Nakul N. Karle, Ph.D.

Research Scientist, Howard University, Washington, D.C.

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Summary

Experimental atmospheric physicist studying atmospheric measurement, boundary-layer turbulence, and transport using optical remote sensing, in situ observations, and computational analysis. Experience with lidar, ceilometers, radiosondes, UAV-based measurements, infrared observations, and quantitative retrieval methods. Research record includes peer-reviewed publications, externally funded projects, field campaign leadership, undergraduate teaching, and student mentorship.

Education

2021 Ph.D. in Environmental Science and Engineering, The University of Texas at El Paso (UTEP)
Dissertation: *Studies of the planetary boundary layer and their impact on air pollution in a semi-arid region with complex terrain.*

2017 M.S. in Computational Sciences, UTEP
Thesis: *DFT Study of Adsorption of Trimetallic Endohedral Fullerenes on Graphene.*

2014 M.Sc. in Physics, University of Mumbai
Thesis: *Assembly and Characterization of Resistive Plate Chambers.*

2012 B.Sc. in Physics, University of Mumbai

Academic and Research Experience

May 2026 – Present **Research Scientist, NOAA Cooperative Science Center for Atmospheric Science and Meteorology, Howard University**

– Lead observational studies of boundary-layer turbulence, diurnal evolution, and atmospheric transport using Raman lidar, ceilometers, radiosondes, and UAV-based measurements.

– Mentor undergraduate and graduate students in atmospheric observations, data analysis, scientific writing, and conference presentations.

Jan 2024 – Apr 2026 **Assistant Research Scientist, NOAA Cooperative Science Center for Atmospheric Science and Meteorology, Howard University**

– Developed Python-based analysis pipelines for turbulence statistics, variance decomposition, structure functions, and optimal-estimation retrievals from atmospheric remote-sensing observations.

– Designed and executed multi-instrument field campaigns to investigate boundary-layer dynamics, atmospheric transport, and urban air quality in the Baltimore–Washington region.

Aug 2023 – May 2024 **Adjunct Lecturer, Department of Earth, Environment and Equity, Howard University**

– Taught Environmental Studies I and Global Climate Change during the 2023–2024 academic year.

Aug 2022 – Dec 2023 **Postdoctoral Associate, Howard University**

– Quantified fire radiative energy and fire radiative power from laboratory biomass-burning experiments using multispectral infrared imagery.

– Processed observations from the Georgia Wildland-fire Simulation Experiment and developed workflows to characterize fire behavior, combustion energetics, and radiative heat release.

Aug 2021 – Jul 2022 **Postdoctoral Researcher, Department of Physics, UTEP**

- Conducted multi-scale analyses of boundary layer processes influencing ozone and particulate matter in semi-arid, complex-terrain environments.
- Integrated surface observations, lidar profiling, radiosondes, satellite products, and numerical models (WRF, HYSPLIT) to assess meteorological drivers of air quality episodes.
- Contributed to interdisciplinary studies on virga precipitation, dust storms, wildfire smoke, and climate-related extreme events.

Research Interests

My research uses experimental observations and computational analysis to investigate turbulence, transport, and thermodynamic structure in the planetary boundary layer, with applications to air quality, convection, and land–atmosphere interactions.

- Thermodynamic and dynamic structure of the PBL, including diurnal evolution, turbulent mixing, convection initiation, and higher-order turbulence statistics.
- Atmospheric measurement physics using Raman lidar, Doppler lidar, radar, and ceilometers, complemented by radiosonde and ozonesonde profiles, to investigate turbulence, boundary-layer structure, and pollution transport.
- Observational–model integration to evaluate and improve numerical weather prediction and regional climate model representation of boundary layer processes.
- Land–atmosphere coupling in complex terrain (e.g., Paso del Norte), emphasizing surface heterogeneity, turbulence generation, and boundary layer transitions.

