

**ATS/CIRA Colloquium**

**Owen Cooper**

**Visiting from CIRES/NOAA**

**The Tropospheric Ozone Assessment Report (TOAR):  
Accomplishments, Open Questions and New Frontiers**

**Hosted by Emily Fischer**

**3 p.m. Thursday, Feb. 6  
ATS room 101**

Tropospheric ozone is a greenhouse gas and pollutant detrimental to human health and crop and ecosystem productivity. However, it is difficult to observe and quantify on the global scale, due to its acute spatial variability, resulting from its variable lifetime and its range of sources (injection from the stratosphere, or photochemical production from natural and anthropogenic precursor gases) and sinks (surface deposition and chemical destruction). To improve our understanding of ozone, the International Global Atmospheric Chemistry Project (IGAC) initiated the Tropospheric Ozone Assessment Report (TOAR) in 2014. With over 220 member scientists and air quality specialists from 36 nations, TOAR's mission is to provide the research community with an up-to-date scientific assessment of tropospheric ozone's global distribution and trends from the surface to the tropopause. TOAR built the world's largest database of surface ozone observations and generated ozone exposure metrics at thousands of measurement sites around the world. The open-access database is facilitating new research on the global-scale impact of ozone on climate, human health and crop/ecosystem productivity. This presentation will highlight key results from the first phase of TOAR (2014-2019), focusing on the regions of the world where ozone air quality has improved or degraded. While TOAR has shed new light on ozone's global distribution and trends, the effort has also established the limits of our knowledge. For example, data limitations prevent us from determining if the global tropospheric ozone burden has increased or decreased over the past decade. The presentation will highlight these knowledge gaps as well as outstanding questions pertaining to tropospheric ozone, and will conclude with an overview of TOAR-II (2020-2024).

Link to colloquia page: [atmos.colostate.edu/colloquia](https://atmos.colostate.edu/colloquia)