

## JINGQIU MAO

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### Research Interest

Biosphere-atmosphere interactions, arctic urban air pollution, biomass burning emission and chemistry, fundamental chemical mechanisms, secondary organic aerosol formation, chemistry-climate interactions, remote sensing of atmospheric trace gases and aerosols

### Education and Training

Postdoctoral Fellow, <i>Harvard University, Cambridge, MA</i>	2008-2010
Advisor: Prof. Daniel J. Jacob	
Ph.D. Meteorology, <i>Pennsylvania State University, PA</i>	2002-2008
Advisor: Prof. William H. Brune	
Thesis: <i>Measurement and modeling of OH reactivity in the atmosphere</i>	
M.S., Atmospheric Chemistry, <i>Institute of Atmospheric Physics, China</i>	1999-2002
B.S., Chemistry, <i>Shenzhen University, China</i>	1995-1999

### Professional Experience

Associate Professor (with tenure), University of Alaska Fairbanks	2022-
Visiting Professor, University of Helsinki	2023-2024
Assistant Professor of Atmospheric Chemistry, University of Alaska Fairbanks	2016-2022
Associate Research Scholar, Princeton University/NOAA GFDL	2010-2016

### Honors and Awards

NASA Health and Air Quality Science Team	2021-
NASA Group achievement award for ARCTAS	2009
NASA Group achievement award for INTEX-B	2008
NASA Group achievement award for INTEX-A	2005

### Teaching Experience

#### *University of Alaska Fairbanks*

Quantitative Chemical Analysis (2 <sup>nd</sup> -3 <sup>rd</sup> year undergraduate)	2019-2021
Analytical Instrumental Laboratory (3 <sup>rd</sup> -4 <sup>th</sup> year undergraduate)	2018-2022
Atmospheric Chemistry (graduate & undergraduate)	2017-2024
<b>Guest Lecturer:</b> Pennsylvania State University, EMSci100	2007
<b>Instructor:</b> Penn State Upward Bound Math and Science Program, Summer Experience in Earth and Mineral Sciences (SEEMS)	2006,2007

### Research Funding

#### Current (~\$3 M in total)

1. "NNA Track 1: Collaborative Research: Sustainably Navigating Arctic Pollution Through Engaging Communities (SNAP-TEC)", NSF NNA, 2019-2024, \$964,884 (**co-PI**).
2. "Collaborative Research: Investigating Formation of Sulfur Aerosols in Fairbanks, Alaska", NSF Atmospheric Chemistry, 2020-2024, \$316,576 (**PI**).
3. "Air quality and health impacts of boreal fires: decision support and applied research supported by NASA satellite products", NASA HAQAST, 2021-2025, \$800,000 (**PI**).

4. "Mid-scale RI-1 (M1:IP): ASCENT: Atmospheric Science and Chemistry mEasurement NeTwork", NSF, 2021-2025, \$342,871 (**PI**).
5. "MRI Track 1: Acquisition of a Time-of-Flight Aerosol Chemical Speciation Monitor for Urban Air Pollution and Wildfire at Northern High Latitudes", NSF, 2024-2027, \$702,252 (**PI**).

***Past*** (~\$2.5 M in total)

1. "Impact of organic nitrate chemistry on air quality and climate: past, present and future atmospheres", NOAA Climate Program Office, 2013-2016, \$392,881 (**PI**).
2. "Evaluating how dry deposition influences eastern U.S. ozone, aerosols, and precursors: Mean contributions, uncertainties, and spatio-temporal variability from weather, regional climate and land use", NOAA Climate Program Office, 2014-2017, \$52,000 to JM (**co-I**).
3. "Southeast Atmosphere Studies Workshop: Intensive Observation Period Modeling to Improve Mechanistic Representation of Trends", NSF, 2015-2016, \$20,000 (**PI**).
4. "Two Days Workshop to Study Wintertime Urban Atmospheric Pollution Processes; Fairbanks, Alaska; Mid-May 2018", NSF, 2018-2019, \$21,391 (**co-PI**).
5. "Ground validation of satellite measurements of HCHO columns at northern high latitudes", Alaska NASA EPSCoR RID seed award, 2018-2019, \$30,100 (**PI**).
6. "Regional Haze Visibility with GEOS-Chem Model", Alaska Department of Environmental Conservation, 2018-2019, \$23,900 (**PI**).
7. "Characterizing soluble transition metals in ambient PM2.5: a link between air pollution and human health", UAF BLaST, 2018-2020, \$40,000 (**PI**).
8. "Improving understanding of sulfur species in Fairbanks fine particulate matter", Fort Wainwright, \$97,000 (**co-PI**).
9. "Rural Alaska Air Quality with Big Data Analysis", Faculty Initiative Fund, 2019-2020, \$30,000 (**PI**).
10. "REU Site: Understanding Arctic as a System", NSF REU, 2015-2021, \$4,339 (**co-I**).
11. "Anthropogenic influence on the oxidation of biogenic volatile organic compounds: implication for formation of secondary organic aerosols", NOAA Climate Program Office, 2018-2022, \$389,274 (**PI**).
12. "Remote sensing of formaldehyde at northern high latitudes: Probing the chemical impacts of Arctic greening", NASA ESPCoR CAN award, 2019-2023, \$750,000 (**Science PI**).
13. "Measurement and Modeling of Brown Carbon (BrC) from Boreal Forest Wildfires in Alaska", NSF Atmospheric Chemistry, 2020-2024, \$454,019 (**PI**).

