

# Oluwafisayo (Fisayo) Owolabi

## EDUCATION

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<b>Virginia Polytechnic Institute and State University</b> Ph.D., Aerospace Engineering	Blacksburg, VA May 2026
<b>University of Ilorin</b> M.Sc., Space Physics	Ilorin, Nigeria June 2018
<b>Federal University of Technology</b> B.Tech. (Hons.), Physics with Electronics	Akure, Nigeria December 2009

## RESEARCH EXPERIENCE

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<b>Virginia Polytechnic Institute and State University</b> <i>Graduate Researcher:</i> Space@VT & Aerospace and Ocean Engineering (AOE) Department <i>Laboratory Assistant:</i> Aerospace Structures and Materials Lab <i>Laboratory Assistant:</i> Center for Research and Engineering in Aero/Hydrodynamic Technologies	Blacksburg, VA 2022 – Present 2022 2022
<b>Ionospheric Connection Explorer (ICON) Working Group</b> <i>Graduate Researcher:</i> ICON Dynamics and Temperatures Working Group	2024 – Present
<b>National Space Research and Development Agency   Kogi State University Campus</b> <i>Scientific Officer:</i> Center for Atmospheric Research	Anyigba, Nigeria 2018 – 2021
<b>South African National Space Agency</b> <i>SCOSTEP Visiting Scholar:</i> Space Science Center	Hermanus, South Africa 2016
<b>57 Military Signal Command   Arakan Barracks</b> <i>Radio Programmer:</i> Radio & Telecommunication Laboratory	Lagos, Nigeria 2008

## TEACHING EXPERIENCE

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<b>Virginia Polytechnic Institute and State University</b> AOE 3054 Experimental Methods, <i>Teaching Assistant</i> (Spring 2022) AOE 3154 Astromechanics, <i>Teaching Assistant</i> (Fall 2021, Fall 2022)
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## AWARDS, RECOGNITION & GRANTS

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Doctoral research funding from NSF (NSF/ANSWERS Grant AGS-2149697)	2024, 2025
Doctoral research funding from NASA's ICON Project (NASA Grant 80NSSC22K1018)	2023, 2024
AOE Teaching Assistantship funding	2021, 2022
Japan Society for the Promotion of Science core-to-core program travel award	2016, 2017, 2018
American Geophysical Union (AGU) Max Hammond Student Travel Award (Declined)	2018
VarSITI's Project Role of the Sun and the Middle atmosphere/thermosphere/ionosphere	2017
In Climate (ROSMIC) Highlight on Young Scientists	
Scientific Committee on Solar-Terrestrial Physics (SCOSTEP) Visiting Scholar Award	2015
Science Fair Exhibition Awards with Canon James Anglican College	2013, 2014, 2015
CFGM Award of Excellence for Best Graduating Student	2009

## INVITED SPEAKING ENGAGEMENT

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“Planetary waves multi-day signatures in the ionosphere” at NASA/GSFC Heliophysics Science Division Seminar	October 2022
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## PROJECTS

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### Doctoral Projects

Multiple spacecrafts and physics-based model examination of the response in the thermosphere and ionosphere to quasi 6-day planetary wave events (<https://cedarscience.org/sites/default/files/2025-posters/coup-12-owolabi-oluwafisayo-poster.pdf>) 2024 – Present

- Design a wave model that tracks the non-linear effects of quasi-6-day westward planetary waves in the whole atmosphere using least-square and convolution fitting techniques.
- Compile, analyze, and debug issues with large satellite datasets, including datasets from NASA's Ionospheric Connection Explorer (ICON), Global-scale Observations of the Limb and Disk (GOLD), and Constellation Observing for Meteorology, Ionosphere and Climate-2 (COSMIC-2) satellites.
- Develop a model to simulate visible airglow physical processes at 80 – 400 km altitude of the Earth's atmosphere, explaining 70% of the physical processes.

The role of atmospheric planetary waves in the day-to-day variability of the ionosphere 2022 - 2023  
(<https://agupubs.onlinelibrary.wiley.com/doi/pdfdirect/10.1029/2024JA033160>).

- Developed a novel algorithm that tracks and quantifies the activities of the atmospheric planetary-scale waves in the mesosphere lower-thermosphere region.
- Managed and integrated large datasets from varied sources (including NASA's TIMED-SABER satellite), ensuring high quality data for analysis.

**COSMIC-2 Group Project** June 2023

- Led a team of 3 graduate students to create global Total Electron Content (TEC) maps of the topside ionosphere and plasmasphere using COSMIC-2 satellites geospatial radio occultation data.

