

# Jinkyul Choi

NASA Postdoc Program fellow at Jet Propulsion Laboratory  
Phone : +1-970-999-2061 | E-mail : [jinkyul.choi@jpl.nasa.gov](mailto:jinkyul.choi@jpl.nasa.gov)  
4800 Oak Grove Drive, 233-208E, Pasadena, CA, United States, 91109

---

## RESEARCH INTERESTS

Inverse Modeling, Satellite Data Analysis, Air Pollutant Emissions, Source Attribution  
Air Quality, Health Impacts, Emission Scenario Assessment  
Atmospheric Chemical Transport Modeling, Gas and Aerosol Chemistry and Physics

---

## EDUCATION

|                                                                                                                                                                                                                                                               |           |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| <b>University of Colorado Boulder</b><br>Ph.D. in Environmental Engineering<br><br>Advisor: Prof. Daven K. Henze<br>Thesis: Inverse modeling constraints on non-methane volatile organic compound emissions and their impacts on air quality and human health | 2018-2024 |
| <b>Seoul National University</b><br>M.S. in Earth and Environmental Sciences<br><br>Advisor: Prof. Rokjin J. Park                                                                                                                                             | 2016-2018 |
| <b>Seoul National University</b><br>B.S. in Earth and Environmental Sciences, Minor in Chemistry                                                                                                                                                              | 2011-2016 |
| <b>University of Melbourne</b> (Exchange Program)                                                                                                                                                                                                             | 2015      |

---

## PUBLICATIONS

- Choi, J.**, Henze, D. K., Wells, K. C., & Millet, D. B. (under review). Joint inversion of satellite-based isoprene and formaldehyde observations to constrain emissions of non-methane volatile organic compounds
- Choi, J.**, Henze, D. K., Nawaz, M. O., & Chris, M. (2024). Source attribution of health burdens from ambient PM<sub>2.5</sub>, O<sub>3</sub>, and NO<sub>2</sub> exposure for assessment of South Korean national emission control scenarios by 2050. *GeoHealth*.
- Choi, J.**, Henze, D. K., Cao, H., Nowlan, C. R., González Abad, G., Kwon, H.-A., Lee, H.-M., Oak, Y. J., Park, R. J., Bates, K. H., Maasakkers, J. D., Wisthaler, A., & Weinheimer, A. J. (2022). An inversion framework for optimizing non-methane VOC emissions using remote sensing and airborne observations in Northeast Asia during the KORUS-AQ field campaign. *Journal of Geophysical Research: Atmospheres*, 127, e2021JD035844. <https://doi.org/10.1029/2021JD035844>
- Schreck, J. S., Becker, C., Gagne, D. J., Lawrence, K., Wang, S., Mouchel-Vallon, C., **Choi, J.**, & Hodzic, A. (2022). Neural network emulation of the formation of organic aerosols based on the explicit GECKO-A chemistry model. *Journal of Advances in Modeling Earth Systems*, 14, e2021MS002926. <https://doi.org/10.1029/2021MS002926>

5. Kwon, H.-A., Park, R. J., Oak, Y. J., Nowlan, C. R., Janz, S. J., Kowalewski, M. G., Fried, A., Walega, J., Bates, K. H., **Choi, J.**, Blake, D. R., Wisthaler, A., & Woo, J.-H. (2021). Top-down estimates of anthropogenic VOC emissions in South Korea using formaldehyde vertical column densities from aircraft during the KORUS-AQ campaign. *Elementa: Science of the Anthropocene*, 9(1). <https://doi.org/10.1525/elementa.2021.00131>
  6. **Choi, J.**, Park, R. J., Lee, H.-M., Lee, S., Jo, D. S., Jeong, J. I., Henze, D. K., Woo, J.-H., Ban, S.-J., Cho, S., Lee, M.-D., Lim, C.-S., Park, M.-K., Shin, H. J., Cho, S., Peterson, D., & Song, C.-K. (2019). Impacts of local vs. trans-boundary emissions from different sectors on PM<sub>2.5</sub> exposure in South Korea during the KORUS-AQ campaign. *Atmospheric Environment*, 213, 190-205. <https://doi.org/10.1016/j.atmosenv.2019.05.062>
- 

## INVITED TALKS

Optimizing emission inventories through inverse modeling to improve air quality simulations, presented at National Institute of Environmental Research, South Korea (2023).

Utilizing satellite observations with adjoint modeling: (1) inverse modeling of VOC emissions and (2) source attribution of air pollutant associated health burdens, presented at Ewha Womans University, South Korea (2023).

---

## PRESENTATIONS

Constraining VOC emissions using joint inversion of remote sensing isoprene and formaldehyde

- American Geophysical Union Fall Meeting 2022 (AGU2022), United States (2022)
- The 10th International GEOS-Chem Meeting (IGC10), United States (2022)

Source Attribution of health burdens due to ambient air pollution in South Korea

- American Geophysical Union Fall Meeting 2023 (AGU2023), United States (2023)
- The 10th International GEOS-Chem Meeting (IGC10), United States (2022)

Constraining VOC emissions using inverse modeling of formaldehyde measurements from multiple platforms

- American Geophysical Union Fall Meeting 2020 (AGU2020), United States (2020)
- American Geophysical Union Fall Meeting 2019 (AGU2019), United States (2019)
- The 9th International GEOS-Chem Meeting (IGC9), United States (2019)

Source Attribution of PM<sub>2.5</sub> for South Korea during the KORUS-AQ campaign using GEOS-Chem adjoint model

- European Geosciences Union General Assembly 2018 (EGU 2018), Austria (2018)
- Asian Conference on Meteorology 2017 (ACM2017), South Korea (2017)
- The 1st KORUS-AQ Science Team Meeting, South Korea (2017)

Influence of El Niño on interannual variations of surface ozone concentration over South Korea

- Graduation Presentation (Seoul National University), South Korea (2015) (Best Poster Award)
-