***Student Awards***

1. "Characterizing Anion and Metal Aerosol Composition and Formation in Arctic Air", Alaska Space Grant, 2017-2018, \$15,000 (Ragen Davey).
2. Alaska Space Grant Fellowship, 2017-2018, \$5,000 (Kiersten Johnson).
3. NASA Student Airborne Research Program summer intern, 2018 (Kiersten Johnson).
4. Undergraduate Research & Scholarly Activity Fellowship, 2018, \$5,000 (James Campbell).
5. "Characterizing Wintertime Aerosol Composition and Sulfate Formation in Fairbanks, Alaska", Alaska Space Grant, 2018-2019, \$22,575 (Ragen Davey).
6. Alaska Space Grant Fellowship, 2018-2019, \$5,000 (James Campbell).
7. Alaska EPSCoR travel award, 2019 (Ragen Davey).
8. NASA Student Airborne Research Program summer intern, 2019 (James Campbell).
9. Alaska Space Grant Fellowship, 2019-2020, \$5,000 (James Campbell).
10. Undergraduate Research & Scholarly Activity Fellowship, 2020, \$2,500 (Lahra Weber).
11. Dean's Choice Award, 2021 (Lahra Weber).

**Research Advisees**

**Postdoc:** Yiqi Zheng (2019-2022), Jingyi Li (NOAA GFDL, 2014-2016)

**Graduate Student:** Congrong Wang (2024-), Zhiwei Dong (2021-), Kunal Bali (2021-), James Campbell (2020-), Tianlang Zhao (2019-), Sujai Banerji (2018-2021), Ragen Davey (2017-2020), Zak Tourville (2018-2019)

**Undergraduate student/intern:** Abby Amick (2021-2022), Joseph Cherayil (NSF REU 2021), Clarene Davis (EEOP intern, UAF, 2021), Lahra Weber (2020-2021), Paul Lin (2020-2021), Hailee Brown (EEOP intern, UAF, 2020), Nicole June (NSF REU, 2019-2020), James Campbell (2018-2020), Julia Hnilicka (EEOP intern, 2019-2020), Jack DeCorso (2018), Nicholas Hasson (2018), Kiersten Johnson (2017-2018)

### Graduate Committee

Paige Kehoe (UAF, PhD committee, 2023-), Jenno J.L.H. (UAF, PhD committee, 2023-), Lucas Djeu (UAF, PhD committee, 2021-), Meeta Cesler-Maloney (UAF, PhD committee, 2019-2023), Julia Hnilicka (UAF, MS committee, 2019-2020) Akila Sampath (UAF, PhD committee, 2017-2019), William Swanson (UAF, PhD committee, 2017-2021), Abdul Kadir (UAF, PhD committee, 2017-2019), Kenneth Christian (Penn State University, PhD committee, 2014-2017)

**Publications** (Web of Science citations: **5468**, Google scholar: **7485**, H-index: 40(WoS), 45(GS))

\*denotes research advisees

#### Peer-reviewed

85. Lill, E., Costa, E. J., Barry, K., Mirrielees, J. A., Mashkevich, M., Wu, J., Holen, A. L., Cesler-Maloney, M., DeMott, P. J., Perkins, R., Hill, T., Sullivan, A., Levin, E., Simpson, W. R., **Mao, J.**, Temime-Roussel, B., D'Anna, B., Law, K. S., Ault, A. P., Schmitt, C., Pratt, K. A., Fischer, E. V., and Creamean, J.: The Abundance and Sources of Ice Nucleating Particles Within Alaskan Ice Fog, *J. Geophys. Res. Atmospheres*, 129, e2024JD041170, <https://doi.org/10.1029/2024JD041170>, 2024.
84. **Zhao, Tianlang\***; **Mao, Jingqiu**; Gupta, Pawan; Zhang, Huanxin; Wang, Jun: Observational constraints on AOD-surface PM<sub>2.5</sub> relationship during Alaskan wildfire seasons, *ACS ES&T Air*, <https://pubs.acs.org/doi/10.1021/acsestair.4c00120>, 2024.
83. **James R. Campbell\***, Michael Battaglia Jr., Kayane K. Dingilian, Meeta Cesler-Maloney, William R. Simpson, Ellis S. Robinson, Peter F. DeCarlo, Brice Temime-Roussel, Barbara D'Anna, Andrew L. Holen, Judy Wu, Kerri A. Pratt, Jack E. Dibb, Athanasios Nenes, Rodney J. Weber, **Jingqiu Mao**: Enhanced aqueous formation and neutralization of fine atmospheric particles driven by extreme cold, *Science Advances*, in press.
82. **Zhao, T. \***, **Mao, J.**, Ayazpour, Z., González Abad, G., Nowlan, C. R., and Zheng, Y.: Interannual variability of summertime formaldehyde (HCHO) vertical column density and its main drivers at northern high latitudes, *Atmospheric Chem. Phys.*, 24, 6105–6121, <https://doi.org/10.5194/acp-24-6105-2024>, 2024.
81. Dingilian, K., Hebert, E., Battaglia, M. Jr., **Campbell, J. R. \***, Cesler-Maloney, M., Simpson, W., St. Clair, J. M., Dibb, J., Temime-Roussel, B., D'Anna, B., Moon, A., Alexander, B., Yang, Y., Nenes, A., **Mao, J.**, and Weber, R. J.: Hydroxymethanesulfonate and Sulfur(IV) in Fairbanks Winter During the ALPACA Study, *ACS EST Air*, <https://doi.org/10.1021/acsestair.4c00012>, 2024.
80. Robinson, E. S., Michael Battaglia, J., **Campbell, J. R. \***, Cesler-Maloney, M., Simpson, W., **Mao, J.**, Weber, R. J., and DeCarlo, P. F.: Multi-year, high-time resolution aerosol chemical composition and mass measurements from Fairbanks, Alaska, *Environ. Sci. Atmospheres*, <https://doi.org/10.1039/D4EA00008K>, 2024.
79. **Bali, K. \***, **Banerji, S. \***, **Campbell, J. R. \***, Bhakta, A. V., Chen, L.-W. A., Holmes, C. D., and **Mao, J.**: Measurements of brown carbon and its optical properties from boreal forest fires in Alaska summer, *Atmos. Environ.*, 324, 120436, <https://doi.org/10.1016/j.atmosenv.2024.120436>, 2024.

