

**Séminaire vendredi le 16 août 2019 11:00 / Seminar Friday August 16th 2019
11:00h**

Sujet/Subject: Accelerating Computation of Atmospheric Radiative Flux Profiles in High-Resolution Dynamical Models

Langue/language : Anglais/English

Conférenciers/Lecturers: Howard Barker (RPN-A)

Résumé/Abstract:

High-resolution cloud models, including the HRDPS, apply 1D radiative transfer (RT) models to all columns in a domain (the Independent Column Approximation, or ICA). When the number of columns is in the millions, this can be expensive; even when the RT models are called only once every ~ 30 dynamics time step, they still account for 10 - 40% of the model's entire CPU time. This seminar reports on an alternate methodology that can reduce the number of ICA RT model executions by a factor of more than 100 with little to no bias error. Like a "lossy" compression algorithm, however, this method loses much radiative information (which can be interpreted as random error), but, as will be shown, when a well-known cloud system-resolving model is run in radiative convective equilibrium-mode, only minor differences exist between the control simulation using the ICA method, and the experiments using the new method with 100, 500, and 1,000 times fewer calls to the RT models.