**Space Weather Project** August - December 2021  
Special Signatures of the Space Weather Response to the Deep and Awakening Phase of Solar Cycle 24-25

**Orbital Mechanics Group Project** January – May 2022  
Controller Design for Periodic Lagrange Point Orbits

### Machine Learning Projects

- Designed and developed a unique neural network algorithm for cleaning coarse atmospheric dataset. This algorithm can fill observational data gaps and remove spikes in large datasets 2021  
<https://doi.org/10.1016/j.mex.2021.101533>
- Co-developed Nigerian first GNSS ionospheric TEC model using an application of artificial intelligence, reducing the prediction errors to half those of IRI and NeQuick empirical models. 2016  
<http://dx.doi.org/10.1016/j.geog.2016.03.003>

## PUBLICATIONS

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Published 8 research articles with 165 citations and h-index of 6  
(<https://scholar.google.com/citations?user=VWo2m-QAAAAJ&hl=en>)

**Owolabi, O. P.**, England, S. L., & Liu, G. (2025). A long-term survey of the role of atmospheric planetary waves in the day-to-day variability of the ionosphere. *Journal of Geophysical Research: Space Physics*, 130, e2024JA033160. <https://agupubs.onlinelibrary.wiley.com/doi/pdfdirect/10.1029/2024JA033160>

Daniel Okoh, Loretta Onuorah, Babatunde Rabi, Aderonke Obafaye, Kashim Dauda, Najib Yusuf, **Oluwafisayo Owolabi (2022)**, An application of artificial intelligence for investigating the effect of COVID-19 lockdown on three-dimensional temperature variation in equatorial Africa, *Geoscience Frontiers* 13 (2022) 101318, <https://doi.org/10.1016/j.gsf.2021.101318>

**Oluwafisayo Owolabi**, Daniel Okoh, Babatunde Rabi, Aderonke Obafaye, Kashim Dauda (2021), A Median Absolute Deviation-Neural Network Method for Atmospheric Data Cleaning, *MethodsX*, <https://doi.org/10.1016/j.mex.2021.101533>

Bolaji, O.S., E.O. Oyeyemi, O. E. Jimoh, A. Fujimoto, P. H. Doherty, **O.P. Owolabi**, J. O. Adeniyi, E. O. Falayi, E. Abe, R. O. Kaka and A. Kotoye (2019), Morphology of the equatorial ionization anomaly in Africa and Middle

East due to a 2009 sudden stratospheric warming event, *Journal of Atmospheric and Solar-Terrestrial Physics*, 184, 37–56, <https://doi.org/10.1016/j.jastp.2019.01.006>

**Owolabi, O. P.**, Bolaji, O. S., Adeniyi, J. O., Oyeyemi, E. O., Rabiou, A. B., & Habarulema, J. B. (2018). Excursions of interhemispheric field-aligned currents in Africa. *Journal of Geophysical Research: Space Physics*, 123, 6042–6053. <https://agupubs.onlinelibrary.wiley.com/doi/epdf/10.1029/2017JA025083>

Bolaji, O., **Owolabi, O.**, Falayi, E., Jimoh, E., Kotoye, A., Odeyemi, O., Rabiou, B., Doherty, P., Yizengaw, E., Yamazaki, Y., Adeniyi, J., Kaka, R., and Onanuga, K. (2017). Observations of equatorial ionization anomaly over Africa and Middle East during a year of deep minimum, *Ann. Geophys.*, 35, 123–132, <https://doi.org/10.5194/angeo-35-123-2017>

Bolaji, O. S., Oyeyemi, E.O., **Owolabi, O.P.**, Yamazaki, Y., Rabiou, A.B., Okoh, D., Fujimoto A., Amory-Mazaudier C., Seemala G.K., Yoshikawa, A. and Onanuga, O.K. (2016), Solar quiet currents responses in the African sector due to a 2009 sudden stratospheric warming, *Journal of Geophysical Research, Space Physics*, 121, 8055–8065, <https://doi.org/10.1002/2016JA022857>

Daniel Okoh, **Oluwafisayo Owolabi**, Christopher Ekechukwu, Olanike Folarin, Gila Arhiwo, Joseph Agbo, Segun Bolaji, Babatunde Rabiou (2016), A regional GNSS-VTEC model over Nigeria using neural networks: A novel approach, *Geodesy and Geodynamics*, <http://dx.doi.org/10.1016/j.geog.2016.03.003>

## PRESENTATIONS

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**Oluwafisayo Owolabi** and Scott England, “Comparison of ICON-MIGHTI Relative 5577 and 6300 Airglow Brightness with GLOW 5577 and 6300 Simulations, ICON Dynamics and Temperatures Working Group Meeting (21 November 2025)

**Oluwafisayo P. Owolabi**, Scott L. England and the ICON Team, “Multi-instrument examination of the response in the thermosphere and ionosphere to a quasi 6-day planetary westward wave event”. 2025 CEDAR/Gem Workshop, Des Moines, Iowa (22 - 27 June 2025)

**Oluwafisayo P. Owolabi**, Scott L. England and the ICON Team, “An examination of the response in the thermosphere and ionosphere to a planetary wave observed in the middle atmosphere”. AGU Annual Meeting 2024, Washington, DC, USA (9 – 13 December 2024)