78. Simpson, W. R., **Mao, J.**, Fochesatto, G. J., Law, K. S., DeCarlo, P. F., Schmale, J., Pratt, K. A., Arnold, S. R., Stutz, J., Dibb, J. E., Creamean, J. M., Weber, R. J., Williams, B. J., Alexander, B., Hu, L., Yokelson, R. J., Shiraiwa, M., Decesari, S., Anastasio, C., D'Anna, B., Gilliam, R. C., Nenes, A., St. Clair, J. M., Trost, B., Flynn, J. H., Savarino, J., Conner, L. D., Kettle, N., Heeringa, K. M., Albertin, S., Baccharini, A., Barret, B., Battaglia, M. A., Bekki, S., Brado, T. J., Brett, N., Brus, D., **Campbell, J. R.** \*, Cesler-Maloney, M., Cooperdock, S., Cysneiros de Carvalho, K., Delbarre, H., DeMott, P. J., Dennehy, C. J. S., Dieudonné, E., Dingilian, K. K., Donateo, A., Doulgeris, K. M., Edwards, K. C., Fahey, K., Fang, T., Guo, F., Heinlein, L. M. D., Holen, A. L., Huff, D., Ijaz, A., Johnson, S., Kapur, S., Ketcherside, D. T., Levin, E., Lill, E., Moon, A. R., Onishi, T., Pappaccogli, G., Perkins, R., Pohorsky, R., Raut, J.-C., Ravetta, F., Roberts, T., Robinson, E. S., Scoto, F., Selimovic, V., Sunday, M. O., Temime-Roussel, B., Tian, X., Wu, J., and Yang, Y.: Overview of the Alaskan Layered Pollution and Chemical Analysis (ALPACA) Field Experiment, ACS EST Air, <https://doi.org/10.1021/acsestair.3c00076>, 2024.
77. Yang, Y., Battaglia, M. A., Mohan, M. K., Robinson, E. S., DeCarlo, P. F., Edwards, K. C., Fang, T., Kapur, S., Shiraiwa, M., Cesler-Maloney, M., Simpson, W. R., **Campbell, J. R.** \*, Nenes, A., **Mao, J.**, and Weber, R. J.: Assessing the Oxidative Potential of Outdoor PM<sub>2.5</sub> in Wintertime Fairbanks, Alaska, ACS EST Air, <https://doi.org/10.1021/acsestair.3c00066>, 2024a.
76. Yang, Y., Battaglia, M. A., Robinson, E. S., DeCarlo, P. F., Edwards, K. C., Fang, T., Kapur, S., Shiraiwa, M., Cesler-Maloney, M., Simpson, W. R., **Campbell, J. R.** \*, Nenes, A., **Mao, J.**, and Weber, R. J.: Indoor–Outdoor Oxidative Potential of PM<sub>2.5</sub> in Wintertime Fairbanks, Alaska: Impact of Air Infiltration and Indoor Activities, ACS EST Air, <https://doi.org/10.1021/acsestair.3c00067>, 2024b.
75. Moon, A., Jongebloed, U., Dingilian, K. K., Schauer, A. J., Chan, Y.-C., Cesler-Maloney, M., Simpson, W. R., Weber, R. J., Tsiang, L., Yazbeck, F., Zhai, S., Wedum, A., Turner, A. J., Albertin, S., Bekki, S., Savarino, J., Gribanov, K., Pratt, K. A., Costa, E. J., Anastasio, C., Sunday, M. O., Heinlein, L. M. D., **Mao, J.**, and Alexander, B.: Primary Sulfate Is the Dominant Source of Particulate Sulfate during Winter in Fairbanks, Alaska, ACS EST Air, <https://doi.org/10.1021/acsestair.3c00023>, 2024.
74. **Zheng, Y.** \*, Horowitz, L. W., Menzel, R., Paynter, D. J., Naik, V., Li, J., and **Mao, J.**: Anthropogenic amplification of biogenic secondary organic aerosol production, Atmos. Chem. Phys., 23, 8993–9007, <https://doi.org/10.5194/acp-23-8993-2023>, 2023.
73. Robinson, E. S., Cesler-Maloney, M., Tan, X., **Mao, J.**, Simpson, W., and DeCarlo, P. F.: Wintertime spatial patterns of particulate matter in Fairbanks, AK during ALPACA 2022, Environ. Sci. Atmospheres, <https://doi.org/10.1039/D2EA00140C>, 2023.
72. Jenny Bratburd, Pawan Gupta, Shobha Kondragunta, Hai Zhang, Barron H. Henderson, Phil Dickerson, Alqamah Sayeed, Yang Liu, **Jingqiu Mao**, Dimple Pruthi, Keerthi Gudipudi, John E. White, Rachel Wyatt, Amber J. Soja, Robert Levy, Randall V. Martin, Sundar A. Christopher, and Nathan R. Pavlovic, Incorporating Satellite Data Updates into AirNow, EM Plus.
71. Brune, W. H., Jenkins, J. M., Olson, G. A., McFarland, P. J., Miller, D. O., **Mao, J.**, & Ren, X. (2022). Extreme hydroxyl amounts generated by thunderstorm-induced corona on grounded metal objects. *Proceedings of the National Academy of Sciences*, 119(37), e2201213119. <https://doi.org/10.1073/pnas.2201213119>.
70. **Tianlang Zhao\***, **Jingqiu Mao**, William R. Simpson, Isabelle De Smedt, Lei Zhu, Thomas F. Hanisco, Glenn M. Wolfe, Jason M. St. Clair, Gonzalo González Abad, Caroline R. Nowlan, Barbara Barletta, Simone Meinardi, Donald R. Blake, Eric C. Apel, and Rebecca S. Hornbrook: Source and variability of formaldehyde (HCHO) at northern high latitude: an integrated satellite, aircraft, and model study, Atmos. Chem. Phys., 22, 7163–7178, <https://doi.org/10.5194/acp-22-7163-2022>, 2022.