Research Grants and Proposals

Awarded

- **Principal Investigator**, *NSF–UCAR Unidata Community Equipment Award*, 2023–2024, Enhancing Computing Accessibility in the Atmospheric Science Program at HU, **$19,941**.
- **Principal Investigator**, *NSF–UCAR COMET University Partnership Program*, 2023–2024, Assessment of Climate Change Impacts on Rainfall Distribution and Extreme Events in El Paso, Texas, **$15,000**.
- **Principal Investigator**, *ACTRIS 2 Trans-National Access Research Grant*, 2019, Influence of PBL and Meteorology on Ozone Concentration in the Region, **€2,000**.

Submitted / Pending

- **Principal Investigator**, NIST Measurement Science and Engineering (MSE) Program, 2026. *Advancing Measurement Science for High-Resolution Atmospheric Water-Vapor Profiling Using Differential Absorption Lidar.* **Amount requested:** $740,446. **Status:** Submitted.

Publications

Published and Scholarly Work

24. Elum, D. R., N. R. Nalli, J. Villanueva, D. Yeager, A. Flores, M. Walker, **N. N. Karle**, R. Sakai, and J. Wilkins (2026). "Radiative Constraints on VIIRS Nighttime Detectability of Lower-Tropospheric Methane". In: *Atmospheric Measurement Techniques* 19, pp. 7667–7691. DOI: 10.5194/amt-19-7667-2026.

23. Peng, T., **N. N. Karle**, S. Chiao, Y.-C. Liou, and S.-H. Wang (2026). "A Comparative Study of Long-Term Variability of Urban and Suburban Planetary Boundary Layer Heights Using Ceilometers and the HRRR Model". In: *Meteorological Applications* 33.5, e70250. DOI: 10.1002/met.70250.
22. Rossi, R. D., J. R. Villanueva Medina, R. K. Sakai, U. Shah, **N. N. Karle**, A. Flores, and X. Li (2026). "Tracking Total Precipitable Water Vapor: A Multi-Instrument Comparative Analysis". In: *Remote Sensing* 18.16, p. 2840. DOI: 10.3390/rs18162840.
21. Das, D., R. Sakai, A. Flores, **N. N. Karle**, Z. Yang, U. Shah, R. D. Rossi, I. Sloan, S. Chiao, and B. B. Demoz (2026). "Atmospheric and meteorological responses during the April 8, 2024, total solar eclipse: advancing workforce development through experiential learning". In: *Frontiers in Environmental Science* 14, p. 1751718. DOI: 10.3389/fenvs.2026.1751718.
20. Elum, D., **N. N. Karle**, R. K. Sakai, X. Ren, P. Stratton, N. R. Nalli, M. Walker, A. Flores, J. R. Villanueva, and J. Wilkins (2026). "High Resolution UAV-Based Monitoring of Ambient Methane: Field Deployment and Intercomparison with Reference Standards". In: *Remote Sensing* 18.549. DOI: 10.3390/rs18040549.
19. Lechuga, J. and **N. N. Karle** (2026). "Generating Experimental Text Stimuli for Psychological Research Using ChatGPT". In: *Advances in Methods and Practices in Psychological Science* 9.1, p. 25152459251407631. DOI: 10.1177/25152459251407631.
