

Cassandra J. Gaston
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Department of Atmospheric Sciences
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Contact:

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Academic Appointments:

Assistant Professor, Department of Atmospheric Sciences, University of Miami	2016-Present
Postdoctoral Researcher, University of Washington, Seattle	2012-2015

Education:

Ph.D., University of California, San Diego (UCSD), Scripps Institution of Oceanography	2012
B.A., University of California, San Diego (UCSD), Environmental Chemistry	2005
B.S., University of California, San Diego (UCSD), Biology	2005

Selected Honors and Awards:

Article selected to be a cover story by the journal *Atmosphere* [2018]
Environmental Science & Technology Top Environmental Science Paper of 2015 [2016]
Journal of Physical Chemistry A: 1 of 25 Papers Included in a Virtual Issue on Atmospheric Physical Chemistry [2016]
Travel Award Recipient: On the Cutting Edge Early Career Geoscience Faculty Workshop [2016]
ADVANCE Workshop Participant (Texas A&M University) [2014]
Achievement Rewards for College Scientists Scholarship [2011-2012]
American Geophysical Union Outstanding Student Paper Award [2010]
San Diego Graduate Fellowship [2008-2012]
Pacific Northwest National Laboratory Aerosol Chemistry and Climate Institute Fellowship [2008-2012]
UC Regents Graduate Fellowship [2006-2007]

Teaching Experience:

Instructor, University of Miami, Department of Atmospheric Sciences	2016-present
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- Courses include:
 - Atmospheric Thermodynamics (undergraduate), Atmospheric Chemistry (graduate), Introduction to Weather and Climate (undergraduate), Principles and Applications of Mass Spectrometry (graduate)

Service and Committee Experience:

Co-Chair: Marine Organic Carbon, Ocean-Derived Aerosols, and Particulate Nutrient Deposition Session at the American Geophysical Union conference [2017]

Co-Chair: Marine Aerosols and Trace Gases Session at the American Geophysical Union conference [2016]
Reviewer for *Aeolian Research*, *Atmospheric Chemistry and Physics*, *Environmental Science & Technology*, *Geophysical Research Letters*, *Journal of Atmospheric Chemistry*, *Journal of the Air & Waste Management Association*, *National Science Foundation*, *Swiss National Science Foundation*

Professional Memberships: American Geophysical Union [2008-present]; Union of Concerned Scientists [2011-2015]; Earth Science Women's Network [2014-present]; American Chemical Society [2016-present]

Outreach: Polar Science Weekend demonstrations for all ages [2015]; Atmospheric chemistry demonstrations for high school students [2013]; Expanding Your Horizons [Mar. 2011]; Local elementary school outreach events [2011]; Outreach with the Scripps Environmental Advocates [Sept. 2010]; Scripps Institution of Oceanography volunteer (2008, 2009 Family Day, 2008 BEWiSE Geo-Challenge); SCOPE (Scripps Community Outreach Program for Education) volunteer for middle and high school students [2007-2012]

Peer-Reviewed Publications (23 total, 10 first author):

G=graduate student in the Gaston lab; U=undergraduate student

Zhang, Y., Y. Chen, A.T. Lambe, N.E. Olson, Z. Lei, R.L. Craig, Z. Zhang, A. Gold, T.B. Onasch, J.T. Jayne, D.R. Worsnop, **C.J. Gaston**, J.A. Thornton, W. Vizuete, A.P. Ault, J.D. Surratt. (2018). Effect of aerosol-phase state on secondary organic aerosol formation from the reactive uptake of isoprene-derived epoxydiols (IEPOX). *Environ. Sci. Technol. Lett.*, Just Accepted.

***Gaston, C.J.**, J.F. Cahill, D.B. Collins, K.J. Suski, J.Y. Ge^U, A.E. Barkley^G, K.A. Prather. 2018. The cloud nucleating properties and mixing state of marine aerosols sampled along the Southern California coast. *Atmosphere*, 9(2), 52; doi:10.3390/atmos9020052.

*Selected as the cover article for an issue of the journal *Atmosphere*

Zaveri, R.A., J.E. Shilling, A. Zelenyuk, J. Liu, D.M. Bell, E.L. D'Ambro, **C.J. Gaston**, J.A. Thornton, A. Laskin, P. Lin, J. Wilson, R.C. Easter, J. Wang, A.K. Bertram, S.T. Martin, J.H. Seinfeld, D.R. Worsnop. 2018. Growth kinetics and size distribution dynamics of viscous secondary organic aerosol, *Environ. Sci. Tech.*, *ASAP*, DOI: 10.1021/acs.est.7b04623.

