

Dr. David W. Fahey

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NOAA Chemical Sciences Laboratory
National Oceanic and Atmospheric Administration (NOAA)
325 Broadway R/CSL | Boulder, Colorado 80305 | United States

EXPERTISE

- Leadership and management of research teams in the laboratory and in airborne field campaigns.
- Written and oral communication of atmospheric science results to experts and non-experts.
- Evaluation of scientific results for use in national and international assessments of contemporary atmospheric issues, including climate change and stratospheric ozone depletion.
- *In situ* measurements of trace gases and aerosols in the troposphere and stratosphere using airborne instrumentation, with emphases on black carbon aerosol, ozone, water vapor, and reactive nitrogen gases.
- Interpretation of *in situ* observations of gas and aerosol abundances to address climate and air quality issues in the troposphere and stratosphere.

EXPERIENCE

Director, Chemical Sciences Division

NOAA Earth System Research Laboratory, Boulder, CO

January 2014 - present

Research Physicist

Atmospheric Composition and Chemical Processes Group

NOAA Earth System Research Laboratory, Boulder, CO

September 1982 – December 2014

EDUCATION

Ph.D. in Physics, 1979, University of Missouri, Rolla, Missouri

B.A. in Physics, 1976, University of Wisconsin, Madison, Wisconsin

SELECTED HONORS

Chair, Advisory Committee, 2019 Dan David Prize for *Combatting Climate Change*, December 2018.

Honorary Doctor of Science Degree from the University of Wisconsin-Madison, 11 May 2018.

Ozone Awards 2017, Montreal Protocol Ozone Secretariat, Scientific Leadership Award to Guus Velders' Team, 24 November 2017.

2013 Distinguished Alumni Award, Physics Department, University of Wisconsin, Madison, WI, 3 May 2013.

Co-recipient of the U. S. Department of Commerce Bronze Medal for Superior Federal Service, January 2013, for 'For the successful demonstration of the Global Hawk Unmanned Aircraft Systems for NOAA's Climate Goal.'

Federal Player of the Week. Washington Post and Partnership for Public Service, Washington, DC, 9 March 2010.

Recipient of the 2009 Dr. Daniel L. Albritton Outstanding Science Communicator Award from the NOAA Office of Oceanic and Atmospheric Research.

Co-recipient of the 2008 Stratospheric Ozone Protection Award from the U.S. Environmental Protection Agency (EPA) to the Climate Co-Benefits of the Montreal Protocol Protection Team for 'Motivating action on climate.'

SELECTED AIRBORNE SCIENCE RESPONSIBILITIES

Co-Platform Scientist for the NASA Global Hawk Unmanned Aircraft System (UAS) in the NASA Airborne Tropical Tropopause Experiment (ATTREX), 2010 - 2015.

Co-Project Scientist for the NASA Global Hawk Pacific (GloPac) Mission using the NASA Global Hawk Unmanned Aircraft System (UAS), March - April 2010.

SELECTED NATIONAL and INTERNATIONAL ASSESSMENT PARTICIPATION

Scientific Steering Committee Member for the *Scientific Assessment of Ozone Depletion: 2018*, Global Ozone Research and Monitoring Project - Report No. 58, 588 pp., World Meteorological Organization, Geneva, Switzerland, 2018.

Coordinating Lead Author (with D. Wuebbles and K. Hibbard) of the *Climate Science Special Report (CSSR)* of the US 4th National Climate Assessment, 2016-2017.

Lead author of Aviation and Climate: State of the Science (white papers), Impacts and Science Group (ISG) of the Committee on Aviation Environmental Protection (CAEP) of the International Civil Aviation Organization (ICAO), November 2012 and November 2015.