69. Cesler-Maloney, M., Simpson, W. R., Miles, T., **Mao, J.**, Law, K. S., & Roberts, T. J. (2022). Differences in ozone and particulate matter between ground level and 20 m aloft are frequent during wintertime surface-based temperature inversions in Fairbanks, Alaska. *Journal of Geophysical Research: Atmospheres*, 127, e2021JD036215. <https://doi.org/10.1029/2021JD036215>.
68. **James R. Campbell\***, Michael Battaglia, Kayane Dingilian, Meeta Cesler-Maloney, Jason M. St. Clair, Thomas F. Hanisco, Ellis Robinson, Peter DeCarlo, William Simpson, Athanasios Nenes, Rodney J. Weber, **Jingqiu Mao**: Source and Chemistry of Hydroxymethanesulfonate (HMS) in Fairbanks, Alaska, *Environ. Sci. Technol.*, <https://doi.org/10.1021/acs.est.2c00410>, 2022.
67. **Mao, J., Zhao, T. \***, Keller, C. A., Wang, X., McFarland, P. J., Jenkins, J. M., & Brune, W. H. (2021). Global impact of lightning-produced oxidants. *Geophysical Research Letters*, 48, e2021GL095740. <https://doi.org/10.1029/2021GL095740>.
66. Souri, A. H., Chance, K., Bak, J., Nowlan, C. R., González Abad, G., Jung, Y., Wong, D. C., **Mao, J.**, and Liu, X.: Unraveling pathways of elevated ozone induced by the 2020 lockdown in Europe by an observationally constrained regional model using TROPOMI, *Atmos. Chem. Phys.*, 21, 18227–18245, <https://doi.org/10.5194/acp-21-18227-2021>, 2021.
65. L.-W. Antony Chen, Judith C. Chow, Xiaoliang Wang, Junji Cao, **Jingqiu Mao**, and John G. Watson: Brownness of Organic Aerosol over the U.S.: Evidences for Seasonal Biomass Burning and Photobleaching Effects, *Environ. Sci. Technol.* 2021, <https://doi.org/10.1021/acs.est.0c08706>.
64. Brune, W. H., McFarland, P. J., Bruning, E., Waugh, S., MacGorman, D., Miller, D. O., Jenkins, J. M., Ren, X., **Mao, J.**, and Peischl, J.: Extreme oxidant amounts produced by lightning in storm clouds, *Science*, <https://doi.org/10.1126/science.abg0492>, 2021.
63. **Nicole June\***, Xuan Wang, L.-W. Antony Chen, Judy Chow, John Watson, Xiaoliang Wang, **Jingqiu Mao**, Observational constraints on ambient brown carbon with IMPROVE network observations, *Geophysical Research Letters*, 47, <https://doi.org/10.1029/2020GL090332>.
62. **Zheng, Y. \***, Thornton, J. A., Ng, N. L., Cao, H., Henze, D. K., McDuffie, E. E., Hu, W., Jimenez, J. L., Marais, E. A., Edgerton, E., and **Mao, J.**: Long-term observational constraints of organic aerosol dependence on inorganic species in the southeast US, *Atmos. Chem. Phys.* , <https://doi.org/10.5194/acp-2020-575>, 2020.
61. Larry Horowitz, Vaishali Naik, Fabien Paulot, Paul Ginoux, John Dunne, **Jingqiu Mao**, Jordan Schnell, Xi Chen, Jian He, Meiyun Lin, Pu Lin, Sergey Malyshev, David Paynter, Elena Shevliakova, Ming Zhao: The GFDL Global Atmospheric Chemistry-Climate Model AM4.1: Model Description and Simulation Characteristics. *Journal of Advances in Modeling Earth Systems*, 2020.
60. Baublitz, C. B., Fiore, A. M., Clifton, O. E., **Mao, J., Li, J. \***, Correa, G., Sensitivity of Tropospheric Ozone Over the Southeast USA to Dry Deposition. *Geophysical Research Letters*, 47(7), 2020.
59. Meskhidze, N., Voelker, C., ... **Mao, J.**, and coauthors, Perspective on Identifying and Characterizing the Processes Controlling Iron Speciation and Residence Time at the Atmosphere-Ocean Interface, *Marine Chemistry*, 2019.
58. Schmale J., S. Arnold, K.S. Law, T. Thorp, S. Anenberg, W.R. Simpson, **J. Mao**, K.A. Pratt: Local Arctic air pollution: A neglected but serious problem, *Earth's Future*, 2018.
57. Brune, W. H., Ren, X., Zhang, L., **Mao, J.**, Miller, D. O., and coauthors: Atmospheric Oxidation in the Presence of Clouds during the Deep Convective Clouds and Chemistry (DC3) Study, *Atmos. Chem. Phys.*, 2018.
56. Schnell, J. L., Naik, V., Horowitz, L. W., Paulot, F., **Mao, J.**, Ginoux, P., Zhao, M., and Ram, K.: Exploring the relationship between surface PM<sub>2.5</sub> and meteorology in Northern India, *Atmos. Chem. Phys.*, 2018.

