

## Daun Jeong, Ph.D.

NOAA CSL & CU CIRES  
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### EDUCATION

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- University of California, Irvine (UCI)**, Irvine, CA 10/2014 - 8/2019  
Doctor of Philosophy, Earth System and Science  
Thesis title: Probing the Tropospheric Oxidation Capacity in Pristine to Polluted Environments  
Advisor: Prof. Saewung Kim
- Pohang University of Science and Technology (POSTECH)**, Pohang, South Korea 3/2011 - 2/2013  
Master of Science, Environmental Science and Engineering  
Thesis title: Enhanced Dissolution of Iron Oxides Trapped in Ice Under Dark Condition  
Advisor: Prof. Wonyong Choi
- Ewha Womans University (EWha)**, Seoul, South Korea 3/2007 - 2/2011  
Bachelor of Science in Engineering, Environmental Science and Engineering  
Thesis title: Dissolution of Magnetite and Calcite Generated from Mineral Carbonation  
Advisor: Prof. Yong Pyo Kim

### RELEVANT RESEARCH HIGHLIGHTS

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Participation of five domestic and international field projects ranging from ground to ship and airborne platforms, which includes leading four field deployments of the quad-CIMS. Main focus during the CIMS deployments were on reactive halogen gas species (i.e., bromine and chlorine) in the troposphere and data analysis were mainly done in igor. Matlab based 0-D and igor based 1-D numerical modeling were used to understand the impact of the measured halogen gas species in the tropospheric oxidation capacity.

### PROFESSIONAL APPOINTMENTS

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- Research Scientist II at NOAA CSL/CIRES**, Boulder, CO 8/2024 – present  
*Atmospheric Composition & Chemical Processes (ACCP) Lab*
  - Understanding of upper troposphere/lower stratosphere chemical compositions through chemical ionization mass spectrometry
- Postdoctoral Research Fellow (Advanced Study Program) at NCAR**, Boulder, CO 10/2022 – 7/2024  
*Atmospheric Chemistry Observations & Modeling (ACOM) Lab, Advisor: Dr. Eric Apel*
  - Observationally-constrained 0-D modeling (FOAM) of ozone chemistry in the northern front range using airborne measurements during FRAPPÉ.
  - Measurement intercomparison of airborne formaldehyde observations during FIREX-AQ.
  - Deployment of the drone canister system (WASPP; The Whole Air Sampling Pilotless Platform) at the Atmospheric Science and Chemistry mEasurement NeTwork (ASCENT) Denver site for sampling of VOCs.
  - **ASIA-AQ campaign** (Feb. – Apr. 2023): deployment of the Trace Organic Gas Analyzer (TOGA-TOF) on the NASA DC-8 to measure C<sub>1</sub>-C<sub>10</sub> VOCs in South Korea and Thailand
- Postdoctoral Research Fellow at University of Michigan**, Ann Arbor, MI 10/2019 – 9/2022  
*Department of Chemistry, Advisor: Prof. Kerri Pratt*
  - Numerical 1-D modeling of ClNO<sub>2</sub>, during the 2018 SNACK campaign in Kalamazoo, MI, to understand vertically-resolved contributions of ClNO<sub>2</sub> production from the urban snowpack versus aerosols.
  - Analysis of reactive bromine production from snow and aerosols using data collected during the 2016 PHOXMELT campaign in Utqiagvik, AK.
  - **Arctic CLOROX campaign** (Feb. – Mar. 2020): Mentoring of two graduate students on field deployment preparations, instrumentation, and data analysis. Independent data analysis of volatile organic compounds measured using a Vocus at Oliktok Point, AK to understand the impact of oilfield emissions and chlorine chemistry in the Arctic atmosphere.

## Curriculum Vitae: Daun Jeong

- **CHACHA campaign** (Feb. – Apr. 2022): Led integration (Aug. 2021 – Jan. 2022) of the quad-CIMS and DRUM impactor on the University of Wyoming King Air. Deployment and mission scientist on flights, based out of Utqiagvik, AK, measuring Br<sub>2</sub>, HOBr, HNO<sub>3</sub>, HO<sub>2</sub>NO<sub>2</sub> associated with oil field emissions and the changing sea ice in the Arctic.

