

Séminaire 6 Septembre 2012 11h / Seminar September 6th 2012 11h

Conférencier/Lecturer: King-Fai Li

Division of Geological and Planetary Sciences California Institute of Technolog

Sujet/Subject: Intraseasonal Variability in Atmospheric Ozone and Carbon Dioxide

Présentation/Presentation: Anglais / English

Lieu/Room: Salle de conference 2^{eme} étage /conference room second floor (Dorval)

wiki: https://wiki.cmc.ec.gc.ca/wiki/RPN_Seminars

iweb: <http://web-mrb.cmc.ec.gc.ca/mrb/rpn/SEM/>

web: <http://collaboration.cmc.ec.gc.ca/science/rpn/SEM/index.php>

Résumé/Abstract

Intraseasonal variability in upper tropospheric/lower stratospheric (UTLS) O₃ and mid-tropospheric carbon dioxide (CO₂) related to the Madden-Julian oscillation (MJO) are studied using recent satellite observations. The UTLS O₃ at mid-latitudes is shown to be modulated by the MJO through dynamical motions of the tropopause layer, supporting the conjecture proposed in previous studies. It is further shown that the UTLS O₃ over Arctic can be also modulated by the tropopause motions through MJO teleconnections. On the other hand, the distribution of tropical mid-tropospheric CO₂ is modulated by the MJO through upward transport of surface CO₂. The amplitude is of the critical scale for identifying oceanic and land sources of CO₂. The detailed structures of these MJO impacts are useful for diagnosing chemical transport models. These findings may be used for improving air quality forecasts to weekly/monthly timescales, which help warn the public in advance and help authorities to take efficient emergency control actions.