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.

Professional Experience

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***, P. Sullivan, G. Bryan, and D. Richter, "On the existence of coherent turbulent structures in the eyewall of tropical cyclones," *Boundary Layer Meteorology (In Prep.)*, 2024.
2. **C. N. Oguejiofor***, R. Rotunno, P. Sullivan, G. Bryan, and D. Richter, "The role of turbulence in intense tropical cyclones," *Journal of Atmospheric Sciences (In Prep.)*, 2023.
3. **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.

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, LaTeX.
Packages	Numpy/Scipy, Pangeo, Tensorflow/Keras, xarray, Matplotlib, CDO, NCL/NCO, GRADS.
Models	Weather research and forecast (WRF), Cloud model (CM1), HYSPLIT, TouchStone®.
Computing	High performance computing (MPI), Cloud Computing (AWS), Version control (Git).

Awards and Certifications

Grants & Awards

2023	**Computational Sciences and Visualization Award** - Center for Research Computing.	**$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.

Awards and Certifications (continued)

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).

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,
Harindra.J.Fernando.10@nd.edu

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

Dr. Richard Rotunno
Senior scientist,
National Center for Atmospheric Research (NCAR),
rotunno@ucar.edu

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