18. Blaszczak-Boxe, C., **N. N. Karle**, O. Ideki, L. Taku, M. Yu, S. Wang, N. Golosov, M. Riyad, D. S. Hilaire, K. Smith, et al. (2025). "Temporal variations in NO x, O3, and CO2 and meteorological influences in New York and New Jersey urban atmospheres". In: *Discover Environment* 3.1, p. 98. DOI: 10.1007/s44274-025-00226-6.
17. **Karle, N. N.**, R. K. Sakai, R. D. Rossi, A. Flores, and S. Chiao (2025). "Vertical profiling of Canadian wildfire smoke in the Baltimore-Washington Corridor – interactions with the planetary boundary layer and impact on surface air quality". In: *Atmospheric Measurement Techniques* 18.22, pp. 6727–6746. DOI: 10.5194/amt-18-6727-2025.
16. Penland, R., S. Flanagan, L. Ellison, M. Abdurrahman, C. K. Glenn, O. El Hajj, A. Anosike, K. Kumar, M. A. Callaham, E. L. Loudermilk, **N. N. Karle**, R. K. Sakai, A. Flores, T. Hewagam, C. Ichoku, J. O'Brien, and R. Saleh (2025). "The Effect of Combustion Conditions on Emissions of Elemental Carbon and Organic Carbon and Formation of Secondary Organic Carbon in Simulated Wildland Fires". In: *ACS ES&T Air* 2.10, pp. 2056–2070. DOI: 10.1021/acsestair.4c00300.
15. Golosov, N., S. Wang, M. Yu, **N. N. Karle**, O. Ideki, B. Abdul-Hamid, and C. Blaszczak-Boxe (2024). "Socioeconomic and sociodemographic correlations to COVID-19 variability in the United States in 2020". In: *Frontiers in Public Health* 12, p. 1359192. DOI: 10.3389/fpubh.2024.1359192.
14. Guzman-Gonzalez, J., R. M. Fitzgerald, **N. N. Karle**, R. K. Sakai, and W. R. Stockwell (2024). "Particulate matter in the American southwest: detection and analysis of dust storms using surface measurements and ground-based LIDAR". In: *Atmosphere* 15.1, p. 110. DOI: 10.3390/atmos15010110.
13. **Karle, N. N.**, R. K. Sakai, S. Chiao, R. M. Fitzgerald, and W. R. Stockwell (2024). "Reinterpreting Trends: The Impact of Methodological Changes on Reported Sea Salt Aerosol Levels". In: *Atmosphere* 15.7, p. 740. DOI: 10.3390/atmos15070740.
12. Blaszczak-Boxe, C. S., **N. N. Karle**, S. Wang, M. Yu, N. Golosov, M. Riyad, K. Smith, T. Hollet, B. Abdul-Hamid, D. St. Hillaire, et al. (2023). "Environmental assessment and monitoring of heavy metals in New York City potable water systems: Case study at Medgar Evers college, correlation analysis, and public health impacts". In: *Water* 15.24, p. 4233. DOI: 10.3390/w15244233.
11. **Karle, N. N.**, R. K. Sakai, R. M. Fitzgerald, C. Ichoku, F. Mercado, and W. R. Stockwell (2023). "Systematic analysis of virga and its impact on surface particulate matter observations". In: *Atmospheric Measurement Techniques* 16.4, pp. 1073–1085. DOI: 10.5194/amt-16-1073-2023.
10. Hallar, A. G., S. S. Brown, E. Crosman, K. C. Barsanti, C. D. Cappa, I. Faloona, J. Fast, H. A. Holmes, J. Horel, J. Lin, **N. N. Karle**, et al. (2022). "Breadth of Un-Fresh Air: Comprehensively

Studying Winter Air Pollution Maxima Out West". In: *Bulletin of the American Meteorological Society* 103.12, pp. 911–914. DOI: 10.1175/BAMS-D-20-0017.A.

9. Lara, P., R. M. Fitzgerald, **N. N. Karle**, J. Talamantes, M. Miranda, D. Baumgardner, and W. R. Stockwell (2022). "Winter and wildfire season optical characterization of black and brown carbon in the El Paso-Ciudad Juárez airshed". In: *Atmosphere* 13.8, p. 1201. DOI: 10.3390/atmos13081201.
8. Fitzgerald, R. M., **N. N. Karle**, P. Lara, J. Polanco, and W. R. Stockwell (2021). "Optical Measurements of Particulate Matter in the El Paso–Juárez Region: Natural Mineral Dust and Soot". In: *The Magazine for Environmental Managers*.
7. Hallar, A. G., S. S. Brown, E. Crosman, K. C. Barsanti, C. D. Cappa, I. Faloona, J. Fast, H. A. Holmes, J. Horel, J. Lin, **N. N. Karle**, et al. (2021). "Coupled air quality and boundary-layer meteorology in Western US basins during winter: design and rationale for a comprehensive study". In: *Bulletin of the American Meteorological Society* 102.10, E2012–E2033. DOI: 10.1175/BAMS-D-20-0017.1.
6. **Karle**, **N. N.**, R. M. Fitzgerald, R. K. Sakai, D. W. Sullivan, and W. R. Stockwell (2021). "Multiscale atmospheric emissions, circulation and meteorological drivers of ozone episodes in El Paso-Juárez airshed". In: *Atmosphere* 12.12, p. 1575. DOI: 10.3390/atmos12121575.
5. **Karle**, **N. N.**, S. Mahmud, R. K. Sakai, R. M. Fitzgerald, V. R. Morris, and W. R. Stockwell (2020). "Investigation of the successive ozone episodes in the El Paso–Juarez region in the summer of 2017". In: *Atmosphere* 11.5, p. 532. DOI: 10.3390/atmos11050532.
4. Mahmud, S., **N. N. Karle**, R. M. Fitzgerald, D. Lu, N. R. Nalli, and W. R. Stockwell (2020). "Intercomparison of Sonde, WRF/CAMx and Satellite Sounder Profile Data for the Paso Del Norte Region". In: *Aerosol Science and Engineering* 4.4, pp. 277–292. DOI: 10.1007/s41810-020-00075-1.
3. Reveles, J. U., **N. N. Karle**, T. Baruah, and R. R. Zope (2016). "Electronic and structural properties of C60 and Sc3N@ C80 supported on graphene nanoflakes". In: *The Journal of Physical Chemistry C* 120.45, pp. 26083–26092. DOI: 10.1021/acs.jpcc.6b07405.
2. **Karle**, **N. N.** and K. M. Kolwankar (2015). "CHARACTERIZATION OF THE IRREGULARITY OF A TERRAIN USING FRACTAL DIMENSION OF LAKES'BOUNDARIES". In: *Fractals* 23.02, p. 1550002. DOI: 10.1142/S0218348X15500024.
1. Kolwankar, K. M. and **N. N. Karle** (2014). "A simple method to estimate fractal dimension of mountain surfaces". In: *arXiv preprint arXiv:1412.2747*. DOI: 10.48550/arXiv.1412.2747.

Dissertation

1. **Karle**, **N. N.** (2021). "Studies of the planetary boundary layer and their impact on air pollution in a semi-arid region with complex terrain". PhD thesis. The University of Texas at El Paso.

Master's Theses

2. **Karle**, **N. N.** (2017). "DFT Study of Adsorption of Trimetallic Endohedral Fullerenes on Graphene". M.S. thesis. The University of Texas at El Paso.
1. **Karle**, **N. N.** (2014). "Assembly & Characterization of Resistive Plate Chambers". M.Sc. thesis. Mumbai, India: Mumbai University.

Manuscripts Submitted and Under Review

4. Manaswitha, J., S. Schmitt, Z. Morse, A. Nesensen, S. Jadhav, **N. N. Karle**, and Y. Kim (2027). "An Internet-of-Things Platform and Readiness Evaluation for AI Analysis of Air Quality Monitoring". In: *2027 IEEE 17th Annual Computing and Communication Workshop and Conference (CCWC)*. Paper submitted.

3. Sharma, P., S. Jadhav, T. Danielson, Y. Kim, and **N. N. Karle** (2026). "Real-Time Groundwater Monitoring with Geo-spatial Dissolved Oxygen Prediction Using Machine Learning". In: *Journal of Water Process Engineering*. Manuscript submitted.
2. Abe, A., **N. N. Karle**, S. Chiao, and Z. Yang (2026). "Process-Based Evaluation of MPAS-A Planetary Boundary Layer Schemes for Dryline-Cold-Front Convection Initiation". In: *Monthly Weather Review*. Manuscript submitted.
1. Turner, D. D., **N. N. Karle**, G. N. Raghunathan, T. Heus, and D. Rosenberg (2026). "Non-isotropic, Intermittent Mixing at the Top of the Convective Boundary Layer". In: *Journal of Geophysical Research: Atmospheres*. Manuscript submitted.