Researcher at Pohang University of Science and Technology (POSTECH), Pohang, South Korea

3/2013 - 8/2014

Department of Environmental Science and Engineering, Advisor: Prof. Wonyong Choi

- Freeze-enhanced dissolution of iron oxide dusts in ice in the presence inorganic (e.g., Cl<sup>-</sup>, SO<sub>4</sub><sup>2-</sup>, NO<sub>3</sub><sup>-</sup>) and organic ions

## AWARDS and FELLOWSHIPS

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- Advanced Study Program (ASP) Postdoctoral Fellowship (NCAR) (2022-2024)
- Howard Hughes Medical Institute (HHMI) Teaching Postdoctoral Fellowship (2019)
- Group Achievement Award (NASA): For outstanding achievements of the KORUS-AQ (2017)
- Jenkins Family Graduate Fellowship (UCI): selected based on academic record and compelling research (2014)
- Best Paper Award (POSTECH): Competitive award for academic excellence and promising research (2013)
- Honor Scholarship (EWAH): Competitive University-wide award for academic excellence (2010)

## FIELD WORK PARTICIPATION

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ASIA-AQ (airborne, planned for South Korea and Philippines)

2/2024 - 4/2024

- Participated on the deployment of the Trace Organic Gas Analyzer (TOGA-TOF) on the NASA DC-8

CHACHA2022 (airborne, Utqiagvik, AK, US)

2/2022 - 4/2022

- Led airborne deployment of quad-CIMS aboard the Univ. of Wyoming King Air, based out of Utqiagvik, AK, to study halogen-aerosol-cloud interactions

ARAON2018 (shipborne, Weddell Sea)

4/2018 - 5/2018

- Field observation and data analysis of HOI and I<sub>2</sub> on the icebreaker ARAON near the Antarctic peninsula

CROUL2017 (ground, Irvine, CA, US)

7/2017 - 8/2017

- Field observation and data analysis of ClNO<sub>2</sub>, HONO, and ClONO<sub>2</sub> with quad-CIMS at Irvine, CA

KORUS-AQ2016 (ground, Seoul, Korea)

5/2016 - 6/2016

- Field observation and data analysis of NO<sub>x</sub>, ClNO<sub>2</sub>, and Cl<sub>2</sub> from airborne (NASA DC-8) and ground measurements (Seoul Metropolitan Area) to understand the impact of chlorine precursors on tropospheric O<sub>3</sub> production

MAPS2015 (ground, Seoul, Korea)

9/2015

- Field deployment of LGR CRDS for NO<sub>2</sub> measurement at the Taehwa Research Forest (TRF)

## PUBLICATIONS

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17. **Jeong, D.**; Hornbrook, R. S.; Apel, E. C.; Travis, K.; Crawford, J.; Hills, A.; Blake, D.; Meinardi, S.; Barletta, B.; Blake, N.; Flocke, F.; Fried, A.; Weibring, P.; Richter, D.; Walega, J.; Huey, G.; Tanner, D.; Hall, S.; Ullmann, K.; Mauldin, L.; Cantrell, C.; Weinheimer, A.; Montzka, D.; Campos, T.; Pfister, G.; Orlando, J.; Emmons, L.; Heikes, B.; Jo, D. "Observationally-Constrained 0-D Modeling of Ozone Chemistry in the Denver Metro Northern Front Range (DMNFR) using Airborne Measurements during FRAPPÉ", *in preparation*
16. **Jeong, D.**; Hornbrook, R. S.; Hills, A. J.; Diskin, G.; Fried, A.; Richter, D.; Walega, J.; Weibring, P.; Hanisco, T. F.; Wolfe, G. M.; St Clair, J.; Peischl, J.; Wisthaler, A.; Mikoviny, T.; Nowak, J. B.; Piel, F.; Tomsche, L.; Holmes, C. D.; Soja, A.; Gargulinski, E.; Crawford, J.; Dibb, J.; Warneke, C.; Apel, E. C. "TOGA-TOF (Trace Organic Gas Analyzer Time-of-Flight mass spectrometer) System for Airborne Observations of Formaldehyde", *in preparation*
15. **Jeong, D.**; McNamara, S. M.; Chen, Q.; Mirrielees, J.; Edebeli, J.; Kulju, K. D.; Mumpfield, J.; Hayani, L.; Fuentes, J. D.; Bertman, S. B.; Ault, A. P.; Wang, S.; Pratt, K. A. "Quantifying the Contributions of Aerosol and Snow-produced ClNO<sub>2</sub> through Observations and 1-D Modeling", *ACS Earth and Space Chemistry* (2023), 7, 12, 2548-2561, <https://doi.org/10.1021/acsearthspacechem.3c00237>
14. Kim, H.; Park, R. J.; Kim, S.; Jeong, J. I.; **Jeong, D.**; Fu, Z.; Cho, S. "Effect of nitryl chloride chemistry on air quality in South Korea during the KORUS-AQ campaign", *Atmospheric Environment* (2023), 312, 120045, <https://doi.org/10.1016/j.atmosenv.2023.120045>

13. **Jeong, D.**; McNamara, S. M.; Barget, A. J.; Raso, A. R. W.; Upchurch, L.; Thanekar, S.; Quinn, P.; Simpson, W. R.; Fuentes, J. D.; Shepson, P. B.; Pratt, K. A. "Multiphase reactive bromine chemistry during late Spring in the Arctic: Measurements of Gases, Particles, and Snow", *ACS Earth and Space Chemistry* (2022), 6, 12, 2877-2887 <https://doi.org/10.1021/acsearthspacechem.2c00189>
12. **Jeong, D.**; Seco, R.; Emmons, L.; Schwantes, R.; Liu, Y.; McKinney, K. A.; Martin, S. T.; Keutsch, F. N.; Gu, D.; Guenther, A. B.; Vega, O.; Tota, J.; Souza, R. A. F.; Springston, S. R.; Watson, T. B.; Kim, S. "Reconciling observed and predicted tropical rainforest OH concentrations" *Journal of Geophysical Research: Atmospheres* (2021), 127, <https://doi.org/10.1029/2020JD032901> (*Top downloaded article on WILEY in the first 12 months of publication*)
11. Sanchez, D.; Seco, R.; Gu, D.; Guenther, A.; Mak, J.; Lee, Y.; Kim, D.; Ahn, J.; Blake, D.; Herndon, S.; **Jeong, D.**; Sullivan, J. T.; Mcgee, T.; Kim, S. "Contributions to OH reactivity from unexplored volatile organic compounds measured by PTR-ToF-MS – A case study in a suburban forest of the Seoul Metropolitan Area during KORUS-AQ 2016" *Atmospheric Chemistry and Physics* (2021), 21, 6331-6345, <https://doi.org/10.5194/acp-2020-174>
10. Kim, S.; Seco, R.; Gu, D.; Sanchez, D.; **Jeong, D.**; Guenther, A.; Lee, Y.; Mak, J.; Su, L.; Kim, D.; Lee, Y.; Ahn, J.; Mcgee, T.; Sullivan, J.; Long, R.; Brune, W.; Thames, A.; Wisthaler, A.; Müller, M.; Mikoviny, T.; Weinheimer, A.; Yang, M.; Woo, J.; Kim, S.; Park, H. "The roles of suburban forest in controlling vertical trace gas and OH reactivity distributions – a case study for Seoul Metropolitan Area." *Faraday Discussions* (2020), 226, 537-550, <https://doi.org/10.1039/D0FD00081G>
9. **Jeong, D.**; Seco, R.; Gu, D.; Lee, Y.; Nault, B. A.; Knote, C. J.; Mcgee, T.; Sullivan, J. T.; Jimenez, J. L.; Campuzano-Jost P.; Blake, D. R.; Sanchez, D.; Guenther, A. B.; Tanner, D.; Huey, L. G.; Long, R.; Anderson, B. E.; Hall, S. R.; Ullmann, K.; Shin, H.; Herndon, S. C.; Lee, Y.; Kim, D.; Ahn, J.; Kim, S. "Integration of Airborne and Ground Observations of Nitryl Chloride in the Seoul Metropolitan Area and the Implications on Regional Oxidation Capacity During KORUS-AQ 2016" *Atmospheric Chemistry and Physics* (2019), 19, 12779-12795, <https://doi.org/10.5194/acp-19-12779-2019>
