

Séminaire vendredi le 6 février 2015 11:00h / Seminar Friday February 6th 2015
11:00h

Sujet/Subject : Greenhouse gas simulation with GEM: The story of mass conservation

Langue/language : Anglais / English

Conférencier/Lecturer: Saroja Polavarapu (CCMR, CRD , Environment Canada, Toronto)

Résumé/Abstract :

Environment Canada's greenhouse gas measurement network has seen considerable expansion in the past few years. At the same time, the global observing system has seen the launch of the first two dedicated greenhouse gas satellite missions in GOSAT (Greenhouse Gas Observing Satellite- launched in 2009) and OCO-2 (Orbiting Carbon Observatory – launched in 2014). Thus, there is now a new opportunity to better understand carbon cycle processes and to determine if sources and sinks of carbon can be retrieved from atmospheric measurements on regional scales. For this reason, the EC Carbon Assimilation System (EC-CAS) was proposed in 2011. While the goal is to assimilate greenhouse gases (primarily CO₂ and CH₄), the initial development has focused on adapting GEM to produce accurate simulations of CO₂. The challenge is that GEM-MACH was chosen for this task, but it is being used in an unusual way since the reactive chemistry module is not used, and long time scales (months to years) are of interest. As a result, we can provide better scrutiny on model processes important for CO₂ transport (advection, boundary layer mixing, vertical diffusion, emissions insertion) for GEM and GEM-MACH.

In this talk, the story of mass conservation of CO₂ and the implications on GEM model development are presented.