Deep-soil temperature update option
- CO₂ variation with year in CAM radiation
- No-leap-year option (for CCSM coupling)
- Bucket rainfall and flux accumulations for accuracy over long simulations

Other new options

- Monotonic advection
- Spectral grid-nudging (Miguez Macho)
- Surface analysis nudging (Penn State)
- Gravity-wave drag (NMM and ARW)
- WRF-Fire: Forest fire model

New Idealized Case: Single Column Model

- Initialization module:
dyn_em/module_initialize_scm_xy.F
- test case directory: em_scm_xy

WPS

- Support for MODIS and GWD
- Distinguish inland lake and open ocean for water categories
- Can process any of the defined grids using namelist variable `active_grid`