8. Sullivan, J. T.; McGee, T. J.; Stauffer, R. M.; Thompson, A. M.; Weinheimer, A.; Knote, C.; Janz, S.; Wisthaler, A.; Long, R.; Szykman, J.; Park, J.; Lee, Y.; Kim, S.; **Jeong, D.**; Sanchez, D.; Twigg, L.; Sumnicht, G.; Knepp, T.; Schroeder, J. R. "Taehwa Research Forest: A receptor site for severe domestic pollution events in Korea during 2016" *Atmospheric Chemistry and Physics* (2019), 19, 5051-5067, <https://doi.org/10.5194/acp-19-5051-2019>
7. Menacherry, S. P.; Min, D. W.; **Jeong, D.**; Aravindakumar, C. T.; Lee, W.; Choi, W. "Halide-Induced Dissolution of Lead(IV) Oxide in Frozen Solution", *Journal of Hazardous Materials* (2019), 384, 121298, <https://doi.org/10.1016/j.jhazmat.2019.121298>
6. Kim, K.; Menacherry, S. P.; Kim, J.; Chung, H. Y.; **Jeong, D.**; Saiz-Lopez, A.; Choi, W. "Simultaneous and Synergic Production of Bioavailable Iron and Reactive Iodine Species in Ice", *Environmental Science & Technology* (2019), 53, 7355-7362, <https://doi.org/10.1021/acs.est.8b06659>
5. Sanchez, D.; **Jeong, D.**; Seco, R.; Wrangham, I.; Park, J.; Brune, W. H.; Koss, A.; Gilman, J.; Gouw, J.; Misztal, P.; Goldstein, A.; Baumann, K.; Wennberg, P. O.; Keutsch, F. N.; Guenther, A.; Kim, S. "Intercomparison of OH and OH reactivity measurements in a high isoprene and low NO environment during the Southern Oxidant and Aerosol Study (SOAS)" *Atmospheric Environment* (2018), 174, 227-236, <https://doi.org/10.1016/j.atmosenv.2017.10.056>
4. Kim, S.; **Jeong, D.**; Sanchez, D.; Wang, M.; Seco, R.; Blake, D.; Meinardi, S.; Barletta, B.; Hughes, S.; Jung, J.; Kim, D.; Lee, G.; Lee, M.; Ahn, J.; Lee, S.; Cho, G.; Sung, M.; Lee, Y.; Park, R. "The controlling factors of photochemical ozone production in Seoul, South Korea" *Aerosol and Air Quality Research* (2018), 18, 2253 – 2261, <https://doi.org/10.4209/aaqr.2017.11.0452>
3. Kim, S.; Sanchez, D.; Wang, M.; Seco, R.; **Jeong, D.**; Hughes, S.; Barletta, B.; Blake, D. R.; Jung, J.; Kim, D.; Lee, G.; Lee, M.; Ahn, J.; Lee, S.-D.; Cho, G.; Sung, M. Y.; Lee, Y. H.; Kim, D. B.; Kim, Y.; Woo, J. H.; Jo, D.; Park, R.; Park, J. H.; Hong, Y. D.; Hong, J. H. "OH reactivity in urban and suburban regions in Seoul, South Korea - an East Asian megacity in a rapid transition" *Faraday Discussions* (2016), 189, 231-251, <https://doi.org/10.1039/c5fd00230c>
2. **Jeong, D.**; Kim, K.; Min, D. W.; Choi, W. "Freezing-Enhanced Dissolution of Iron Oxides: Effects of Inorganic Acid Anions", *Environmental Science & Technology* (2015), 49, 12816-12822, <https://doi.org/10.1021/acs.est.5b04211>
1. **Jeong, D.**; Kim, K.; Choi, W. "Accelerated Dissolution of Iron Oxides in Ice", *Atmospheric Chemistry and Physics* (2012), 12, 11125-11133, <https://doi.org/10.5194/acp-12-11125-2012>