55. Christian, K. E., Brune, W. H., **Mao, J.**, and Ren, X.: Global sensitivity analysis of GEOS-Chem modeled ozone and hydrogen oxides during the INTEX campaigns, *Atmos. Chem. Phys.*, 2018.
54. **Li, J. \***, **Mao, J.**, Fiore, A. M., Cohen, R. C., Crouse, J. D., Teng, A. P., Wennberg, P. O., and coauthors: Decadal change of summertime reactive nitrogen species and surface ozone over the Southeast United States, *Atmos. Chem. Phys.*, 2018.
53. **Mao, J.**, Carlton, A., Cohen, R. C., Brune, W. H., Jimenez, J. L., Pye, H. O. T., Ng, N. L., McDonald, B., Warneke, C., de Gouw, J., and coauthors: Southeast Atmosphere Studies: learning from model-observation syntheses, *Atmos. Chem. Phys.*, 2018.
52. Prather, M. J., Zhu, X., Flynn, C. M., Strode, S. A., Rodriguez, J. M., Steenrod, S. D., Liu, J., Lamarque, J.-F., Fiore, A. M., Horowitz, L. W., **Mao, J.**, Murray, L. T., Shindell, D. T., and Wofsy, S. C.: Global Atmospheric Chemistry – Which Air Matters, *Atmos. Chem. Phys.*, 2017.
51. **Mao, J.**, Fan, S., and Horowitz, L. W.: Soluble Fe in Aerosols Sustained by Gaseous HO<sub>2</sub> Uptake, *Environ. Sci. Technol. Let.*, 2017.
50. Christian, K. E., Brune, W. H., and **Mao, J.**: Global sensitivity analysis of the GEOS-Chem chemical transport model: ozone and hydrogen oxides during ARCTAS (2008), *Atmos. Chem. Phys.*, 2017.
49. Nicely, J. M., Salawitch, R. J., Canty, T., Anderson, D. C., Arnold, S. R., Chipperfield, M. P., Emmons, L. K., Flemming, J., Huijnen, V., Kinnison, D. E., Lamarque, J.-F., **Mao, J.**, Monks, S. A., Steenrod, S. D., Tilmes, S., and Turquety, S.: Quantifying the causes of differences in tropospheric OH within global models, *J. Geophys. Res.*, 2017.
48. Ng, N. L., Brown, S. S., and coauthors including **Mao, J.**,: Nitrate radicals and biogenic volatile organic compounds: oxidation, mechanisms, and organic aerosol, *Atmos. Chem. Phys.*, 2017.
47. **Li, J. \***, **J. Mao**, R. A. Washenfelder, S. S. Brown, J. Kaiser, F. N. Keutsch, R. Volkamer, G. M. Wolfe and coauthors, Observational constraints on glyoxal production from isoprene oxidation and its contribution to organic aerosol over the Southeastern United States, *J. Geophys. Res.*, 2016.
46. Nicely J., and many others including **J. Mao.**, An Observationally Constrained Evaluation of the Oxidative Capacity in the Tropical Western Pacific Troposphere, *J. Geophys. Res.*, 2016.
45. M. C. Barth, M. M. Bela, A. Fried, P. O. Wennberg, J. D. Crouse, J. M. St. Clair, N. J. Blake, D. R. Blake, C. R. Homeyer, W. H. Brune, L. Zhang, **J. Mao**, X. Ren, and coauthors, Convective Transport and Scavenging of Peroxides by Thunderstorms Observed over the Central U.S. during DC3, *J. Geophys. Res.*, 2016.
44. Wolfe, G. M., J. Kaiser, T. F. Hanisco, F. N. Keutsch, J. A. de Gouw, J. Gilman, M. Graus, C. D. Hatch, J. Holloway, L. Horowitz, B. H. Lee, B. Lerner, F. Lopez-Hilifiker, **J. Mao**, and coauthors, Formaldehyde production from isoprene oxidation across NO<sub>x</sub> regimes, *Atmos. Chem. Phys.*, 2016.
43. Paulot, F., P. Ginoux, W. F. Cooke, L. J. Donner, S. Fan, M. Lin, **J. Mao**, V. Naik, and L. W. Horowitz, Sensitivity of nitrate aerosols to ammonia emissions and to nitrate chemistry: implications for present and future nitrate optical depth, *Atmos. Chem. Phys.*, 2016.
42. Fisher, J., D. Jacob, and coauthors including **J. Mao**, “Organic nitrate chemistry and its implications for nitrogen budgets in an isoprene- and monoterpene-rich atmosphere: constraints from aircraft (SEAC4RS) and ground-based (SOAS) observations in the Southeast US”, *Atmos. Chem. Phys.*, 2016.
41. Warneke C., M., Trainer, J.A., de Gouw, **J. Mao**, and coauthors: Instrumentation and Measurement Strategy for the NOAA SENEX Aircraft Campaign as Part of the Southeast Atmosphere Study 2013, *Atmos. Meas. Tech.*, 2016.
40. Nault, B. A. Nault, C. Garland, P. J. Wooldridge, D. R. Blake, W. H. Brune, **J. Mao**, R. C. Cohen and coauthors, Observational constraints on the oxidation of NO<sub>x</sub> in the upper troposphere, *J. Phys. Chem. A*, 2015.

