

ALEXANDER A. MASSOUD

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EDUCATION

M.S., Physics, The University of Texas at Dallas	August 2021 - May 2024
B.A., Physics, <i>Summa cum Laude</i> , Ithaca College <i>Minors in English and Mathematics</i>	August 2016 - May 2020

RESEARCH EXPERIENCE

Research Assistant <i>The University of Texas at Dallas</i>	Fall 2021 - Present
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- Visually inspected, analyzed, and published results from radar experiments.
- Developed a numerical model of electrodynamics in the Earth's upper atmosphere.
- Presented research results at multiple professional conferences.

PUBLICATIONS

Massoud, A. A., Rodrigues, F. S., Sousasantos, J., Milla, M. A., Scipion, D. E., Apaza, J. M., Kuyeng, K. M., and Padin, C. 2024. First climatology of F-region UHF echoes observed by the AMISR-14 system at the Jicamarca radio observatory and comparison with the climatology of VHF echoes observed by the collocated JULIA radar. *Journal of Atmospheric and Solar-Terrestrial Physics*, **263**: doi:10.1016/j.jastp.2024.106328.

Sousasantos, J., Rodrigues, F. S., Fejer, B. G., Abdu, M. A., Massoud, A. A., and Valladares, C. E. 2023. On the Role of Mild Substorms and Enhanced Hall Conductivity in the Plasma Irregularities Onset and Zonal Drift Reversals: Experimental Evidence at Distinct Longitudes Over South America. *Earth and Space Science*, **10**(11): doi:10.1029/2023EA003071.

Rodrigues, F. S., Milla, M. A., Scipion, D., Apaza, J. M., Kuyeng, K. M., Sousasantos, J., Massoud, A. A., and Padin, C. 2023. On new two-dimensional UHF radar observations of equatorial spread F at the Jicamarca Radio Observatory. *Earth, Planets and Space*, **75**: doi:10.1186/s40623-023-01876-7.

Massoud, A. A., Shidler, S. A. and Rodrigues, F. S. 2023. A height-dependent climatological model of the equatorial ionospheric zonal plasma drifts (EZDrifts): Description and application to an analysis of the longitudinal variations of the zonal drifts. *Journal of Space Weather and Space Climate*, **13**: doi:10.1051/swsc/2023006.

PRESENTATIONS

Massoud, A. A. and Rodrigues, F. S. (2025), *Ground-based radar studies of equatorial spread F with new two-dimensional observations*. Invited talk at the Air Force Research Laboratory, NM (oral presentation).

Massoud, A. A., Rodrigues, F. S., Kuyeng, K. M., and Scipión, D. E. (2025), *Studies of post-midnight ESF over Jicamarca using two-dimensional radar observations*. Presented at the 2025 CEDAR conference (oral presentation).

Massoud, A. A., Rodrigues, F. S., Kuyeng, K. M., and Scipión, D. E. (2025), *On the vertical plasma drift conditions prior to post-midnight ESF*. Presented at the 2025 CEDAR conference (poster presentation).

Abubakar, A. A., **Massoud, A. A.**, Rodrigues, F. S., Kuyeng, K. M., and Scipión, D. E. (2025), *First climatology results of equatorial vertical drifts derived from new medium power ISR observations at Jicamarca*. Presented at the 2025 CEDAR conference (poster presentation).

Kikuchi, M. T., Gomez Socoloa, J., **Massoud, A. A.**, Perez, C., Terra, P., Brum, C. G. M., and Rodrigues, F. S. (2025), *On the long-term behavior of amplitude scintillation over Puerto Rico: Effects of increasing solar activity during solar cycle 25*. Presented at the 2025 CEDAR conference (poster presentation).

Kikuchi, M. T., Gomez Socoloa, J., **Massoud, A. A.**, Perez, C., Terra, P., Brum, C. G. M., and Rodrigues, F. S. (2025), *On the long-term behavior of unexpected GNSS signal degradation observed over Puerto Rico: Effects of increasing solar activity*. Presented at the 2025 Undergraduate Research Scholar Awards Finals (poster presentation, **third place**).

Kikuchi, M. T., Gomez Socoloa, J., **Massoud, A. A.**, Perez, C., Terra, P., Brum, C. G. M., and Rodrigues, F. S. (2025), *On the long-term behavior of unexpected GNSS signal degradation observed over Puerto Rico: Effects of increasing solar activity*. Presented at the 2025 Undergraduate Research Scholar Awards Semifinals (poster presentation).

Massoud, A. A., Rodrigues, F. S., and Sousasatnos, J. (2025), *Two-dimensional radar studies of post-midnight equatorial F-region irregularity development*. Presented at the 2025 NRSN meeting (**oral presentation**).

