Séminaire ven 22 Oct 2010 11h / Seminar Fri Oct 22nd 2010 11h

Conférencier/Lecturer:	Jason Milbrandt
Sujet/Subject:	Current Research on Parameterizing Cloud Microphysics in GEM
Présentation/Presentation:	Anglais / English
Lieu/Room:	Salle des vents (Dorval)

iweb: http://web-mrb.cmc.ec.gc.ca/mrb/rpn/SEM/
web: http://collaboration.cmc.ec.gc.ca/science/rpn/SEM/index.php

Abstract

As computer resources increase, weather centers around the world, including CMC, are moving towards higher resolution NWP models and to convective-scale configurations. Thus, the role of bulk microphysics schemes (BMSs) is becoming increasingly important in operational meteorology as well as in atmospheric research. In support of forecasting for the 2010 Vancouver Olympics, Environment Canada (EC) ran the operational GEM (Global Environmental Multiscale) model over a 1-km limited-area domain over the Vancouver-Whistler region. The model used a two-moment BMS, which provided details on the precipitation type, as well as some experimental fields. In addition to developing the microphysics for the 2010 Olympics, EC scientists continue to do research on improving the parameterization of cloud microphysics in models.

In this talk, a brief overview of GEM's two-moment scheme will be provided, followed by a summary of three recent studies pertaining to research in microphysics parameterization. First, a new method to prognose the instantaneous snow density will be presented, along with results from the use of this field in the 2010 Vancouver Olympics. This method exploits information already present in many existing BMSs and can, in principle, improve the prediction of snowfall amounts. Second, a theoretical study on alternative approaches to treating sedimentation in a BMS will be summarized. In this work, the errors in various computed moments – on which the microphysical growth rates depend – that are generated due to sedimentation, are quantified for various configurations of prognostic moments. Third, a study will be summarized that directly compares the results of two comparable two-moment schemes for the idealized simulation of a supercell. It will be shown that despite the advances in techniques in parameterizing bulk microphysics, the addition of complexity to schemes does not necessarily lead to a converging solution.