

# JACOB Z. TINDAN

Email: [jztindan@psu.edu](mailto:jztindan@psu.edu) ♦ Personal website: <https://jtindan.github.io>

Department of Meteorology and Atmospheric Science

605 Walker Building, University Park, PA 16802

## EDUCATION

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**Penn State University , University Park, PA 16802** **2022-date**  
Degree: PhD in Meteorology and Atmospheric Science

**The University of Kansas (KU), Lawrence, KS 66045** **2020-2022**  
Degree: M.S. in Atmospheric Science (Distinction)

**Abdus Salam Center for Theoretical Physics (ICTP), Italy** **2019-2020**  
Degree: Postgraduate Diploma in Earth System Physics

**Kwame Nkrumah University of Sci. & Tech., (KNUST), Ghana** **2014-2018**  
Degree: B.Sc. in Meteorology & Climate Science (First Class Division)

## RESEARCH AND TEACHING EXPERIENCE

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**Graduate Teaching and Research Assistant** **2022 - date**  
*Department of Meteorology and Atmospheric Science*  
*Walker Building*  
*University Park, PA 16802*  
*Courses taught: Application of Computers to Meteorology (Spring 2023)*

**Graduate Research Assistant** **Summer 2022**  
*Department of Geography and Atmospheric Science*  
*KU, Lawrence, KS 66045*

**Graduate Teaching Assistant** **2021 - 2022**  
*Department of Geography and Atmospheric Science*  
*KU, Lawrence, KS 66045*  
*Courses taught: Physical Geography Lab (fall 2021)*  
*and Introduction to Meteorology Lab (spring 2022)*

**Graduate Research Assistant** **2020 - 2021**  
*Department of Geography and Atmospheric Science*  
*KU, Lawrence, KS 66045*

**Graduate Teaching and Research Assistant** **2018 - 2019**  
*Department of Physics*  
*KNUST, Kumasi - Ghana*

**Intern** **Summer 2016**  
*Ghana Meteorological Agency*  
*Accra - Ghana*

High School Teacher  
Deborah Vision School  
Accra - Ghana

2013 - 2015

## HONORS AND AWARDS

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<b>Best Student Poster Award</b> <i>16th Symposium on Aerosol Cloud Climate Interactions, 104th AMS Annual Meeting</i>	<b>2024</b>
<b>Outstanding Master's Thesis Award</b> <i>College of Liberal Arts and Sciences (KU), Lawrence - USA</i>	<b>2023</b>
<b>Best Performing Student</b> <i>Earth System Physics Section (ICTP), Trieste - Italy</i>	<b>2020</b>
<b>Test for Africa Fellowship</b> <i>KNUST, Kumasi - Ghana</i>	<b>2016 - 2018</b>
<b>S.T Nankani Scholarship</b> <i>KNUST, Kumasi - Ghana</i>	<b>2016</b>

## RESEARCH INTERESTS

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Dust-climate interactions, Climate change and modeling, climate dynamics, data assimilation, and machine learning applications

## PUBLICATIONS

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1. **Tindan, Jacob**, Jenkins, G. S., and Gebremariam, S. Evaluating wrf-chem simulations of present-day (1981–2010) saharan dust aerosols. *Journal of Geophysical Research: Atmospheres* (submitted)
2. **Tindan, Jacob Z**, Pu, B., and Jin, Q. (2025). Trends in daytime and nighttime dust aerosols over the dust belt revealed by iasi. *Science of The Total Environment*, 1004:180742
3. Jenkins, G. S., **Tindan, Jacob**, and Gebremariam, S. (2025). Wrf simulations of future saharan dust concentrations across west africa: Historical and late 21st century. *Journal of Geophysical Research: Atmospheres*, 130(19):e2025JD043892
4. **Tindan, J. Z**, Jin, Q., and Pu, B. (2023). Understanding day-night differences in dust aerosols over the dust belt of north africa, the middle east, and asia. *Atmospheric Chemistry and Physics*, 23(9):5435–5466
5. Gyamfi, C., **Tindan, J. Z.**, and Kifanyi, G. E. (2021). Evaluation of cordex africa multi-model precipitation simulations over the pra river basin, ghana. *Journal of Hydrology: Regional Studies*, 35:100815

## CONFERENCE PRESENTATIONS

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1. **Tindan, Jacob** and Jenkins, G. (2024). Regional simulation of present-day (1981–2010) saharan dust aerosols using wrf-chem. In *105th AMS Annual Meeting: 17th AMS Symposium on Aerosol - Cloud - Climate Interactions*. AMS

2. **Tindan, Jacob**, Sium, G., Rather, M., and Jenkins, G. (2024). Wrf-chem simulations of saharan dust for the periods of 1981–2010, 2041–2060, 2081–2100 using ncep, ecmwf reanalyses, and the cmip5/cmip6 gcms. In *104th AMS Annual Meeting*. AMS
3. **Tindan, Jacob** (2024). Wrf-chem simulation of the 2020 godzilla dust plume in north africa. In *104th AMS Annual Meeting*. AMS
4. Sium, G., Rather, M., Jenkins, G., and **Tindan, Jacob** (2023). Evaluating wrf-chem simulations of saharan dust for the periods of 1981-2010 and 2041-2060 using ncep, ecmwf reanalyses and the cmip6 mpi model. In *Chapman on Climate and Health for Africa*. AGU
5. Colon-Burgos, D., **Tindan, Jacob Z**, Jenkins, G., and Gebremariam, S. (2023). Quantifying the amount of transatlantic african dust transport and its annual and seasonal variability for the period of 2000–2005. In *Chapman on Climate and Health for Africa*. AGU
6. **Tindan, Jacob**, Pu, B., and Jin, Q. (2022). Long-term variations in daytime and nighttime dust activities over the dust belt of north africa, the middle east, and asia in the early 21st century. In *AGU Fall Meeting Abstracts*, volume 2022, pages A55O–1318
7. Granados, P., **Tindan, Jacob**, Garza, V., Harrison, C. S., and Coupe, J. (2022). Understanding observed climate change and urbanization temperature shifts in south texas. In *AGU Fall Meeting Abstracts*, volume 2022, pages GC42U–0973
8. **Tindan, J. Z.**, Jin, Q., and Pu, B. (2022). Understanding the day-night differences in dust activities over the dust belt of North Africa, the Middle East, and Asia. *14th AMS Symposium on Aerosol - Cloud - Climate Interactions*

## TECHNICAL SKILLS AND EXPERTISE

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**Expertise in:** Python, NCL, Fortran 90, R, Unix Shell Scripting, Climate Data Operator (CDO), netCDF Operator (NCO), WRF, WRF-Chem, and high performance computing (HPC)

## PROFESSIONAL MEMBERSHIP

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American Geophysical Union (AGU)	2022 - date
American Meteorological Society (AMS)	2020 - date
Meteorology and Atmospheric Science Graduate Organization	2022 - date
Chi Epsilon Pi (By invitation)	2022 - date

## WORKSHOPS AND SYMPOSIA

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Tropical Meteorology of West and East Africa, African SWIFT Summer School <i>KNUST, Kumasi</i>	Jul 21 - Aug 2, 2019
Pythia Cook-off 2024 <i>Mesa Lab, NCAR</i>	June 11–14

**2024 URSSI Summer School on Research Software Engineering**  
*George Washington University*  
*Washington, DC*

**June 24–26**

## **REFEREES**

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**Available upon request.**