Long-term Trends of Tropospheric Ozone Over North America and Southeast Asia

A. Gaudel[1,2], O. Cooper[1,2], B. Hassler[1,2], H. Petetin[3], D. Tarasick[4] and V. Thouret[5]

[1]Cooperative Institute for Research in Environmental Sciences (CIRES), University of Colorado, Boulder, CO 80309; 303-497-6563, E-mail: audrey.gaudel@noaa.gov
[2]NOAA Earth System Research Laboratory, Chemical Sciences Division (CSD), Boulder, CO 80305
[3]Laboratoire dAérologie, Université de Toulouse, CNRS, UPS, France
[4]Air Quality Research Division, Environment Canada, Downsview, Ontario M3H 5T4, Canada
[5]Laboratoire dAérologie, The National Center for Scientific Research (CNRS), and Universite Paul Sabatier Toulouse III, Toulouse, France

Tropospheric ozone is a greenhouse gas and pollutant detrimental to human health and crop and ecosystem productivity. Since 1990 a large portion of the anthropogenic emissions that react in the atmosphere to produce ozone have shifted from North America and Europe to Asia. This rapid shift, coupled with limited ozone monitoring in developing nations, has left scientists unable to answer the most basic questions: Is ozone continuing to decline in nations with strong emission controls? To what extent is ozone increasing in the developing world? In response to these questions this presentation will show results from International Global Atmospheric Chemistry's (IGAC) Tropospheric Ozone Assessment Report, focusing on long-term trends (1994-2014) of tropospheric ozone over North America and Southeast Asia measured by the In-service Aircraft for a Global Observing System (IAGOS) program and by ozonesondes. The study is aimed at evaluating OMI/MLS satellite observations as well as the chemistry-climate models participating in the Chemistry Climate Model Initiative (CCMI) and Task Force on Hemispheric Transport of Air Pollutants (TF-HTAP) experiments that indicate a steady 21st century increase of tropospheric ozone extending from India to western North America.

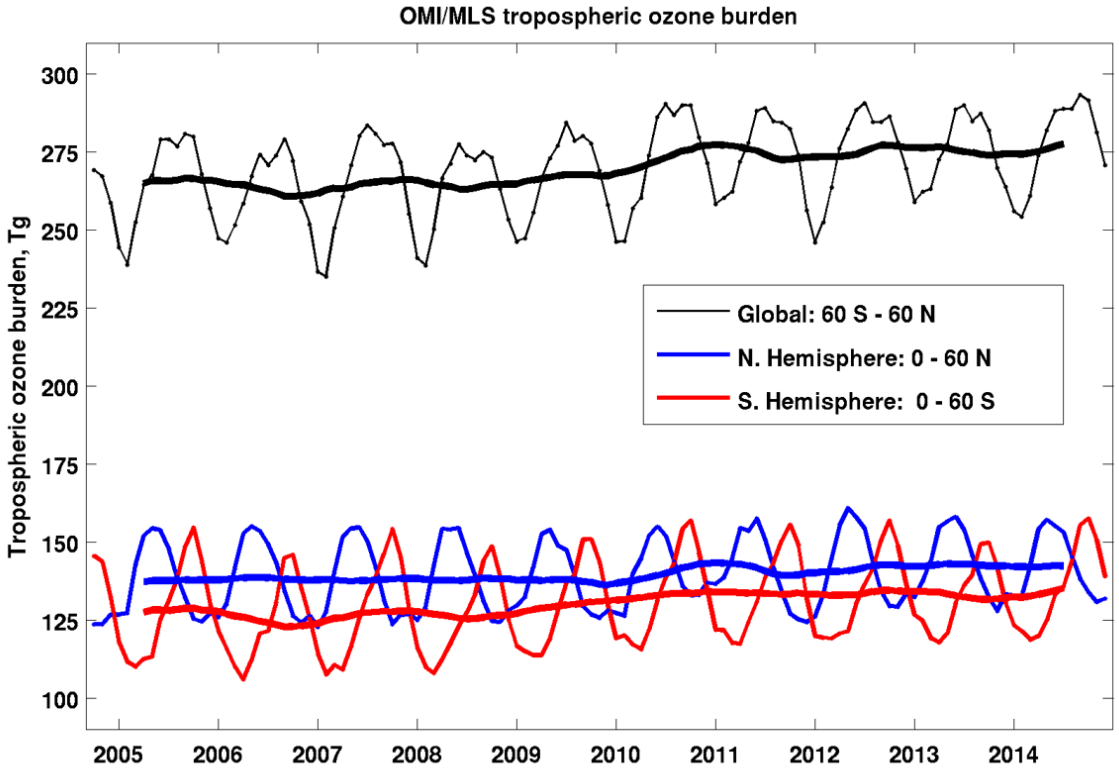

Figure 1. Time series of global tropospheric ozone burden in Tg with Ozone Monitoring Instrument Microwave Limb Sounder (OMI/MLS) dataset for the period 2004-2014.