

IAS Seminar

Topic: **Tropospheric Ozone Assessment Report: Present-day distribution and trends of tropospheric ozone relevant to climate and global atmospheric chemistry model evaluation**

Speaker: Audrey Gaudel, Chemical Science Division, National Oceanic & Atmospheric Administration, Boulder, Colorado, USA

Contents: 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 seminar will show results from the Tropospheric Ozone Assessment Report (TOAR), an activity of the International Global Atmospheric Chemistry Project (IGAC), focusing on the present-day distribution and trends of tropospheric ozone relevant to climate and global atmospheric chemistry model evaluation. Utilizing the TOAR database, which hosts the world's largest collection of global surface ozone metrics, several figures present the global distribution and trends of daytime average ozone at all available non-urban monitoring sites, highlighting the regions and seasons of the world with the greatest ozone mole fractions (nmol mol^{-1}). Similarly, ozonesonde and commercial aircraft observations reveal the global distribution of ozone throughout the depth of the free troposphere. Long term surface ozone observations are limited in their global spatial coverage, but observations at remote locations indicate that ozone in the 21st century is greater than it was in the 1970s and 1980s. While some remote sites and many sites in the heavily polluted regions of East Asia show ozone increases since 2000, many others show decreases and there is no clear global pattern for surface ozone changes since 2000. Two new satellite products provide detailed views of ozone in the lower troposphere across East Asia and Europe, revealing the full spatial extent of the spring and summer ozone enhancements across eastern China that cannot be assessed from limited surface observations.

Time: Monday, 9 October 2017, 15:00

Venue: Jülich Supercomputing Centre, Hörsaal, Geb. 16.3, R. 222