Gaston, C.J., K.A. Pratt, K.J. Suski, N.W. May, T.E. Gill, K.A. Prather. 2017. Laboratory studies of the cloud droplet activation properties and corresponding chemistry of dry lake bed dust. *Environ. Sci. Tech.*, 51(3), 1348-1356, DOI: 10.1021/acs.est.6b04487.

D'Ambro, E.L., B.H. Lee, J. Liu, J.E. Shilling, **C.J. Gaston**, F.D. Lopez-Hilfiker, S. Schobesberger, R.A. Zaveri, C. Mohr, A. Lutz, Z. Zhang, A. Gold, J.D. Surratt, J.C. Rivera-Rios, F.N. Keutsch, J.A. Thornton. 2017. Molecular composition and volatility of isoprene photochemical oxidation secondary organic aerosol under low- and high-NO_x conditions. *Atmos. Chem. Phys.*, 17, 159-174.

Gaston, C.J., F.D. Lopez-Hilfiker, L.E. Whybrew^U, O. Hadley, F. McNair, H. Gao, D.A. Jaffe, J.A. Thornton. 2016. Online molecular characterization of fine particulate matter in Port Angeles, WA: Evidence for a major impact from residential wood smoke. *Atmos. Environ.*, 138, 99-107.

****Gaston, C.J.** and J.A. Thornton. 2016. The reacto-diffusive length of N₂O₅ in aqueous sulfate and chloride containing aerosol particles. *J. Phys. Chem. A*, DOI: 10.1021/acs.jpca.5b11914.

****One of 25 papers selected for inclusion in a virtual issue on Atmospheric Physical Chemistry by The Journal of Physical Chemistry A**

Lopez-Hilfiker, F., C. Mohr, E. D'Ambro, A. Lutz, T. Riedel, **C.J. Gaston**, S. Iyer, Z. Zhang, A. Gold, J. Surratt, B. Lee, T. Kurtén, W.W. Hu, J. Jimenez, M. Hallquist, J.A. Thornton. 2016. Molecular composition and volatility of organic aerosol in the Southeastern U.S.: Implications for IEPOX derived SOA. *Environ. Sci. Tech.*, DOI: 10.1021/acs.est.5b04769.

*****Gaston, C.J.**, H. Furutani, S.A. Guazzotti, K.R. Coffee, J. Jung, M. Uematsu, K.A. Prather. 2015. Direct night-time ejection of particle-phase reduced biogenic sulfur compounds from the ocean to the atmosphere. *Environ. Sci. Tech.*, DOI: 10.1021/es506177s.

*****Selected as the top environmental science paper of 2015 by Environmental Science & Technology**

Riedel, T.P., Y.-H. Lin, S.H. Budisulistiorini, **C.J. Gaston**, J.A. Thornton, Z. Zhang, W.G. Vizuete, A. Gold, J.D. Surratt. 2015. Heterogeneous reactions of isoprene-derived epoxides: Reaction probabilities and molar SOA yield estimates. *Environ. Sci. Tech. Lett.*, DOI: 10.1021/ez500406f.

Gaston, C.J., T.P. Riedel, Z. Zhang, A. Gold, J.D. Surratt, J.A. Thornton. 2014. Reactive uptake of an isoprene-derived epoxydiol to submicron aerosol particles. *Environ. Sci. Tech.*, 48(19), 11178-11186.

Gaston, C.J., J.A. Thornton, and N.L. Ng. 2014. Reactive uptake of N₂O₅ to internally mixed inorganic and organic particles: The role of organic carbon oxidation state and inferred organic phase separations. *Atmos. Chem. Phys.*, 14, 5693-5707.

Ryder, O.S., A.P. Ault, J.F. Cahill, T.L. Guasco, L. Cuadra-Rodriguez, **C.J. Gaston**, E. Fitzgerald, C. Lee, K.A. Prather, and T.H. Bertram. 2014. On the role of particle mixing state in the reactive uptake of N₂O₅ to ambient aerosol particles. *Environ. Sci. Tech.*, 48(3), 1618-1627.

Zauscher, M.D., Y. Wang, M.J.K. Moore, **C.J. Gaston**, K.A. Prather. 2013. Air quality impact and physicochemical aging of biomass burning aerosols during the 2007 San Diego wildfires. *Environ. Sci. Tech.*, 47(14), 7633-7643, DOI: 10.1021/es4004137.

