Séminaire Lundi 5 Novembre 10h30 / Seminar Monday November 5 10:30 AM

Conférencier/Lecturer: Amir Hakami (Carleton University)

Sujet/Subject: Applications of forward and backward sensitivity analysis in air quality modelling

Présentation/Presentation: Anglais / English

Lieu/Room: Grande salle du premier étage CMC

Résumé/Abstract:

Air quality models are routinely used to predict four-dimensional distributions of the pollutant concentrations. However, with the rapid advancement of computational resources, more attention is paid to additional information that these models contain in the form of sensitivity coefficients. Two complementary methods for local sensitivity analysis in air quality models will be discussed. In particular, applications of backward (adjoint) sensitivity analysis are presented. In adjoint analysis a perturbation in a receptor-based metric is propagated backward in time, and as a result, sensitivities of the metric with respect to numerous input parameters can be efficiently calculated. As a receptor-oriented method, adjoint sensitivity analysis is most suitable to address policy questions. I will present some examples of using the adjoint method in applications such as ozone non-attainment sensitivity analysis, followed by discussion of policy implications of long range transport of ozone and its precursors.
Examples of using adjoints for variational inverse modelling and other potential applications will also be discussed.