39. Fu, T., Y. Zheng, F. Paulot, **J. Mao**, and R. M. Yantosca: Sensitivity of Southeast U.S. surface ozone to large-scale warming is positive but variable, *Nature Climate Change*, 2015.
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36. Monks, S.A., S.R. Arnold, L.K. Emmons, K.S. Law, S. Turquety, B.N. Duncan, J. Flemming, V. Huijnen, S. Tilmes, J. Langner, **J. Mao**, and coauthors: Multi-model study of chemical and physical controls on transport of anthropogenic and biomass burning pollution to the Arctic, *Atmos. Chem. Phys.*, 2015.
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5. **Mao, J.**, X. Ren, W. H. Brune, J. R. Olson, J. H. Crawford, A. Fried, L. G. Huey, R. C. Cohen, B. Heikes, H. B. Singh, D. R. Blake, G. W. Sachse, G. S. Diskin, S. R. Hall, and R. E. Shetter: Airborne measurement of OH reactivity during INTEX-B, *Atmos. Chem. Phys.*, 2009.
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1. Shirley, T. R., W. H. Brune, X. Ren, **J. Mao**, R. Leshner, B. Cardenas, R. Volkamer, L. T. Molina, M. J. Molina, B. Lamb, E. Velasco, T. Jobson, and M. Alexander, Atmospheric oxidation in the Mexico City Metropolitan Area (MCMA) during April 2003, *Atmos. Chem. Phys.*, 2006.

#### Non-Peer reviewed

4. **Mao, J.**, **Y. Zheng**, “UAF GEOS-Chem model support for the Regional Haze State Implementation Plan”, final report submitted to Alaska Department of Environmental Conservation, 2019.
3. **Mao, J.**, A.M. Carlton, L. W. Horowitz and coauthors, “Southeast Atmosphere Studies Workshop 2015”, IGAC Newsletter, 2015.
2. Alvarado, M., **J. Mao**, and coauthors (2015) : Advancing atmospheric chemistry through the use of satellite observations from the cross-track infrared sounder (CrIS), Report of the CrIS Atmospheric Chemistry Data User’s workshop, NOAA Program Office, doi:10.7289/V50V89SS.
1. **Mao, J.**, C. Carouge, M. Evans, and D. Millet (2009): GEOS-Chem Chemical Mechanism v 8-02-04.

#### **Selected Talks, Seminars and Presentations in past three years**

\*denotes research advisees

43. University of Helsinki at Helsinki, Finland, May 2024 (**Invited seminar**).
42. Università degli studi G.D’Annunzio Chieti Pescara, May 2024 (**Invited seminar**).

41. Jingqiu Mao, "Direct observation of wintertime secondary formation of sulfate in ambient aerosols in Fairbanks, Alaska", European Geophysical Union, Apr 2024 (**Talk**).
40. University of Helsinki at Helsinki, Finland, August 2023 (**Invited seminar**).
39. Canadian Chemistry Conference and Exhibition (CSC 2023) at Vancouver, June 2023, (**Invited Talk**).
38. Climate / Atmospheric Science & Engineering (CASE) Colloquium series at U of Iowa, Apr 2023 (**Invited Talk**).
37. CRC Air Quality Research Needs (AQRN) Workshop at UC Davis, Nov 2022 (**Invited Talk**).
36. Environment and Climate Change Canada's Air Quality Research Division seminar, May 2022 (**Invited Talk**).
35. **Jingqiu Mao**, "Unique sulfur species in Fairbanks PM2.5", "Lunch and Learns" seminar at Alaska DEC, Feb 2022 (**Invited Talk**).
34. **Jingqiu Mao**, Peter De Carlo, Kathy Law, Jochen Stutz, "A brief introduction to Alaska Pollution and Chemical Analysis (ALPACA) project", Virtual Alaska Weather Symposium, Feb 2022 (**Invited Talk**).
33. **Kunal Bali, Sujai Banerji, Jingqiu Mao**: Characterization of water-soluble brown carbon (WS-BrC) from boreal forest fires during the summer season at northern high latitudes, Pacificchem 2021 Congress, December 2021 (**Talk**).
32. **Jingqiu Mao, Tianlang Zhao**, Christoph A. Keller, Xuan Wang, Patrick J. McFarland, Jena M. Jenkins, William H. Brune, Global impact of lightning-produced oxidants, Atmosphere, Air quality and Climate Seminar, City University of Hong Kong, September, 2021 (**Invited talk**)
31. **Tianlang Zhao\***, **Jingqiu Mao**, William R Simpson, Isabelle De Smedt, Lei Zhu, Thomas F Hanisco, Gonzalo Gonzalez Abad, Caroline R Nowlan, Barbara Barletta, Simone Meinardi and Donald R Blake: Source and variability of formaldehyde (HCHO) vertical column density at northern high latitude: an integrated satellite, ground/aircraft, and model perspective, IGAC 2021 meeting (Talk).
30. **Jingqiu Mao, Tianlang Zhao**, Christoph A. Keller, Patrick J. McFarland, Jena M. Jenkins, William H. Brune, Global impact of lightning-produced oxidants, EPA Air Quality Model Applications meeting, July 2021 (**Invited talk**).
29. **Tianlang Zhao\***, **Jingqiu Mao**, William R Simpson, Isabelle De Smedt, Lei Zhu, Thomas F Hanisco, Gonzalo Gonzalez Abad, Caroline R Nowlan, Barbara Barletta, Simone Meinardi and Donald R Blake: Constraining biogenic volatile organic compound emissions at northern high latitude: an integrated satellite, ground/aircraft, and model perspective, IGAC PACES meeting, 2021. (Talk)
28. **Yiqi Zheng, Jingqiu Mao**, Larry Horowitz, Vaishali Naik, "Changes in direct radiative effect of organic aerosol from pre-industrial to present day", AGU Fall meeting, 2020. (poster)
27. **Tianlang Zhao\***, **Jingqiu Mao**, William R Simpson, Isabelle De Smedt, Lei Zhu, Thomas F Hanisco, Gonzalo Gonzalez Abad, Caroline R Nowlan, Barbara Barletta, Simone Meinardi and Donald R Blake: Constraining biogenic volatile organic compound emissions at northern high latitude: an integrated satellite, ground/aircraft, and model perspective, AGU Fall meeting, 2020. (Talk)
26. **James Campbell\***, Michael Battaglia, Meeta Cesler-Maloney, Jason St. Clair, Thomas Hanisco, William Simpson, Rodney Weber, **Jingqiu Mao**, Source and chemistry of Hydroxymethanesulfonate (HMS) in Fairbanks, Alaska, AGU Fall meeting, 2020. (Talk)
25. **Jingqiu Mao, Tianlang Zhao\***, William R. Simpson, "Constraining biogenic volatile organic compound emissions at northern high latitude: an integrated satellite, ground, and model perspective", NASA TOLNet/Pandora Science Team Workshop, June, 2020. (Talk)

