

Séminaire vendredi le 28 novembre 2014 11:00h / Seminar Friday November 28<sup>th</sup> 2014 11:00h

**Sujet/Subject : A new approach to parameterize ice-phase cloud microphysics: The Predicted Particle Properties (P3) scheme**

**Langue/language : Anglais / English**

**Conférencier/Lecturer: Jason Milbrandt (RPN)**

**Résumé/Abstract :**

The representation of cloud microphysics continues to be a major source of uncertainty in atmospheric models. Traditionally, microphysics schemes partition ice-phase particles into pre-defined categories with prescribed bulk characteristics. This approach, which is used in nearly all existing schemes (including Milbrandt-Yau), is intrinsically restrictive and imposes the need for conversion between categories, which are poorly constrained processes and often unphysical.

There has been a paradigm shift in the parameterization of ice microphysics towards emphasis on the prediction of bulk hydrometeor properties, rather than categories. As part of this shift, a fundamentally new approach is proposed and a new microphysics scheme has been developed. Ice particle properties are predicted and evolve locally in time and space by prognosing four independent mixing ratio quantities. From these variables, important physical properties that describe the ice hydrometeors at a given point in time and space can be derived. This allows the full range of ice particle types to be represented by a single “free” ice-phase category, which is both conceptually better and computationally cheaper.

An overview of the P3 scheme will be given and results from model simulations will be presented.