GCSC Seminar Series

Tuesday, Sept. 11, 2018
4:00-5:00 PM

John C. Lin
Professor, Atmospheric Sciences, University of Utah

"The Greenhouse Gas-Air Quality nexus: experiences from the Western U.S."
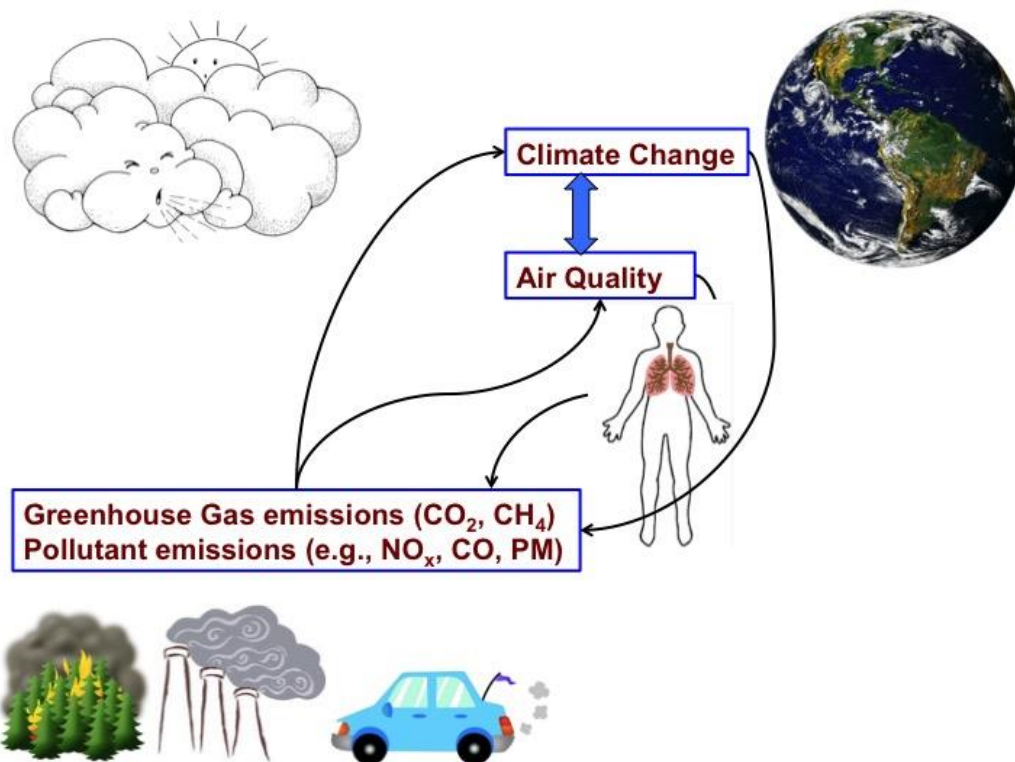
With scientific understanding, "win-win" situations can be arrived at that mitigate climate change while improving air quality.

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Abstract

Greenhouse gases and air quality - two key environmental issues of our time - are coupled at multiple scales. At the most basic level, greenhouse gases and air quality-relevant pollutants are co-emitted at the scale of tailpipes. At regional to global scales, climate change influences the sources of pollutants, which, in turn, impact the fluxes of greenhouse gases.

My research at the University of Utah seeks to understand this nexus by combining both observational and modeling approaches, with a strong focus on the Western U.S. This is an area where wildfire activity, dust events, unconventional energy development, complex terrain, climate change, and rapid population growth all intersect to create compelling scientific, environmental, and societal issues that remain to be answered. These issues will be introduced in my talk, highlighting the greenhouse gas-air quality linkages from the urban scale near the Salt Lake area to the regional scale of the Western U.S.

Bio

Prof. John C. Lin is currently a Professor in the Department of Atmospheric Sciences at the University of Utah. His research is interdisciplinary in nature, reflecting his diverse educational background. He studied plant physiology at Harvard University for his B.A. and M.A. degrees in Biology. He then transferred to a Ph.D. program at Harvard's Dept. of Earth and Planetary Sciences, in which he carried out research on greenhouse gases, interpreting aircraft data with atmospheric and biospheric models. He won a NOAA Postdoctoral Fellowship and held the award at Colorado State University, where he was trained in satellite data analyses and mesoscale meteorological modeling (advisor: R.A. Pielke, Sr.).

Lin has expertise in modeling of greenhouse gases, pollutants, and inverse analyses for over ten years. He was among the first to integrate continental atmospheric CO_2 concentrations with land surface observations to estimate regional scale carbon sources/sinks [Gerbig et al., 2003; Lin et al., 2004]. Over the years he has been invited to participate in multi-institutional, international efforts at studying the Carbon Cycle. He was a contributing author to the North American Carbon Program (NACP).

He has extensive experience in Lagrangian modeling of the atmosphere and is the original author of the STILT atmospheric model [Lin et al., 2003]. STILT is being used by a growing community (over 20 institutions internationally) for interpreting trace gas measurements made at ground based stations, on aircraft, as well as for remote sensing.