

ATMO 558 HW#1
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RAMS

The Regional Atmospheric Modeling System

RAMS were developed by R.A. Pilke, Sr., W.R. Cotton, C. Tremback, R.L. Walko and others at Colorado State University, the ASTER division of Mission Research Corporation and ATMET. RAMS is a limited area model mainly designed for mesoscale or higher resolution scale grids. There is no lower limit to the grid size thus the model makes it possible to study micro-scale and sub-micro-scale phenomena within the same model structure. It allows two-way interactive grid nesting, which have finer mesh grids to resolve small-scale processes while large-scale processes are being modeled on coarser grids.

The model has been widely used for various studies and different sub-models were also developed. The information about the research projects is readily available from the websites listed below.

The model dynamical core consists of dynamics, thermodynamics, and conservation equations with both hydrostatic approximation sets and non-hydrostatic sets. Various parameterizations supplements sub-grid scale phenomena, such as turbulent diffusion, short- and long-wave radiations, cloud processes, cumulous convection, and momentum, sensible, and latent heat exchange with the surface. The model structure is expressed schematically in the next page.

RAMS provides data analysis tools for initial conditions (RAMS/ISAN) as well as the capability of four dimensional data assimilation, which makes use of weighting functions and objectively-constructed model grid data from available observations.

RAMS are primarily supported under UNIX and Linux operation systems. Most of the code is written in Fortran 90 (with some written in C code for effective I/O procedures). The latest version of v6.0 was released in June 2007.

RAMS research pages by Dr.Cotton and Dr.Pielke research groups
<http://rams.atmos.colostate.edu/>

RAMS source code and documentations (ATMET)
<http://atmet.com/>

Model structure:

