

# Chibueze N. Oguejiofor, Ph.D (In View).

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## Research Interests

Tropical Cyclone dynamics, Air – Sea interaction, High performance computing (HPC), Numerical modeling, Boundary layer dynamics and micrometeorology, Geostatistics, Turbulence modeling.

## Education


- 2020 - Present  **Ph.D., University of Notre Dame, United States** in Civil & Environmental Engineering.  
*Thesis: On The Role of Submesoscale and Turbulent Processes in Tropical Cyclone Intensity Changes.*  
*Committee: Prof. Joannes Westerink, Dr. George Bryan, Dr. Paola Crippa, Prof. David Richter.*
- 2019 - 2020  **Postgrad., Int'l. Center for Theoretical Physics (ICTP), Italy** in Physics (Earth Systems).  
*Thesis: Local and Non-Local PBL schemes in WRF model - Impact on the Intensification of Tropical cyclone Idai.*
- 2018 - 2019  **M.Sc., African Inst. for Mathematical Sciences (AIMS), Rwanda** in Mathematical Sciences.  
*Thesis: Simulating the influence of sea-surface-temperature on tropical cyclones over South-West Indian ocean, using the UEMS-WRF regional climate model.*
- 2012 - 2017  **B.Sc., University of Lagos, Nigeria** in Geophysics (GPA: 4.74/5.0; Top 1%).  
*Award: Overall Best Graduating Student in Geosciences.*

## Employment History


- Aug 2022 - Jan 2023  **National Center for Atmospheric Research (NCAR)** - *Advanced Graduate Visitor, ASP*  
Investigated the role of turbulence in the inner eyewall of intense hurricanes.
- Sept 2018 - Sept 2019  **Indicina Inc.** - *Data Engineer*  
Built and optimized credit risk machine learning (ML) models.
- Feb 2018 - Aug 2018  **KPMG** - *Datascience Intern*  
Built and deployed a machine learning (ML) churn model as an API.
- Nov 2017 - Jan 2018  **Carbon Inc.** - *Datascience Intern*  
Adapted machine learning models on AWS platforms.


## Research Publications

### Peer-Reviewed Journal Publications

- 1 **C. N. Oguejiofor\***, R. Rotunno, P. Sullivan, G. Bryan, and D. Richter, "The role of turbulence in intense tropical cyclones," (*In Prep.*), 2023.
- 2 **C. N. Oguejiofor\***, C. Wainwright, J. Rudzin, and D. Richter, "Onset of tropical cyclone rapid intensification: Evaluating the response to length scales of sea surface temperature anomalies," *Journal of Atmospheric Sciences*, vol. 48, no. 3, pp. 479–492, 2023.  DOI: 10.1175/JAS-D-22-0158.1.

### Thesis





- 1 **C. N. Oguejiofor\*** and G. Guiliani, *Local and Non-Local PBL schemes in WRF model - Impact on the Intensification of Tropical cyclone Idai*. 2020.  URL: [https://drive.google.com/file/d/1F6uRMYqRKw06MXhs9J69rbkEwE8w-\\_F3/view](https://drive.google.com/file/d/1F6uRMYqRKw06MXhs9J69rbkEwE8w-_F3/view).

- 2 C. N. Oguejiofor\* and B. J. Abiodun, *Simulating the influence of sea-surface-temperature on tropical cyclones over South-West Indian ocean, using the UEMS-WRF regional climate model*. 2019.  DOI: 10.48550/arXiv.1906.08298.

## Conference Proceedings

- 1 C. N. Oguejiofor\*, C. Wainwright, J. Rudzin, and D. Richter, "Tropical cyclone rapid intensification: Evaluating the response to length scales of sea surface temperature anomalies,," in *American Meteorological Society's (AMS) 23rd Conference on Air-Sea Interaction - The 103rd AMS Annual Meeting*, Denver, Colorado, 2023.
- 2 C. N. Oguejiofor\*, C. Wainwright, and D. Richter, "Investigating the dependence of hurricane intensity on varying sst patterns using idealized model simulations,," in *Ocean Sciences Meeting (OSM)*, Held Virtually, 2022.
- 3 C. N. Oguejiofor\*, C. Wainwright, and D. Richter, "Investigating the sensitivity of hurricane intensification to length scales of sea surface temperature (sst) heterogeneities,," in *35th Conference on Hurricanes and Tropical Meteorology (AMS)*, New Orleans, Louisiana, 2022.
- 4 C. N. Oguejiofor\*, C. Wainwright, J. Rudzin, and D. Richter, "Tropical cyclone rapid intensification: Influence of multiscale anomalies in sea surface temperature (sst),," in *Front Range Tropical Cyclone Workshop*, Fort Collins, Colorado, 2022.
- 5 C. N. Oguejiofor\*, C. Wainwright, and D. Richter, "Investigating the dependence of hurricane intensity on varying sst patterns using idealized model simulations,," in *American Geophysical Union (AGU)*, New Orleans, Louisiana, 2021.
- 6 C. N. Oguejiofor\*, C. Wainwright, and D. Richter, "Investigating the dependence of hurricane intensity on varying sst patterns using idealized model simulations,," in *Midwest Student Conference on Atmospheric Research (MSCAR)*, Held Virtually, 2021.

## Skills

Coding	 Python, FORTRAN, Shell Scripting, MATLAB, SQL, R, $\text{\LaTeX}$ .
Packages	 Numpy/Scipy, Pangeo, Tensorflow/Keras, xarray, Matplotlib, CDO, NCL/NCO, GRADS.
Models	 Weather research and forecast (WRF), Cloud model (CM1), HYSPLIT, TouchStone <sup>®</sup> .
Computing	 High performance computing (MPI), Cloud Computing (AWS), Version control (Git).

## Awards and Certifications

### Grants & Awards

2023	 <b>Computational Sciences and Visualization Award</b> - Center for Research Computing.	\$1,000
2023	 <b>3rd place oral presentation Award</b> - AMS 23rd Conference on Air-Sea interaction.	
2022 - 2023	 <b>NCAR Fellowship Award</b> - Advanced Study Program (ASP) graduate visitor.	\$15,750
2019	 <b>UNESCO/IAEA Study Grant</b> - International Centre for Theoretical Physics.	€9,600
2017	 <b>AAPG - L. Austin Weeks</b> , Undergraduate Research Grant Program.	\$500
2012 - 2017	 <b>MTN Foundation Scholarship</b> , for outstanding academic performance.	\$450/year



### Professional Certifications

May 2023	 <b>Machine Learning in Weather and Climate (Tier 1)</b> - by ECMWF.
Sept 2022	 <b>Certified AWS Cloud Practioner</b> - by Udemy.




### Teaching

Fall 2022	 <b>CE 30125: Statics</b> (Prof. David. H. Richter).
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## Awards and Certifications (continued)

- 2020; 2021      **CE 30125:** Computational Methods (Prof. David. H. Richter).
- 2021      **CE 40450:** Hydraulics (Prof. Andrew Kennedy).

## Services & Professional Appointments

- 2023 - 2024      **Altius Small Unmanned Aerial System (sUAS)** – data quality control and analysis team (led by Dr. Joe Cione) funded by NOAA and Office of Naval Research (ONR).
- 2022 - 2024      **American Meteorological Society (AMS)**, air-sea interaction committee.
- Summer 2021      **Tropical Cyclone Rapid Intensification (TCRI) Campaign**– aircraft planning team (with Dr. Pete Finocchio) funded by Office of Naval Research (ONR).

## References

**Prof. Joseph H. Fernando**  
Wayne and Diana Murdy Endowed Prof. of Engr.,  
University of Notre Dame,  
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**Dr. George H. Bryan**  
Section head, Meso. and Microscale Meteorology,  
National Center for Atmospheric Research (NCAR),  
gbryan@ucar.edu

**Dr. Richard Rotunno**  
Senior scientist,  
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rotunno@ucar.edu

**Prof. David H. Richter (PhD. Advisor)**  
Civil and Environmental Engineering,  
University of Notre Dame,  
David.Richter.26@nd.edu