Séminaire Mercredi 9 Janvier 11h00 / Seminar Wedneday January 9 11:00 AM

Conférencier/Lecturer: Jason Milbrandt

Sujet/Subject: A Proposed Cloud Microphysics Scheme for the GEM-LAM-2.5

Présentation/Presentation: Anglais / English

Lieu/Room: Grande salle du premier étage CMC

Résumé/Abstract:

The cloud microphysics scheme of Milbrandt and Yau (2005), originally developed at McGill University to model hail, became part of the official RPN-CMC library of physics subroutines as of last January. The scheme parameterizes a detailed set of cloud microphysical processes, with several hydrometeor categories, and is appropriate for cloud-resolving atmospheric models for a wide range of meteorological conditions. Since being implemented into the physics library and interfaced with the GEM model, several modifications to the scheme have been made. In addition to the full triple-moment configuration of the scheme, there are now two optimized versions of the microphysics package available, including a single-moment and a double-moment version. The computational cost of running the GEM-LAM with the optimized single-moment version is now comparable to that of using the Kong-Yau scheme, as is currently used in the experimental GEM-LAM-2.5 km configuration.

During the past several months, tests have been conducted to explore the option of replacing the Kong-Yau scheme with the optimized single-moment Milbrandt-Yau scheme in the experimental 2.5-km GEM-LAM windows. The model was run with the Milbrandt-Yau scheme in user-parallel mode for one month during the summer of 2007 and in hind-cast mode for approximately 16 cases during the winter of 2007. Objective evaluations indicate that there was a significant reduction in the overprediction of precipitation for the summer cases. On the other hand, for the winter cases the test runs exhibited nearly the same overprediction as in the real-time experimental GEM-LAM-2.5 configuration. However, the proposed scheme appears to predict more accurately the phase of the surface precipitation in the winter.

An overview of the Milbrandt-Yau cloud scheme and its potential role in the CMC-RPN modelling system will be presented along with results from the tests described above.