24. **Nicole June\***, Xuan Wang, L.-W. Antony Chen, Judy Chow, John Watson, Xiaoliang Wang, Barron Henderson, Yiqi Zheng, **Jingqiu Mao**, “Observational constraints on ambient brown carbon with IMPROVE network observations”, American Meteorological Society meeting, 2020. (Poster)
23. **Yiqi Zheng, Jingqiu Mao**, Joel Thornton, Nga Lee Ng, Erin McDuffie, Jose Jimenez, Eloise Marais, Hansen Cao, “Revisiting the anthropogenic impacts on biogenic secondary organic aerosol in southeast US”, AGU Fall meeting, San Francisco, 2019. (Talk)
22. **Ragen Davey\***, James Campbell, Rodney Weber, **Jingqiu Mao**, “Characterizing Wintertime Aerosol Composition and Sulfate Formation, Fairbanks, Alaska”, AGU Fall meeting, San Francisco, 2019. (Talk)
21. **Jingqiu Mao**, Nicole June, Xuan Wang, L.-W. Antony Chen, Judy Chow, John Watson, Xiaoliang Wang, “Observational constraints on ambient brown carbon with IMPROVE network observations”, AGU Fall meeting, San Francisco, 2019. (**Invited talk**)
20. **Jingqiu Mao**, Julia Hnilicka, Mansel Nelson “Purple Air network in Alaska to monitor wildfire smoke”, NW-AIRQUEST / Northwest Regional Modeling Consortium, October 3, 2019. (Talk)
19. **Nicole June\***, Xuan Wang, L.-W. Antony Chen, Judy Chow, John Watson, Xiaoliang Wang, **Jingqiu Mao**, “Observational constraints on ambient brown carbon with IMPROVE network observations”, Gordon Research Conference, Newry, ME, 08/2019. (Poster)
18. **Jingqiu Mao**, “Atmospheric Chemistry in Arctic”, UAF REU program lecture, July 8, 2019. (Talk)
17. **Ragen Davey\***, James Campbell, Rodney Weber, Jingqiu Mao, “Characterizing Wintertime Aerosol Composition and Sulfate Formation, Fairbanks, Alaska”, ACS National Meeting, San Diego, CA, 2019. (Talk)
16. **Jingqiu Mao**, “Atmospheric Chemistry in Arctic”, Nanjing University of Information Science and Technology, Nanjing, China, May, 2019. (Talk)
15. **Jingqiu Mao**, “Ground validation of satellite HCHO measurements at northern high latitudes”, Alaska Space Grant and NASA EPSCoR Education and Research Symposium, April 12th, 2019. (Talk)
14. **Jingqiu Mao**, “Atmospheric Chemistry of Fairbanks Air Pollution”, UAF Osher Lifelong Learning Institute lecture, Feb 26, 2019. (Talk)
13. **Jingqiu Mao**, Sujai Banerji, Jack DeCorso, William R. Simpson, William Swanson, Joseph Robinson, Lena Shalaby, Robert J. Swap, Gonzalo Gonzalez Abad, Caroline R Nowlan, Martin Tiefengraber, Moritz Müller, and Alexander Cede, “Ground validation of satellite HCHO measurements at northern high latitudes”, AGU Fall meeting, 2018. (Poster)
12. **Jingqiu Mao**, William Simpson, Kerri Pratt, Julia Schmale, Kathy Law, Steve Arnold, “Alaska Pollution and Chemical Analysis (ALPACA) science and status report”, IARPC staff meeting, 08/2018. (Webinar, **Invited**)
11. **Jingqiu Mao**, “The role of Cu in Fe redox cycling in ambient aerosols”, Telluride Iron workshop, Telluride, CO, 07/2018. (**Invited talk**)
10. **Jingqiu Mao**, William Simpson, Kerri Pratt, Julia Schmale, Kathy Law, Steve Arnold, “ALaskan Pollution and Chemical Analysis (ALPACA) project”, NSF PI meeting, Boulder, CO, 05/2018. (poster)
9. **Jingqiu Mao**, “Interaction between biogenic and anthropogenic emissions”, Institute of Atmospheric Physics, Beijing, China, 12/2017. (**Invited talk**)
8. **Jingqiu Mao**, “New directions in Arctic atmospheric chemistry research”, State Key Laboratory on Cryospheric Sciences, Lanzhou, China, 12/2017. (**Invited talk**)

