



The Impact of Greenhouse Gases on Climate in PA

Neil M. Donahue, Lord Professor of Chemistry
Departments of Chemistry, Chemical Engineering, Engineering and Public Policy,
and Center for Atmospheric Particle Studies
Carnegie Mellon University

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Location: Lehigh University, STEPS Building Rm 101
Contact: Phone: 610-758-3650 E-mail: inesei@lehigh.edu

***Light refreshments served**

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Abstract: Although not bound by specific carbon-emission limits, the Paris Climate Change Accords binds nearly 200 nations to decrease the use of fossil fuels that generate heat-trapping greenhouse-gas emissions such as carbon dioxide as soon as possible. The agreement is meant to prevent average global temperatures from increasing by more than 3.6°F above pre-industrial levels, which, since the 1990s, has been commonly regarded as an adequate target for avoiding irreversible impacts, such as catastrophic sea-level rises and widespread plant and animal extinction. In this presentation, Professor Donahue argues that the 3.6F is not a magic line where we are safe below it. The harm from climate change will—more-or-less—get progressively worse, as we have more and more CO₂ in the air.

Dr. Donahue personalizes the potential impact of climate change in Pennsylvania. While evidence of these changes cannot be simply attributed to single events-- the massive flooding in Houston and surrounding areas, for example-- more frequent extreme weather events could be triggered by persistent indicators: higher sea-surface temperatures, stronger weather events, etc.

Biography: Neil M. Donahue is the Thomas Lord Professor of Chemistry in the Departments of Chemistry, Chemical Engineering and Engineering and Public Policy at Carnegie Mellon University, where he has been on the faculty since 2000. He is the founding director of the Center for Atmospheric Particle Studies (CAPS) at CMU and is now the director of the Steinbrenner Institute for Environmental Education and Research, which represents all environmental research and education at CMU. CAPS is ranked among the world leaders in research addressing fundamental behavior of atmospheric aerosols and their relationship to both air quality and climate. He is a Pittsburgh native.

Donahue has a Bachelor's degree in Physics from Brown University and a doctorate in Meteorology from MIT. He has shown that organics material is very dynamic, with compounds condensing to and evaporating from the condensed phase frequently during their roughly one-week residence time in the atmosphere, all the while undergoing oxidation chemistry, especially in the gas-phase via OH-radical attack. Most recently, he joined the CLOUD consortium at CERN to focus on the role that gas-phase organic oxidation chemistry plays during new-particle formation in the atmosphere.



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