
MMM SEMINAR NCAR

A New Approach to Parameterize Ice-Phase Cloud Microphysics: The Predicted Particle Properties (P3) Scheme

Hugh Morrison¹ with Jason Milbrandt²

1. National Center for Atmospheric Research, Boulder, Colorado

2. Environment Canada, Montreal, Canada

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 (bulk and bin), is intrinsically restrictive and imposes the need for conversion between categories, which are poorly constrained processes and often unphysical.

Over the past few years there has been a paradigm shift in the parameterization of ice microphysics towards emphasis on the prediction of bulk hydrometeor properties, rather than pre-defined categories. As part of this shift, a fundamentally new approach is proposed and a new microphysics scheme has been developed. In the new P3 scheme, ice particle properties are predicted and evolve by prognosing four independent mixing ratio quantities for each "free" ice-phase category. 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 in P3 even in the single-category configuration.

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

This seminar will be webcast live at:

<http://www.fin.ucar.edu/it/mms/fl-live.htm>

Recorded seminar link can be viewed here:

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Thursday, 9 July 2015, 3:30 PM

Refreshments 3:15 PM

NCAR-Foothills Laboratory

3450 Mitchell Lane

Bldg 2 Main Auditorium, Room 1022

MMM SEMINAR COORDINATOR

Morris Weisman, 303.497.8901, weisman@ucar.edu

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