7. **Jingqiu Mao**, “Reconciling ozone biases in AM3 and GEOSChem models”, Ozone dry deposition workshop, Lamont-Doherty Earth Observatory, New York, 10/2017. (poster)
6. **Jingqiu Mao**, Jingyi Li, Arlene M. Fiore, Ronald C. Cohen, John D. Crouse, Alex P. Teng, Paul O. Wennberg, Ben H. Lee, Felipe D. Lopez-Hilfiker, Joel A. Thornton, Jeff Peischl, Ilana B. Pollack, Thomas B. Ryerson, Patrick Veres, James M. Roberts, J. Andrew Neuman, John B. Nowak, Glenn M. Wolfe, Thomas F. Hanisco, Alan Fried, Hanwant B. Singh, Jack Dibb, Fabien Paulot, Larry W. Horowitz, “Decadal change of reactive nitrogen species and surface ozone over the Southeast United States”, Gordon Research Conference, Newry, ME, 08/2017. (Poster)
5. **Jingqiu Mao**, Sebastian Eastham, Robert Yokelson, Chris Holmes, Chantelle Lonsdale, Matthew Alvarado, “Issues of modeling fire plumes”, ACCORD Fire Data analysis workshop, Boulder, CO, 07/2017. (**Invited talk**)
4. **Jingqiu Mao**, Dylan Millet, “Decadal trend of Arctic biogenic VOC emissions”, PACES workshop, Victoria, Canada, 06/2017. (Talk)
3. **Jingqiu Mao**, “Two tales of chemistry-climate interaction”, Atmospheric Sciences Informal Seminar, UAF, Fairbanks, AK, 04/2017. (Talk)
2. **Jingqiu Mao**, Jingyi Li, Ronald Cohen, John Crouse, Paul O. Wennberg, Ilana B. Pollack, Thomas B. Ryerson, Patrick Veres, James M. Roberts, Andy Newman, Glenn Wolfe, Thomas F. Hanisco, Fabien Paulot, Larry Horowitz, “Decadal change of reactive nitrogen species and surface ozone over the Southeast United States”, AGU Fall meeting, San Francisco, CA, USA, 12/2016. (Poster)
1. **Jingqiu Mao**, Jingyi Li, Kyung-Eun Min, Steve Brown, Rebecca Washenfelder, Glenn Wolfe, Frank Keutsch, Thomas Hanisco, John Crouse, Paul Wennberg, Armin Wisthaler, Larry Horowitz, “Modeling Uncertainties in Gas-Phase Chemistry of Isoprene-SOA Precursors”, Atmospheric chemical mechanism meeting, Davis, California, 12/2016. (**Invited talk**)

### Professional Service

**Lead Organizer** for Special Symposia "Aerosols Spanning Spatial Scales: Measurement Networks to Models and Satellites" at AAAR (2023)

**Convener** for AGU session "Polar and Wintertime Atmospheric Chemistry" (2022)

**IPCC AR6 Expert Reviewer** for the Working Group I (WGI) contribution (2019).

**Co-Chair** of GEOS-Chem Oxidants and Chemistry working group /Steering Committee (2011-2015, 2017-present)

**Steering Committee** for Investigation of Multiscale Processes Affecting Atmospheric Chemical Transport (IMPAACT) study (2017-2019)

**Panelist** for NSF-sponsored Long-term chemical flux measurement workshop (2017)

**Co-lead organizer** for the ALaskan Pollution and Chemical Analysis (ALPACA) project (held at Fairbanks, AK in May of 2018)

**Lead organizer** for Southeast Atmosphere Studies Modeling workshop (held at NOAA GFDL, 2015)

**Promotion reviewer** for NASA

**Journal reviewer** for a number of journals

**Proposal reviewer** for NASA (3 panels), NOAA (2 panels, ad-hoc), EPA (1 panel), NSF (5 panels, ad-hoc), UK NERC (ad-hoc), City University of Hong Kong (ad-hoc)

### University Activities

**Faculty Senate and Unit Criteria Committee** (2021-2023)

**Earth System Science program working group** (2021-2022)

**Co-lead organizer** for the Environmental Chemistry Symposium (2017, 2018, 2019)

**Reviewer** for Undergraduate Research and Scholarly Activity (2019, 2020, 2021)

**Reviewer** for Alaska Space Grant and NASA EPSCoR (2019, 2020)

**Judge** for Research and Creative Activity Day (2019)

**Judge** for the Interior Alaska Science Fair (2019)

**Judge** for Alaska statewide high school science symposium (ASHSSS) (2018, 2019, 2020)

**Fairbanks Air Quality Stakeholders group** (2017-2019)

**Instructor** for UAF Osher Lifelong Learning Institute (OLLI) (2019)

**Field Experience**

ALPACA(2020, 2021, 2022), SENEX(2013), DC3(2012), BEARPEX II(2009), ARCTAS(2008), BEARPEX (2007), TRAMP(2006), INTEX-B (2006), HOXCOMP(2005), INTEX-A (2004), PMTACS-NY (2004), UCR-CHAMBER(2003), MCMA (2003)