

Advanced Study Program Seminar

Wednesday May 13th 2015, 11 a.m.

Foothills Lab Bldg. 2, Large Auditorium (FL2-1022)

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Model developments related to some South America environmental problems

Abstract:

Tropical areas over South America have faced severe environmental changes associated with the rapid economic expansion, such as deforestation and fire activities over the Amazon basin and cerrado areas and a sustained growing demographic density around large- and mega cities.

In this talk, we will show some aspects of model developments we have been working in Brazil in order to build a numerical tool able to simulate and forecast atmospheric state evolution that includes such processes. These developments are the base of the BRAMS model (Brazilian development on the Regional Atmospheric modeling System, RAMS) and, some of them, were implemented in WRF-Chem. BRAMS model has been used operationally at the Brazilian Center for Weather Forecast (CPTEC/INPE) since 2003 providing an on-line, coupled weather and air quality forecast on a 20 km grid-spacing and, more recently, since 2013, for weather forecast on 5 km covering the entire South America. BRAMS has also been broadly used for applications mainly over South America, with strong emphasis over the Amazonia and the main South American mega cities. An overview of the model development and main applications will be shown.

We will also use this opportunity to introduce some results of a project initiate in 2013 by the Working Group on Numerical Experimentation (WGNE). WGNE is supported by the WCRP Joint Scientific Committee and the WMO Commission for Atmospheric Sciences. This project has eight participating NWP centers: NCEP, ECMWF, NASA/Goddard, Japan Meteo Agency, Meteo-France, ESRL/NOAA, Barcelona Supercomputer Center and CPTEC/INPE, and aims to evaluate aerosols impacts on numerical weather prediction conducted by these centers.