Conference Presentations

Oral Presentations

- **Karle, N. N.**, Turner, D. D., Rosenberg, D. L., Chiao, S., and Jankov, I. (2026). Higher-Order Turbulence Statistics in the Convective Mixed Layer: Insights from Raman Lidar During Ramp-Up and Quasi-Stationary Periods. *American Meteorological Society (AMS) Annual Meeting*, Houston, Texas.
- **Karle, N. N.**, Mahmud, S., Fitzgerald, R. M., Estes, M., Walter, P. J., and Morris, G. (2021). Analysis of Boundary Layer Heights Using a Ceilometer and Models in the El Paso–Juarez Airshed. *American Meteorological Society (AMS) Annual Meeting*, Virtual.
- **Karle, N. N.**, Mahmud, S., Fitzgerald, R. M., Sakai, R. K., Stockwell, W. R., Demoz, B., and Morris, V. R. (2019). Analysis of regional meteorology during ozone episodes in the El Paso–Juarez Airshed (summer 2017). *American Meteorological Society (AMS) Annual Meeting*, Phoenix, Arizona.

Poster Presentations

- **Karle, N. N.**, Turner, D. D., Rosenberg, D., and Chiao, S. (2026, 12 August). Revisiting Inertial-Subrange Scaling in the Convective Boundary Layer Using Raman Lidar Observations and Optimal Estimation. *2026 ARM/ASR Joint User Facility and PI Meeting*, Virtual.
- Peng, T., **Karle, N. N.**, Chiao, S., Liou, Y., and Wang, S. (2026). Seasonal Variability and Urban–Suburban Contrasts in the Planetary Boundary Layer Heights: Insights from CL61 Ceilometer and HRRR Model Evaluation. *The 17th International Conference on Mesoscale Convective Systems (ICMCS-XVII)*, Magong City, Penghu, Taiwan.
- **Karle, N. N.**, Sakai, R. K., Yang, Z., Flores, A., Rossi, R. D., Medina, J. R. V., Demoz, B., and Chiao, S. (2026). Investigating planetary boundary layer transitions during the 2025 JCRDP Intensive Observation Period. *American Meteorological Society (AMS) Annual Meeting*, Houston, Texas.
- Yang, Z., Sakai, R. K., **Karle, N. N.**, Flores, A., Rossi, R. D., Medina, J. R. V., Demoz, B., and Chiao, S. (2026). Characterizing urban–suburban and diurnal transitions of boundary layer structure over the Baltimore–Washington metropolitan area. *American Meteorological Society (AMS) Annual Meeting*, Houston, Texas.
- Flores, A., Sakai, R. K., Demoz, B., Dreessen, J., Rossi, R. D., **Karle, N. N.**, Yang, Z., Medina, J. R. V., and Chiao, S. (2026). Ozone Analysis from Ozonesondes Launched over the Howard University Beltsville Campus during the Joint Collaborative Research and Development Project. *American Meteorological Society (AMS) Annual Meeting*, Houston, Texas.
- Pokhrel, R., **Karle, N. N.**, Demoz, B., and Chiao, S. (2026). High-Resolution Weather Forecasting for Coastal Urban Environments: A Case Study from the Washington-Baltimore-Chesapeake Bay Region. *American Meteorological Society (AMS) Annual Meeting*, Houston, Texas.

– Abe, A., **Karle, N. N.**, and Chiao, S. (2026). Evaluating UFS and MPAS Forecast Performance of a High-Impact Severe Storm Initiated by Dryline Cold Front Interaction. *American Meteorological Society (AMS) Annual Meeting*, Houston, Texas.
– **Karle, N. N.**, Turner, D. D., Rosenberg, D. L., Chiao, S., and Jankov, I. (2025). Characterizing Turbulence in Quasi-Stationary Convective Mixed Layers Using Water Vapor Raman Lidar Profiles. *American Meteorological Society (AMS) Annual Meeting*, New Orleans, Louisiana.
– **Karle, N. N.**, Turner, D. D., Rosenberg, D. L., Chiao, S., and Jankov, I. (2024). Quantifying Higher-Order Statistical Moments in Quasi-Stationary Convective Mixed Layers Using Water Vapor Turbulence Profiles. *American Geophysical Union (AGU) Annual Meeting*, Washington, D.C.
– **Karle, N. N.**, Chiao, S., Laney, J., Barham, J., and Lundeen, G. (2024). Assessment of Long-term Variability in Rainfall Distribution and Extreme Flash Flood Events in the Semi-Arid Region of El Paso, Texas. *104th American Meteorological Society (AMS) Annual Meeting*, Baltimore, Maryland.
– Sakai, R. K., Chiao, S., Flores, A., **Karle, N. N.**, and Demoz, B. (2024). Investigating Turbulent Exchange of Scalars within the Stable Boundary Layer over Urban and Semi-Urban Research Sites. *104th American Meteorological Society (AMS) Annual Meeting*, Baltimore, Maryland.
– **Karle, N. N.**, Sakai, R. K., Fitzgerald, R. M., Chiao, S., and Stockwell, W. R. (2023). Wind–Terrain Effects on Local Circulation and Meteorological Drivers of Ozone Episodes in the El Paso–Juarez Airshed. *103rd American Meteorological Society (AMS) Annual Meeting*, Denver, Colorado.

Invited Talks

– **Keynote Speaker**, *Claflin University*, Orangeburg, South Carolina, 30 April 2024.
– **Keynote Speaker**, *UTEP* Annual Graduate Research Expo (GradExpo), 16 April 2024.
– **Guest Speaker**, *NASA Goddard Space Flight Center (NGSFC)*, Monthly Research Seminar, 16 March 2023.
– **Guest Speaker**, *NOAA Center for Weather and Climate Prediction (NCWCP)* – University of Maryland Mini-Conference, College Park, MD, 13 March 2023.
– **Guest Speaker**, event organized by *Career Center, UTEP*, 13 October 2020.
– **Panelist**, event organized by *Office of University Relations, UTEP*, 17 August 2020.
– **Guest Speaker**, *Ramniranjan Jhunjhunwala College*, Mumbai, India, 15 January 2020.
– **Guest Speaker**, University Faculty and Staff event organized by *Department of Student Affairs, UTEP*, 14 November 2019.
– **Panelist**, a round table organized by *Graduate School, UTEP* Grad Expo, 8 November 2019.
– **Guest Speaker**, seminar organized by *Department of Student Affairs, UTEP*, 17 October 2019.
– **Guest Speaker**, *NOAA Earth Systems Research Laboratory (ESRL)*, Boulder, CO, 17 May 2018.

Service to Profession

– **Review Panelist**, *NASA ROSES–2025 A.11, Earth Science Early Career Investigator Program (ECIP)*, 2026.
– **Guest Editor**, *Planetary Boundary Layer Dynamics and Their Influence on Atmospheric Pollution*, *Atmosphere*.
– **Board Member**, *Air and Waste Management Association, South Atlantic States Section (SASS) Chapter*, 2024.
– **Guest Editor**, *Special Issue Tropical Cyclones Dynamics and Forecast System*, *Climate*.
– **Peer Reviewer** for atmospheric and environmental science journals, including *Bulletin of the American Meteorological Society (BAMS)*, *Atmosphere*, *Climate*, *Journal of Applied Meteorology and Climatology (JAMC)*, *Aerosol and Air Quality*, *Geophysical Research Letters*, *Earth and Space Science*,

and *Energy*.
- **President**, *UTEP, Graduate Student Assembly (GSA)*, June 2020 – June 2021.
- **Committee Member**, *UTEP COVID-19 Recovery Plan Task Force*, May 2020 – May 2021.
- **Search Committee Member** for the position of Assistant Dean of Student Engagement, *UTEP*, June – August 2020.

Experimental, Computational, and Technical Skills

- **Detector Assembly and Characterization:** M.Sc. thesis research on the assembly and characterization of resistive plate chambers, University of Mumbai, 2014.
- **Weather Balloon Operations:** Extensive experience in the preparation and launch of over 200 weather balloons, including both radiosondes and ozonesondes, for atmospheric and climate data collection and air quality monitoring.
- **Field Campaign Leadership:** Led the Joint Collaborative Research and Development Project (JCRDP) Intensive Observation Period operations, coordinating multi-instrument deployment, measurement planning, and observational workflows for boundary-layer and air-quality research.
- **UAV-Based Atmospheric Measurements:** Operate a customized UAV equipped with Aries Strato instrumentation to collect methane, ethane, and water-vapor measurements for atmospheric and environmental research.
- Proficient in Python, MATLAB, Fortran, and LaTeX.
- **Libraries/Tools:** NumPy, Pandas, Matplotlib, SciPy, and MetPy.
- **Applications:** Data analysis, numerical modeling, and scientific computing.

Honors and Awards

- **Exemplary Teaching Activity Recognition**, Science Education Resource Center (SERC), Carleton College, 2026. *Investigating Wildfire Smoke and Air Quality in the DMV Using MATLAB and EPA Data*. Selected through peer review for inclusion in the *Teaching Computation in the Sciences Using MATLAB Exemplary Collection*.
- Nominated for Atmospheric Radiation Measurement (ARM) User Executive Committee (UEC), October 2024.
- Research article (Karle et al. 2024) selected as the *Atmosphere* journal title story (10.3390/atmos15070740), September 2024.
- UTEP Graduate School Travel Grant for presenting at the American Meteorological Society (AMS) annual meeting, Phoenix, Arizona, January 2019.
- UTEP Physics Department's Dodson Travel Grant for presenting at the American Geophysical Union (AGU) annual meeting, Washington, D.C., December 2018.
- UTEP Physics Department's Dodson Travel Grant for presenting at the National Oceanic and Atmospheric Administration's (NOAA) Earth System Research Laboratory (ESRL), Boulder, Colorado, July 2018.
- Competent Leader award from Toastmasters International, 29 March 2018.
- UTEP Graduate School Travel Grant for presenting at the American Geophysical Union (AGU) annual meeting, New Orleans, Louisiana, December 2017.
- Competent Communicator award from Toastmasters International, 26 July 2017.

Teaching Experience

- **Instructor of Record**, Environmental Studies I, Department of Earth, Environment and Equity (EEE), HU, Spring 2024.
- **Instructor of Record**, Global Climate Change, Interdisciplinary Studies, HU, Fall 2023.
- **Teaching Assistant**, Interdisciplinary Problem Solving, Environmental Science and Engineering, UTEP, Fall 2019.
- **Instructor of Record**, Environmental Sciences and Principles of Earth Sciences, Environmental Science and Engineering, UTEP, Summer 2017.
- **Laboratory Instructor**, Physical Science Labs, Physics Department, UTEP, Fall 2016 – Spring 2017.
- **Math Tutor**, Mathematics Research Center for Students (MaRCS), UTEP, Summer 2016.
- **Laboratory Instructor**, Astronomy Labs, Physics Department, UTEP, Fall 2015 – Spring 2016.

Physics Courses Prepared to Teach: Introductory Mechanics; Thermodynamics; Modern Physics; Experimental Physics/Laboratory Methods; Atmospheric Physics.

Student Mentoring

Undergraduate Students

- Tovel Youngii, Howard University Program in Atmospheric Sciences, HU (Fall 2025 – Present).
- Ritesh Kafle, Computer Science, HU (Spring 2024 – Summer 2025).
- Zion Vaughn, Department of Earth, Environment and Equity (EEE), HU (Fall 2023 – Summer 2024).
- Vianey Villalobos, Department of Physics, UTEP (Spring 2022 – Fall 2023).
- Nohemi Beltran, Geological Sciences, UTEP (Spring 2019 – Fall 2020).

Graduate Students

- Tsung Peng (M.S. student), Howard University Program in Atmospheric Sciences, HU (Fall 2026 – Present).
- Ayoola Abe (Ph.D. student), Howard University Program in Atmospheric Sciences, HU (Spring 2025 – Present).
- Valentina Sanchez (Ph.D. student), The University of Texas at El Paso (Fall 2025 – Present).