Gaston, C.J., P.K. Quinn, T.S. Bates, J.B. Gilman, D.B. Bon, W.C. Kuster, K.A. Prather. 2013. The impact of shipping, agricultural, and urban emissions on single particle chemistry observed aboard the R/V *Atlantis* during CalNex. *J. Geophys. Res.* 118, doi:10.1002/jgrd.50427.

Weiss-Penzias, P., E. Williams, B. Lerner, T. Bates, **C.J. Gaston**, K.A. Prather, A. Vlasenko, S.-M. Li. 2013. Shipboard measurements of gaseous elemental mercury along the coast of Central and Southern California. *J. Geophys. Res.*, 118, doi:10.1029/2012JD018463.

Riedel, T.P., T.H. Bertram, O.S. Ryder, S. Liu, D.A. Day, L.M. Russell, **C.J. Gaston**, K.A. Prather, J.A. Thornton. 2012. Direct N₂O₅ reactivity measurements at a polluted coastal site. *Atmos. Chem. Phys.*, 12, 2959-2968.

Gaston, C.J., H. Furutani, S.A. Guazzotti, K.R. Coffee, T.S. Bates, P.K. Quinn, L.I. Aluwihare, B.G. Mitchell, K.A. Prather. 2011. Unique ocean-derived particles serve as a proxy for changes in ocean chemistry. *J. Geophys. Res.-[Atmospheres]*, 116 (D18310), doi: 10.1029/2010JD015289.

- Ault, A.P., C.R. Williams, A.B. White, P.J. Neiman, J.M. Creamean, **C.J. Gaston**, F.M. Ralph, K.A. Prather. 2011. Detection of Asian dust in California orographic precipitation. *J. Geophys. Res.-[Atmospheres]*, 116 (D16205), doi:10.1029/2010JD015351.
- Urbano, R.^U, B. Palenik, **C.J. Gaston**, K.A. Prather. 2011. Detection and phylogenetic analysis of coastal bioaerosols using culture dependent and independent techniques. *Biogeosciences*, 8, 301-309.
- Pratt, K.A., C.H. Twohy, S.M. Murphy, R.C. Moffett, A.J. Heymsfield, **C.J. Gaston**, P.J. DeMott, P.R. Field, T.R. Henn, D.C. Rogers, M.K. Gilles, J.H. Seinfeld, K.A. Prather. 2010. Observation of playa salts as nuclei in orographic wave clouds. *J. Geophys. Res.-[Atmospheres]*, 115 (D15301), doi:10.1029/2009JD013606.
- Ault, A.P., **C.J. Gaston**, Y. Wang, G. Dominguez, M.H. Thiemens, K.A. Prather. 2010. Characterization of the single particle mixing state of individual ship plume events measured at the Port of Los Angeles. *Environ. Sci. Tech.*, 44(6), 1954-1961.
- Gaston, C.J.**, K.A. Pratt, X. Qin, K.A. Prather. 2010. Real-time detection and mixing state of methanesulfonate in single particles at an inland urban location during a phytoplankton bloom. *Environ. Sci. Tech.*, 44(6), 1566-1572.

Invited Talks:

- Gaston, C.J.** Insight into the production and cloud forming potential of natural aerosols. *University of California, Los Angeles*, Apr. 12, 2017.
- Gaston, C.J.** What do we understand about marine aerosols and climate? *University of Miami*, Miami, FL, Apr. 30, 2015.
- Gaston, C.J.**, J.A. Thornton, T.P. Riedel, Z. Zhang, A. Gold, J.D. Surratt. Reactive uptake of isoprene-derived epoxydiols to submicron aerosol particles: Implications for IEPOX lifetime and SOA formation. *2014 American Geophysical Union Fall Meeting*. San Francisco, CA, Dec. 16, 2014.
- Gaston, C.J.** Atmosphere-biosphere interactions and the impact of pollution on particle composition and trace gas uptake. *NOAA*, Boulder, CO, Sept. 11, 2014.
- Gaston, C.J.** Applying *in situ* mass spectrometry techniques to study aerosols and trace gases in the marine boundary layer. *University of Maine*, Orono, ME, Mar. 4, 2014.
- Gaston, C.J.** The impact of biological activity and pollution on marine aerosols, trace gases, and ocean biogeochemistry. *Texas A&M University*, College Station, TX, Feb. 20, 2014.
- Gaston, C.J.** Emissions from anthropogenic and marine biogenic sources: Interactions and synergies between gases and particles. *University of Washington*, Seattle, WA, Jan. 14, 2013.
- Prather, K.A., J.F. Cahill, **C.J. Gaston**, K. Suski, R.A. Zaveri, J. Seinfeld. Aircraft and shipboard measurements of aerosol mixing state in Southern and Northern California during the CalNex 2010 and CARES 2010 field campaigns. *2010 American Geophysical Union Fall Meeting*. San Francisco, CA, Dec. 13-17, 2010.