**Oluwafisayo P. Owolabi**, Scott L. England and Guiping Liu, “Longitudinal Structures and Quantification of Planetary Wave Induced Variability in the Ionosphere”. AGU Annual Meeting 2023, San Francisco, CA, USA (11 – 15 December 2023)

**Oluwafisayo Owolabi** et al., “Disambiguating the detection of Rossby and Kelvin Wave Signatures in the Ionosphere”. 2023 CEDAR Workshop, San Deigo, California, United States (25 – 30 June 2023)

**Oluwafisayo Owolabi**, Scott England and Guiping Liu, “Disambiguating the detection of Rossby and Kelvin Wave Signatures in the Ionosphere”. 2023 CEDAR Workshop, San Deigo, California, United States (25 – 30 June 2023)

**Oluwafisayo Owolabi**, Gomez Socola Josemaria, and Massoud Alexander, “Total electron Content (TEC) maps from the topside ionosphere and plasmasphere”. UCAR/COSMIC GNSS Remote Sensing Colloquium 2023, University of Colorado (CU) Boulder, Colorado, United States, (4 – 16 June 2023)

**Oluwafisayo Owolabi** “Planetary Waves Multi-Day Signatures in the Ionosphere”. NASA/Goddard Heliophysics Science Division Seminar (12 October 2022)

**Owolabi O. P.**, S. L. England, G. Liu, A. B. Abudushaban, “Modulation of Ionospheric Dynamo by Quasi 6-Day Rossby and Kelvin Waves”. 2022 CEDAR Workshop, Austin, Texas (June 2022)

**Owolabi O. P.**, Bolaji, O.S., Adeniyi J.O., Oyeyemi, E.O., Rabiou A.B. and Habarulema J. B., “Excursions of interhemispheric field-aligned currents in Africa”. The Fourteenth Edition of the Solar-Terrestrial Physics Symposium, York University, Toronto, Canada (July 2018)

**Owolabi, O.P.**, Bolaji, O.S., Adeniyi J. O., Oyeyemi, E.O., Rabi, A.B., Habarulema, J. B., Cilliers, P., and McKinnell, L. “Interhemispheric field-aligned currents characterization in the African sector and its response to a 2009 sudden stratospheric warming event”. Second VarSITI General Symposium, Irkutsk, Russia (July 2017).

**Owolabi, O.P.**, Bolaji, O.S., Oyeyemi, E.O., Yamazaki, Y., Rabi, A.B., Okoh, D., Fujimoto, A., Amory-Mazaudier C., and Yoshikawa, A. “Latitudinal and Longitudinal Ionospheric Sq current Response in the African Chain Due to the 2009 Sudden Stratospheric Warming Event”. First VarSITI General Symposium. Albena, Bulgaria (June 2016)

**Owolabi, O.P.**, Bolaji, O.S., Oyeyemi, E.O., Yamazaki, Y., Rabi, A.B., Okoh, D., and Yoshikawa, A. “The Response of Ionospheric Currents to the Sudden Stratospheric Warming Events Over Africa”. Second Nigerian Geophysical Society International Conference, Sango Ota, Ogun State, Nigeria (March 2015)

## PROFESSIONAL CONFERENCES

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CEDAR Workshop	2022, 2023, 2025
NSF ANSWERS Annual Team Meeting	2023, 2024, 2025
UCAR/COSMIC GNSS Remote Sensing Colloquium	2023
AGU Annual Meeting	2023, 2024
NASA’s Heliophysics Summer School	2022
HAO Colloquium on Advocating Robust Data Comparisons in Space Physics Research	2021
5 <sup>th</sup> International Conference on GPS Radio Occultation 2020 (Online)	2020
The 14th Edition of the Solar-Terrestrial Physics Symposium (STP14)	2018
VarSITI General Symposium and Space Weather Summer School	2016, 2017
URSI-ICTP School on Radio Physics, Trieste, Italy	2017

## PROFESSIONAL SERVICE

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Journal reviewer – AGU Earth and Space Science and Journal of Geophysical Research: Space Physics	2025
Co-convenor at CEDAR Workshop: GDC and Dynamic Science	2023, 2024
Chair at AGU Workshop: Science in the GDC and DYNAMIC Era	2023
AOE Department Faculty-Student 2024 – 2029 Strategic 5-year Planning Committee	2023

## PROGRAMMING SKILLS

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MATLAB and Python

## MEMBERSHIP OF PROFESSIONAL BODIES

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Member, American Geophysical Union

## VOLUNTEERING EXPERIENCE

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AOE Department Faculty & Student Engagement Committee	2023 – 2024
Trained and mentored over a hundred secondary school students on Reproductive Health and HIV/AIDS Prevention and Care	2016
Anchored the Sensitization Exercise on Drug Abuse at Ondo State Maximum Prison	2009

## MEDIA

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<http://www.varsiti.org/> Vol. 14 July 2017, Article, Page 13-14, ROSMIC’s Highlight of Young Scientists