Title: On the prognostic treatment of stratospheric ozone in the Environment Canada global NWP model

Presenting author: J. de Grandpre(1)

Coauthors: S. Chabrillat(3),C.A. McLinden(2), Y. J. Rochon (2), R. Menard(1)

Affiliations:
(1)Environment Canada, Dorval, Canada;
(2)Environment Canada, Downsview, Canada;
(3)Belgium Institute for Space Aeronomy, Brussels, Belgium

Abstract

The recent upward extension of the data assimilation system at the Meteorological Service of Canada (MSC) from 10 hPa to 0.1 hPa has significantly improved meteorological analysis within the stratospheric region. This modeling effort has given the opportunity of producing ozone analyses which that will bring several benefits to the operational system. Ozone assimilation has been performed with simplified and comprehensive modeling approaches for evaluating the impact of model uncertainties in different regions. Both chemical schemes have been evaluated over different periods against satellites and ozone sonde measurements. Multi-year integrations have been also performed for evaluating species seasonal variability and mass conservation properties of the transport scheme. The study illustrates the strength and limitations of simplified methods for addressing stratospheric chemical modeling within an integrated dynamical-chemical NWP system.