Chibueze N. Oguejiofor, Ph.D.

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Education

2020 - 2024 **Ph.D., University of Notre Dame, United States**
Civil & Environmental Engineering and Earth Sciences (Fluid Dynamics).
Dissertation: On the Internal Processes Modulating Tropical Cyclone Intensity: Turbulent Stresses & Submesoscale Dynamics.

2019 - 2020 **Postgrad., International Center for Theoretical Physics, Italy**
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 Institute for Mathematical Sciences, Rwanda**
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**
Geophysics.
Award: Overall Best Graduating Student in Geosciences (GPA: 4.74/5.0; Top 1%).

Professional Experience

July 2024 - Present **Verisk Extreme Event Solutions, Boston, MA**
†Scientist II – Tropical Cyclone Risk Modeller
-Leading the formulation of a new topographical downscaling factor, using large eddy simulations, for improved hurricane wind hazard prediction.

Jan 2024 - Feb 2024 **National Center for Atmospheric Research (NCAR), Boulder, CO**
†Graduate Research Visitor
-On the Dynamics of Conditional Eddies in the Hurricane Eyewall.

Aug 2022 - Jan 2023 **National Center for Atmospheric Research (NCAR), Boulder, CO**
†Advanced Graduate Visiting Fellow, ASP-GVP
-Investigated the role of turbulence in the inner eyewall of intense hurricanes.
-Collaborators: Dr. George Bryan, Dr. Richard Rotunno and Dr. Peter Sullivan.

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**†, G. H. Bryan, and D. H. Richter, "*Near-surface Coherent Structures in an Intense Tropical Cyclone: Conditional Eddies and Vertical Momentum Fluxes.,*" *Journal of Fluid Mechanics (In Prep.)*, 2025.

[2] **C. N. Oguejiofor**†, G. H. Bryan, R. Rotunno, P. P. Sullivan, and D. H. Richter, "*The Role of Turbulence in an Intense Tropical Cyclone: Momentum Diffusion, Eddy Viscosities, and Mixing Lengths.,*" *Journal of the Atmospheric Sciences*, vol. 81 (8), 2024. DOI: 10.1175/JAS-D-23-0209.1.

[3] **C. N. Oguejiofor**†, C. Wainwright, J. Rudzin, and D. H. Richter, "*Onset of Tropical Cyclone Rapid Intensification: Evaluating the response to Length Scales of Sea Surface Temperature Anomalies.*," *Journal of the Atmospheric Sciences*, vol. 80 (8), 2023. DOI: 10.1175/JAS-D-22-0158.1.

Thesis

[1] **C. N. Oguejiofor**†, *On the Internal Processes Modulating Tropical Cyclone Intensity: Turbulent Stresses Submesoscale Dynamics*. 2024. DOI: 10.7274/27260892.v1.

[2] **C. N. Oguejiofor**†, *Local and Non-Local PBL schemes in WRF model - Impact on the Intensification of Tropical cyclone Idai*. 2020.

[3] **C. N. Oguejiofor**†, *Simulating the influence of sea-surface-temperature on tropical cyclones over South-West Indian ocean, using the UEMS-WRF regional climate model*. 2019.

Conference Proceedings

[1] C. N. Oguejiofor†, G. H. Bryan, R. Rotunno, P. P. Sullivan, and D. H. Richter, "The diffusive role of turbulence in an intense tropical cyclone.," in *American Meteorological Society's (AMS) 36th Conference on Hurricanes and Tropical Meteorology*, Long Beach, California, 2024.

[2] C. N. Oguejiofor†, C. Wainwright, J. Rudzin, and D. H. 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.

[3] 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.

[4] 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.

[5] 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.

[6] 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.

[7] 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, MATLAB, SQL, R, Shell Scripting.
Packages	Numpy/Scipy, Tensorflow/Keras, xarray, Matplotlib, CDO, NCL/NCO, GRADS.
Models	Weather research and forecast (WRF), Cloud model (CM1), HYSPLIT, TouchStone®, TouchStoneRe®.
Computing	High performance computing (MPI), Cloud Computing (AWS), Version control (Git).

Awards, Certifications and Appointments

Grants & Awards

2024 **NCAR Graduate Visitor Fund** - Mesoscale & Microscale Met. (MMM) Lab. **$2,000**

2023 **Computational Sciences and Visualization Award** - Center for Research Computing, Notre Dame. **$1,000**

2023 **3rd place oral presentation Award** - AMS 23rd Conference on Air-Sea interaction.

2022 - 2023 **NCAR Fellowship Award** - Advanced Study Program (ASP) graduate visitor. **$15,750**

2019 **UNESCO/IAEA Study Grant** - International Centre for Theoretical Physics. **€9,600**

2017 **AAPG - L. Austin Weeks**, Undergraduate Research Grant Program. **$500**

2012 - 2017 **MTN Foundation Scholarship**, for outstanding academic performance. **$450/year**

Professional Certifications

May 2023 **Machine Learning in Weather and Climate (Tier 1)** - by ECMWF.

Sept 2022 **Certified AWS Cloud Practioner** - by Udemy.

Services & Professional Appointments

2024 **Springer - Advances in Atmospheric Sciences**, Reviewer.

2024 **American Meteorological Society (AMS) 36th Conference on Hurricanes and Tropical Meteorology**, Co-chair - Session 7D: The Air-Sea Transition Zone I.

2023 - 2024 **Altius Small Unmanned Aerial System (sUAS)** – data quality control and analysis team (led by Dr. Joseph J. Cione, NOAA).

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).

Teaching

Fall 2022 **CE 30125**: Statics (Prof. David. H. Richter).

2020; 2021 **CE 30125**: Computational Methods (Prof. David. H. Richter).

2021 **CE 40450**: Hydraulics (Prof. Andew Kennedy).

References

†Dr. George H. Bryan
Section head,
Mesoscale and Microscale Meteorology (MMM),
National Center for Atmospheric Research (NCAR),
gbryan@ucar.edu

†Dr. Richard Rotunno
Senior scientist (MMM),
National Center for Atmospheric Research (NCAR),
Member – National Academy of Sciences,
rotunno@ucar.edu

†Prof. Joseph H. Fernando
Wayne and Diana Murdy Endowed Prof. of Engr.,
Civil and Environmental Engineering,
University of Notre Dame,
Harindra.J.Fernando.10@nd.edu

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