## SELECTED FIRST AUTHOR PRESENTATIONS

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- (poster) **Jeong et al.** “Observationally-Constrained Modeling of Ozone Chemistry in the Denver Metro Northern Front Range (DMNFR) using Airborne Measurements during FRAPPÉ”, *American Geophysical Union (AGU)*, San Francisco, CA, 11-15 December (2023)
- (poster) Apel et al. (**Daun Jeong** as presenting author) “TOGA-TOF (Trace Organic Gas Analyzer Time-of-Flight mass spectrometer) System for Airborne Observation of Formaldehyde during FIREX-AQ”, *American Geophysical Union (AGU)*, San Francisco, CA, 11-15 December (2023)
- (oral) **Jeong et al.** “Understanding the end of season bromine chemistry in the Arctic boundary layer through observations of particles, gases, and snow”, *American Meteorological Society Annual Meeting (AMS)*, Denver, CO, 8-12 January (2023)
- (poster) **Jeong et al.** “Observationally constrained 1-Dimensional modeling of wintertime inland ClNO<sub>2</sub> over urban snowpack”, *American Geophysical Union (AGU)*, Chicago, IL, 12-16 December (2022)
- (oral, invited) **Jeong, D.** “Understanding the role of halogen chemistry on tropospheric oxidation capacity through field observations and 1D modeling”, MIT’s *Atmospheric Chemistry Colloquium*, 10 October (2022)
- (oral & poster) **Jeong et al.** “Using gas phase, particle, and snow composition data to understand the spring shutdown of reactive bromine cycling in the Arctic boundary layer”, *16<sup>th</sup> IGAC Science Conference*, online, (2021)
- (poster) **Jeong et al.** “Reconciling measured OH through box model simulations during GoAmazon2014/5”, *American Geophysical Union (AGU)*, San Francisco, CA, 9-13 December (2019)
- (poster) **Jeong et al.** “Observations and modeling of wintertime inland ClNO<sub>2</sub> in Kalamazoo, Michigan”, *IGAC Cryosphere and Atmospheric Chemistry (CATCH) Open Science Workshop*, Berkeley, CA, 7-8 December (2019)
- (oral) **Jeong et al.** “Preliminary Results from the 2018 ARAON-Antarctic Cruise: Halogen Reservoir Species in the Pristine Coastal Antarctic Peninsula during Fall”, *American Geophysical Union (AGU)*, Washington D.C., 11 – 14 December (2018)
- (oral) **Jeong et al.** “Exploring the Impact of Nitryl Chloride (ClNO<sub>2</sub>) on the Tropospheric Oxidation Capacity in South Korea During KOURS-AQ 2016”, *American Geophysical Union (AGU)*, New Orleans, Louisiana, 11 - 15 December (2017)
- (poster) **Jeong et al.** “Evaluation of the Relative Importance of Radical Sources in Determining the Regional Tropospheric Oxidation Capacity in the Seoul Metropolitan Area”, *American Geophysical Union (AGU)*, San Francisco, CA, 14-18 December (2015)
- (poster) **Jeong et al.** “Enhanced Release of Bioavailable Iron in Ice”, The 112<sup>th</sup> *General Meeting of the Korean Chemical Society*, Changwon, South Korea, 16-18 October (2013)
- (poster) **Jeong et al.** “The Production of Dissolved Iron from Iron Oxides in Ice”, The 109<sup>th</sup> *General Meeting of the Korean Chemical Society*, Ilsan, South Korea, 25-27 April (2012)

## INTERNSHIPS, STUDY ABROAD, VISITOR, and WORKSHOPS

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- Visiting Research Graduate Student (NCAR), *Research advisor: Dr. Louisa Emmons* 8/2018
- Workshop on Fundamentals of Atmospheric Chemistry and Aerosol Modeling 2018 (NCAR) 8/2018
- Summer internship (POSTECH), *Research advisor: Wonyong Choi* 6/2010 - 7/2010
- Winter internship (KIGAM, Korea Institute of Geoscience and Mineral Resources) 1/2010 - 2/2010
- Study Abroad, State University of New York in Stony Brook, New York 1/2009 - 5/2009

## TEACHING EXPERIENCE

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- Winter Quarter 2019 (teaching assistant): ESS 15 Climate Change at UCIrvine
- Fall Quarter 2018 (teaching assistant): ESS 114 Field Methods at UCIrvine
- Winter Quarter 2017 & 2018 (teaching assistant): ESS 23 Air Pollution at UCIrvine
- Fall Quarter 2015 & 2017 (teaching assistant): ESS 1 Introduction to Earth System Science at UCIrvine
- Winter Quarter 2016 (teaching assistant): ESS 7 Physical Geology at UCIrvine

## PROFESSIONAL COMMUNITY SERVICES

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- Seminar committees: IGAC CATCH seminar series (2023) and NCAR/UCP postdoc seminar series (2022-2024)
- Application committee for the 2023 NCAR Earth System Science Internship (NESSI) for undergraduate and graduate students
- Journal reviewer: Atmospheric Chemistry and Physics, Geophysical Research Letters, Atmospheric Environment, Environmental Science:Atmospheres