Gaston, C.J., K.A. Pratt, X. Qin, K.A. Prather. Real-time detection of methanesulfonate at an urban location. *Pacific Northwest National Laboratory*. Richland, WA, Aug. 12, 2009.

Selected Oral Presentations:

Gaston, C.J., K.A. Pratt, K.J. Suski, N.W. May, T.E. Gill, K.A. Prather. Laboratory studies of the cloud droplet activation properties and corresponding chemistry of dry lake bed dust. *2016 American Geophysical Union Fall Meeting*. San Francisco, CA, Dec. 12-16, 2016.

Gaston, C.J., J.A. Thornton, N.L. Ng. The role of organic aerosol and liquid-liquid phase separations on the reactive uptake of N_2O_5 to aerosol particles. *2013 American Geophysical Union Fall Meeting*. San Francisco, CA, Dec. 9-13, 2013.

Gaston, C.J., P.K. Quinn, T.S. Bates, K.A. Prather. The impact of port and marine biogenic emissions on the single-particle chemistry of marine aerosols during CalNex. *2010 American Geophysical Union Fall Meeting*. San Francisco, CA, Dec. 13-17, 2010.

Gaston, C.J., H. Furutani, B.P. Palenik, K.A. Prather. Single particle enrichment of organic and inorganic material on sea spray aerosols influenced by biological activity. *2010 American Association of Aerosol Research*. Portland, OR, Oct. 25-29, 2010.

Prather, K., R. Sullivan, K. Pratt, M. Moore, **C. Gaston**, A. Ault. New insights into the size-resolved chemical mixing state of atmospheric dust: Implications for cloud formation and optical properties. *2008 American Geophysical Union Fall Meeting*. San Francisco, CA, Dec. 15-19, 2008.

Selected Posters:

Gaston, C.J. and J.A. Thornton. The impact of particle size, phase, and organic compounds on interactions between trace gases and particles. *2016 International Global Atmospheric Chemistry*. Breckenridge, CO, Sept. 25-30, 2016.

Whybrew, L.E., **C.J. Gaston**, F. Lopez-Hilfiker, O. Hadley, H. Gao, F. McNair, D. Jaffe, J.A. Thornton. Seasonal variations and regional sources of ultrafine particulate matter at a semi-rural site on the Olympic Peninsula. *2014 American Association of Aerosol Research*. Orlando, FL, Oct. 20-24, 2014.

Gaston, C.J. and J.A. Thornton. The role of organic oxidation state and phase separation on the heterogeneous uptake of N_2O_5 to aerosol particles. *2012 Atmospheric Chemical Mechanisms Meeting*. Davis, CA, Dec. 9-13, 2012.

Gaston, C.J., T.P. Riedel, J.A. Thornton, N. Wagner, S.S. Brown, P.K. Quinn, T.S. Bates, K.A. Prather. Heterogeneous reactivity of sea spray particles during the CalNex field campaign: Insight from single particle measurements and correlations with gas phase measurements. *2011 American Geophysical Union Fall Meeting*. San Francisco, CA, Dec. 5-9, 2011.

Gaston, C.J., P.K. Quinn, T.S. Bates, K.A. Prather. The impact of port and marine biogenic emissions on the single-particle chemistry of marine aerosols during CalNex. *28th Informal Symposium on Kinetics and Photochemical Processes in the Atmosphere*. Irvine, CA, Mar. 3, 2011.

Gaston, C.J., J.F. Cahill, D.B. Collins, K.J. Suski, K.A. Prather. Real-time, single-particle insights into marine particle chemistry at a coastal, urban environment. *27th Informal Symposium on Kinetics and Photochemical Processes in the Atmosphere*. La Jolla, CA, Feb. 12, 2010.

Ault, A.P, J.M. Creamean, C.R. Williams, **C.J. Gaston**, F.M. Ralph, K.A. Prather. Impacts of Asian dust on cloud microphysics and precipitation during an atmospheric river. *2009 American Geophysical Union Fall Meeting*. San Francisco, CA, Dec. 14-18, 2009.

Gaston, C.J., K.A. Pratt, X. Qin, K.A. Prather. Real-time detection and mixing-state of methanesulfonic acid in single aerosol particles during a phytoplankton bloom. *2008 American Geophysical Union Fall Meeting*. San Francisco, CA, Dec. 15-19, 2008.