

INDERJEET SINGH

Department of Energy, Environmental and Chemical Engineering, Washington University in St. Louis, MO, USA

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EDUCATION

Washington University in St. Louis, Dep. of Energy, Environmental and Chemical Engineering	St. Louis, USA
Ph.D. (Advisor: Randall V. Martin), Major in Environmental Engineering	Aug. 2019-Present

- **GPA: 3.84/4.00**

Dalhousie University, Department of Physics and Atmospheric Science	Halifax, Canada
Ph.D. (Advisor: Randall V. Martin), Major in Atmospheric science ¹	Aug. 2018- July 2019

Indian Institute of Technology Kharagpur, CORAL	Kharagpur, India
Research Scholar	July 2016-May 2018

Indian Institute of Technology Kharagpur, CORAL	Kharagpur, India
Master, Major in Earth System Science and Technology	July 2014-May 2016

- **GPA: 9.0/10.00**

Punjab Technical University	Jalandhar, India
Bachelor, Major in Mechanical Engineering	July 2008- May 2012

- **Overall Aggregate: 74.9%**

RESEARCH INTEREST

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- Air quality modelling
 - Radiative transfer and remote sensing
 - Atmospheric turbulence

My research interests involve developing the analytical and physics-based approaches to understand the processes affecting atmospheric composition and air quality. My research focuses primarily on the efficient representation of aerosols in the chemical transport model GEOS-Chem. This includes an accurate representation of mineral dust morphology, and vertical distribution of smoke during the wildfire events.

PUBLICATIONS

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4. **Inderjeet Singh**, Randall V. Martin, Aaron van Donkelaar, Chi Li, Haihui Zhu, Dandan Zhang, Alexei Lyapustin. (2024) Effects of fire plume height on geophysical estimation of surface fine particulate matter from satellite aerosol optical depth during extreme wildfire events over North America. (Submitted to ES&T Air) ([Abstract](#))
 3. Zhu, H., Martin, R. V., van Donkelaar, A., Hammer, M. S., Li, C., Meng, J., Oxford, C. R., Liu, X., Li, Y., Zhang, D., **Singh, I.**, and Lyapustin, A.: Importance of aerosol composition and aerosol vertical profiles in global spatial variation in the relationship between PM_{2.5} and aerosol optical depth, Atmos. Chem. Phys., 24, 11565–11584, 2024. ([link](#))

¹ Transferred to Washington University with prof. Randall Martin

2. **Singh, I.**, Martin, R. V., Bindle, L., Chatterjee, D., Li, C., Oxford, C., et al. (2024). Effect of dust morphology on aerosol optics in the GEOS-chem chemical transport model, on UV-vis trace gas retrievals, and on surface area available for reactive uptake. Journal of Advances in Modeling Earth Systems, 16, e2023MS003746. ([link](#))
1. Zhu, H., Martin, R. V., Croft, B., Zhai, S., Li, C., Bindle, L., Pierce, J. R., Chang, R. Y.-W., Anderson, B. E., Ziemba, L. D., Hair, J. W., Ferrare, R. A., Hostetler, C. A., **Singh, I.**, Chatterjee, D., Jimenez, J. L., Campuzano-Jost, P., Nault, B. A., Dibb, J. E., Schwarz, J. S., and Weinheimer, A.: Parameterization of size of organic and secondary inorganic aerosol for efficient representation of global aerosol optical properties, Atmos. Chem. Phys., 23, 5023–5042, 2023. ([link](#))

PRESENTATION

4. Effects of fire plume height on geophysical estimation of surface PM_{2.5} from satellite AOD during extreme wildfire events of 2020 over North America, AGU conference, Washington DC, December 2024 (Poster)
3. Effects of fire plume height on geophysical estimation of surface PM_{2.5} from satellite AOD during extreme wildfire events of 2018 over North America, 11th International GEOS-Chem meeting, St. Louis, June 2024 (Poster)
2. Effects of dust non-sphericity on atmospheric modelling, 10th International GEOS-Chem meeting, St. Louis, June 2022 (Poster)
1. Effects of dust non-sphericity on atmospheric modelling, AGU conference, New Orleans, December 2021 (Poster)

SKILL

- **Technical Model:** GEOS-Chem, UNL-VRM, LibRadtran
- **Programming:** Fortran, Python, and MATLAB
- **Operating System and Software:** Linux and Mac/Unix, Microsoft Office, GrADS
- **Language:** English

SCHOLARSHIPS

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| • Ministry of Human Resource Department (MHRD) | July 2014- May 2016 |
| • Central Scientific and Industrial Research (CSIR) Scholarship | July 2014 (Did not accept) |

PROFESSIONAL EXPERIENCE

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| • Lecturer in Rayat-Bahra Institute of Engineering and Biotechnology, Mohali, Punjab | July 2012- June 2014 |
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