Massoud, A. A., Rodrigues, F. S., Sousasatnos, J., Apaza, J. M., Kuyeng, K. M., Scipion, D., and Padin, C. (2024), *Two-dimensional radar studies of post-midnight ESF using AMISR-14*. Presented at the MST16/iMST3 workshop (**oral presentation**).

Massoud, A. A., Rodrigues, F. S., Sousasatnos, J., Apaza, J. M., Kuyeng, K. M., Scipion, D., and Padin, C. (2024), *Two-dimensional UHF radar studies of post-midnight ESF at the Jicamarca Radio Observatory*. Presented at the 2024 CEDAR conference (poster presentation).

Massoud, A. A. and Rodrigues, F. S. (2024), *Radar studies of the near-Earth space environment: Experiences thus far!* Invited talk at Ithaca College physics department Spring 2024 banquet (**oral presentation**).

Massoud, A. A., Rodrigues, F. S., Sousasantos, J., Milla, M. A., Scipion, D., Apaza, J. M., Kuyeng, K. M., and Carlos, P. (2024), *Climatology of Equatorial F-region UHF Coherent Backscatter Radar Echoes and Comparison with Colocated VHF Radar Observations*. Presented at the 2024 NRSN URSI conference (**oral presentation**).

Massoud, A. A., Shidler, S., and Rodrigues, F. S. (2023), *A height-dependent climatological model of the equatorial ionospheric zonal plasma drifts (EZDrifts): Description and application to an analysis of spatial variabilities in the neutral wind dynamo*. Presented at the 2023 AGU conference (poster presentation).

Massoud, A. A., Rodrigues, F. S., Sousasantos, J., Milla, M. A., Scipion, D., Apaza, J. M., Kuyeng, K. M., and Carlos, P. (2023), *On new two-dimensional observations of the near-Earth space environment at low-latitudes using an Ultra-High Frequency (UHF) radar system*. Presented at the 2023 UT Dallas Research Day Poster Competition.

Massoud, A. A., Rodrigues, F. S., Sousasatnos, J., Milla, M. A., Scipion, D., Apaza, J. M., and Kuyeng, K. M. (2023), *Seasonal and solar flux variations in the occurrence of equatorial F-region UHF radar echoes observed by AMISR-14 at the Jicamarca Radio Observatory*. Presented at the 2023 CEDAR conference (poster presentation).

Massoud, A. A., S. Shidler, and F. Rodrigues. (2022), *EZDrifts: An analytic global model of the Equatorial F-region Zonal plasma Drifts*. Presented at the 2022 CEDAR conference (poster presentation).

GRANTS AND FELLOWSHIPS

DoD NDSEG Fellow, 2023-Present

Awarded by the Department of Defense to pay for full tuition, a monthly stipend, a travel budget, and annual health insurance funding.

Eugene McDermott Graduate Fellow, 2023-Present

Awarded by UT Dallas to accelerate professional opportunities during graduate study.

Award amount: **\$10,000** discretionary research budget, annually

NASA/Texas Space Grant Consortium Fellow, 2022-23

Awarded by TSGC to supplement full-time graduate study in space research.

Award amount: **\$5,000**

HONORS, AWARDS, AND PROFESSIONAL DEVELOPMENT

Fall 2024	iMST Lidar and Radar School , 2024 MST16/iMST3 workshop
Summer 2024	Student Poster Honorable Mention , 2024 CEDAR
Summer 2024	ISR Workshop , 2024 CEDAR
Summer 2023	Student Poster Honorable Mention , 2023 CEDAR
Summer 2023	GNSS RS Colloquium , CU Boulder
Summer 2022	ISR Summer School , Boston University

PROFESSIONAL SERVICE

Session chairing

2025 NRSM Co-chair of *Space Weather II* session

2025 NRSM Co-chair of *Space Weather I* session

Peer-review

- 2024-Present Journal of Geophysical Research: Space Physics

Miscellaneous

- 2025 April Delegate judge for Undergraduate Research Scholar Awards

MENTORING

Undergraduate

Fall 2024-Present Anthony Abubakar, Computer Science

Fall 2024-Present Minori Kikuchi, Physics

OTHER EXPERIENCE

Graduate Students in Physics Club Treasurer Fall 2021 and Spring 2022
The University of Texas at Dallas

- **Secured funding for social events** organized for faculty and students.

ESO Cycle P108 Proposal

2021

Ithaca College

- **Generated plot of study results** for observation proposal at research-telescope.

PROFESSIONAL AFFILIATIONS

Phi Kappa Phi (National honor society), *Sigma Pi Sigma* (Physics honors society), *Sigma Tau Delta* (English honors society), *Sigma Xi* (Scientific Research Honor Society), American Astronomical Society, American Geophysical Union, USNC-URSI Commission G Early Career Member