Séminaire Vendredi 25 Mai 11h00 / Seminar Friday May 25, 11:00 AM

Conférencier/Lecturer: Michel Bourqui

Sujet/Subject: Towards an operational diagnosis of Stratosphere-Troposphere Exchange

Présentation/Presentation: Français / French

Lieu/Room: Grande salle du premier étage CMC

Résumé/Abstract:

Prediction of air quality at the surface is complex and requires an accurate representation of chemical sources and transport as well as chemical processes. It is now well recognised that the stratosphere is an important source of ozone for the background troposphere. Stratospheric ozone can also severely enhance surface ozone concentrations during episodes where air is transported from the stratosphere into the boundary layer within timescales of days.

Stratosphere-Troposphere Exchange (STE) has received much attention over the past two decades in the scientific community. The physical processes involved in STE have been studied in details in the context of particular case studies and are now rather well understood. Their relative importance regionally or globally is however still unclear. The quantification of STE has remained a challenge because of the small scale processes involved and the complex tropopause structures associated to STE episodes. Lagrangian methods have proven to be reliable in characterizing the aspects relevant to chemistry.

Today, the regional impact of STE episodes on the free troposphere and the boundary layer is still not known. The amplitude and frequency of such perturbations as well as their implications for air quality have not been studied in a systematic manner.

In this talk, I will review the different Lagrangian STE diagnostics that have been applied to ECMWF ERA data sets and discuss their potential for use with Environment Canada's operational weather forecast and analysis data.