SELECTED INVITED PRESENTATIONS

- Earth Observations & Modeling for Decision Making*, Course lecture in ATMS 491: Climate and Weather Policy: Building Capacity for Urban Sustainability at the University of Illinois-Champaign-Urbana, Champaign-Urbana, Illinois, 4 March 2020
- Future changes to stratospheric composition and their impacts*, American Meteorological Society Meeting, Middle Atmosphere Symposium, Boston, Massachusetts, 14 January 2020
- Climate intervention: A scientific perspective*, NOAA Chemical Sciences Laboratory Seminar, 23 January 2020
- Messing with stratospheric chemistry: What's at stake*, Geoengineering Gordon Research Conference, Newry, Maine, 23-27 July 2017

SELECTED PEER-REVIEWED PUBLICATIONS

Over 260 peer-reviewed publications with over 18000 citations and Hirsch index of 69 (Web of Science, Researcher ID: G-4499-2013, December 2020)

The contribution of global aviation to anthropogenic climate forcing for 2000 to 2018

- D. S. Lee, D. W. Fahey, A. Skowron, M. R. Allen, U. Burkhardt, Q. Chen, S. J. Doherty, S. Freeman, P. M. Forster, J. Fuglestedt, A. Gettelman, R. R. De León, L. L. Lim, M. T. Lund, R. J. Millar, B. Owen, J. E. Penner, G. Pitari, M. J. Prather, R. Sausen, L. J. Wilcox,
Atmospheric Environment, 244 (2021) 117834
 doi:<https://doi.org/10.1016/j.atmosenv.2020.117834> (2020).

Designing the climate observing system of the future

- E. C. Weatherhead, B.A. Wielicki, V. Ramaswamy, M. Abbott, T.P. Ackerman, R. Atlas, G. Brasseur, L. Bruhwiler, A. J. Busalacchi, J.H. Butler, C.T.M. Clack, R. Cooke, L. Cucurull, S.M. Davis, J.M. English, D.W. Fahey, S.S. Fine, J.K. Lazo, S. Liang, N.G. Loeb, E. Rignot, B. Soden, D. Stanitski, G. Stephens, B.D. Tapley, A.M. Thompson, K.E. Trenberth, and D. Wuebbles
Earth's Future, 6: 80-102. doi:10.1002/2017EF000627 (2018)

How will climate change affect the United States in decades to come?

- D.J. Wuebbles, D. W. Fahey, and K. A. Hibbard
Eos, 98, <https://doi.org/10.1029/2017EO086015>. Published on 03 November 2017.

The role of sulfur dioxide in stratospheric aerosol formation evaluated using in-situ measurements in the tropical lower stratosphere

- A. W. Rollins, T. D. Thornberry, L. A. Watts, P. Yu, K. H. Rosenlof, M. Mills, E. Baumann, F. R. Giorgett, T. V. Bui, M. Höpfner, K. A. Walker, C. Boone, P. F. Bernath, P. R. Colarco, P. A. Newman, D. W. Fahey, and R. S. Gao
Geophysical Research Letters, 44, DOI: 10.1002/2017GL072754, 2017.

Aviation and climate change: A scientific perspective

- David W. Fahey and David S. Lee
Carbon and Climate Law Review, 2, 97-104, 2016.

The spectroscopic foundation of radiative forcing of climate by carbon dioxide

- Martin G. Mlynczak, Taumi S. Daniels, David P. Kratz, Daniel R. Feldman, William D. Collins, Eli J. Mlawer, Matthew J. Alvarado, James E. Lawler, L. W. Anderson, David W. Fahey, Linda A. Hunt, and Jeffrey C. Mast
Geophysical Research Letters, 43, doi:10.1002/2016GL068837, 2016.

A persistent water-nitric acid condensate with saturation water vapor pressure greater than hexagonal ice

- Ru-Shan Gao, Tomasz Gierczak, Troy D. Thornberry, Andrew W. Rollins, James B. Burkholder, Hagen Telg, Christiane Voigt, Thomas Peter, and David W. Fahey
Journal of Physical Chemistry A, 120, 1431–1440, DOI: 10.1021/acs.jpca.5b06357, 2015.

Future atmospheric abundances and climate forcings from scenarios of global and regional hydrofluorocarbon (HFCs) emissions

- Guus J.M. Velders, David W. Fahey, John S. Daniel, Stephen O. Andersen, Mack McFarland
Atmospheric Environment, doi number: 10.1016/j.atmosenv.2015.10.071, 2015

Bounding the role of black carbon in the climate system: A scientific assessment

- Bond, T. C., S. J. Doherty, D. W. Fahey, et al.
Journal of Geophysical Research, 118, DOI: 10.1002/jgrd.50171, 2013.