

DR. GREGORY J. FROST**SUPERVISORY RESEARCH CHEMIST**

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Summary of Professional Achievements

Dr. Gregory Frost leads CSL's Regional Chemical Modeling Program, which uses observations and models to understand the impacts of atmospheric emissions and chemistry on air quality, weather, and climate. Dr. Frost is the Atmospheric Composition and Chemistry Liaison in NOAA's Office of Oceanic and Atmospheric Research. He manages the NOAA Earth's Radiation Budget Initiative, a Congressionally directed research program investigating natural and human activities that may alter the reflectivity of the atmosphere and impact the Earth system. Dr. Frost led the 2020 value assessment of an atmospheric composition capability on NOAA's Geostationary Extended Observations (GeoXO) Mission and leads the User Applications team for GeoXO's Atmospheric Composition Instrument, ACX.

Education

Doctor of Philosophy, Physical Chemistry, University of Colorado, Boulder, CO, 1995

Bachelor of Science, Chemistry, University of California, Berkeley, CA, 1989

Professional Employment History

2020 – present, Supervisory Research Chemist, NOAA CSL

2014 – 2020, Research Chemist, NOAA CSL

1997 – 2014, Research Scientist, University of Colorado, CIRES; Affiliate Scientist, NOAA Chem. Sci. Div.

1995 – 1997, NRC Postdoctoral Associate, NOAA Aeronomy Laboratory

1989 – 1995, Graduate Research Assistant, University of Colorado

Selected Publications (*97 peer-reviewed articles, 10 first-authored, H-index = 43, cumulative citations = 9,367*)

Francoeur, C. B., [...], G. J. Frost, et al. **2021**: Quantifying methane and ozone precursor emissions from oil and gas production regions across the contiguous U.S. *Environ. Sci. Technol.* 55, doi: 10.1021/acs.est.0c07352.

Li, M., [...], G. J. Frost. **2021**: Assessment of updated fuel-based emissions inventories over the contiguous United States using TROPOMI NO₂ retrievals. *J. Geophys. Res. Atmos.*, 126, doi: 10.1029/2021JD035484.

Day, M., [...], G. Frost, et al. **2019**: Reflecting on progress since the 2005 NARSTO emissions inventory report. *J. Air Waste Manage. Assoc.*, 69, 9, 1023-1048, doi: 10.1080/10962247.2019.1629363.

McDonald, B.C., [...], G. J. Frost, et al. **2018**. Modeling Ozone in the Eastern U.S. using a Fuel-Based Mobile Source Emissions Inventory. *Environ. Sci. & Technology*, 52, 13, 7360-7370, doi:10.1021/acs.est.8b0077.

McDonald, B.C., [...], G. J. Frost, et al. **2018**. Volatile Chemical Products Emerging as Largest Petrochemical Source of Urban Organic Emissions. *Science*, 359, 760–764, doi:10.1126/science.aaq0524.

Kim, S.-W., [...], G. J. Frost, et al. **2016**: Modeling the weekly cycle of NO_x and CO emissions and their impacts on O₃ in the Los Angeles-South Coast Air Basin during the CalNex 2010 field campaign. *J. Geophys. Res. Atmos.*, 121, 1340–1360, doi: 10.1002/2015JD024292.

Pétron, G., [...], G. J. Frost, et al. **2014**: A new look at methane and non-methane hydrocarbon emissions from oil and natural gas operations in the Colorado Denver-Julesburg Basin. *J. Geophys. Res. Atmos.*, 119, 6836-6852, doi:10.1002/2013JD021272.

Karion, A., [...], G. Frost, et al. **2013**: Methane emissions estimate from airborne measurements over a western United States natural gas field. *Geophys. Res. Lett.*, 40, 4393-4397, doi:10.1002/grl.50811.

Granier, C., [...], G. Frost, et al. **2011**: Evolution of anthropogenic and biomass burning emissions at global and regional scales during the 1980-2010 period. *Clim. Change*, **109**, 163–190, doi:10.1007/s10584-011-0154-1

Kim, S.-W., [...], G. J. Frost, et al. **2009**: NO₂ columns in the western U.S. observed from space and simulated by a regional chemistry model and their implications for NO_x emissions. *J. Geophys. Res.*, 114, D11301, doi: 10.1029/2008JD011343.

Monks, P. S., [...], G. Frost, et al. **2009**: Atmospheric composition change – global and regional air quality. *Atmos. Environ.*, **43**, 5268–5350

Kim, S.-W., [...], G. J. Frost, et al. **2006**: Satellite-observed US power plant NO_x emission reductions and their impact on air quality. *Geophys. Res. Lett.*, 33, L22812, doi:10.1029/2006GL027749.

Frost, G. J., et al. **2006**: Effects of changing power plant NO_x emissions on ozone in the eastern United States: Proof-of-concept. *J. Geophys. Res.*, 111, D12306, doi:10.1029/2005JD006354.

Grell, G. A., [...], G. Frost, et al. **2005**: Fully coupled “online” chemistry within the WRF model. *Atmos. Environ.*, 39, 6957-6975.