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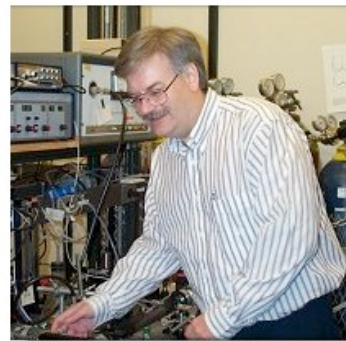
Phone

Research Fields

- Atmospheric chemistry
- Biogeochemistry
- Carbon Footprint Analysis
- Climatology
- Community & Disaster Planning
- Data Analysis & Statistical Modeling
- Ecology & Ecosystem Management
- Economics
- Energy policy & technology
- Ethics
- Fire
- Forestry & Forest Management
- Geographic Information Systems
- Horticulture
- Human Impacts - economics
- Human Impacts - health
- Human Impacts - policy
- Hydrology
- Impacts - agriculture & horticulture
- Impacts - ecosystems, populations
- Impacts - physical
- Instrumentation
- Mitigation Policy
- Modeling Climate
- Modeling Ecosystems
- Modeling Socioeconomic Processes
- Natural Resource Policy & Planning
- Outreach & Engagement
- Paleoclimatology
- Paleoecology
- Physical Ecology
- Physiological Ecology
- Urban Ecology
- Water Policy & Planning
- Other...

Permission date

Photo



Website

www.chem.pdx.edu/people/faculty_pages/atkinson.php

Specific Research Interests

We are interested in the development and use of new types of instrumentation to measure the optical properties of the atmospheric aerosol. Aerosols (particles suspended in air) and their impact on clouds are currently the largest contributors to the uncertainty of global climate models. Particles can have direct radiative effects – some types are responsible for extensive cooling of the planet, while others (black carbon) may be responsible for warming – and more subtle indirect effects through their interaction with clouds. Clouds are the most important negative feedback mechanism working against global warming, so the aerosol-cloud interactions are recognized to have great potential importance. We have been using a novel cavity ring-down based instrument to measure the key optical properties extinction, scattering, absorption, and single scattering albedo of the ambient aerosol at the ground for the last five years and are developing an airborne version for measurements aloft. We have participated in field studies investigating climate change and air quality.

Projects

"Improvements to a Tandem Cavity Ring-Down Transmissometer /Nephelometer Instrument to Facilitate Airborne Measurements of *in Situ* Aerosol Optical Properties." (Atkinson PI) NOAA-ACC \$285,049; active 2/05 – 10/08

"VOCALS-Rex: Aerosol Optical Properties Measurements, Shipboard and on Land" (Atkinson PI) NSF-CLD \$146,784; pending

"Aerosol Optical Properties Measurements from Ship and Land during VOCALS-Rex" (Atkinson PI) NOAA-ACC \$150,000; pending

Selected Recent Publications

1. J. D. Smith and D. B. Atkinson, "A Portable Pulsed Cavity Ring-Down Transmissometer for Measurement of the Optical Extinction of the Atmospheric Aerosol", *Analyst*, 126, 1216, (2001).

2. D. B. Atkinson, "Tutorial Review: Solving Chemical Problems of Environmental Importance Using Cavity Ring-down Spectroscopy", *Analyst*, 128, 117, (2003).

3. P. J. Sheridan, W. P. Arnott, J. A. Ogren, E. Andrews, D. B. Atkinson, D. S. Covert, H. Moosmuller, A. Petzold, B. Schmid, A. W. Strawa, R. Varma, and A. Virkkula, "The Reno Aerosol Optics Study: An Evaluation of Aerosol Absorption Measurement Methods", *Aerosol Science and Technology*, 39, 1, (2005).

Professional Activities

NOAA and NSF Review Panels

Proposal Review - Research Corporation, Petroleum Research Fund, National Science Foundation, NOAA, DoE

Journal Review - Chemosphere, Physical Chemistry Chemical Physics, Chemical Physics Letters, Green Chemistry, Journal of Physical Chemistry, Environmental Science and Technology, Environmental Chemistry, Analyst, Science of the Total Environment