

Curriculum Vitae

Name: **Mark Bela Santos Moldwin**
 Present Positions: Professor of Climate and Space Sciences and Engineering
 Arthur F. Thurnau Professor
 Climate and Space Sciences and Engineering
 University of Michigan
 2455 Hayward Street
 Ann Arbor, MI 48109-2143
 (734) 647-3370 mmoldwin@umich.edu
 orcid.org/0000-0003-0954-1770; <http://space.engin.umich.edu/>

Education

DATES	INSTITUTION	DEGREES & DATE
1983-1987	University of Alaska-Fairbanks	B.A. Physics with Honors,
1987-1990	Boston University	M.A. Astronomy, 1990
1987-1992	Boston University	Ph.D. Astronomy, 1993

Recent Honors and Awards

2014	UM Harold R. Johnson Diversity Service Award
2014	UM Provost's Teaching Innovation Prize
2016	AGU Waldo E. Smith Union Award
2017	UM CoE John F. Ullrich Education Excellence Award
2019	US-Norway Fulbright Arctic Chair
2024	Research Corporation STAR Award

Roles Synergistic with NASA, Education and Mentoring

Faculty Director	UM M-Engin program (STEM Academic support program)
Past-President	American Geophysical Union's Education Section
Co-Chair	2013 S&SP Decadal Survey Education and Workforce Working Group
Faculty Affiliate	UM Center for Research on Learning and Teaching
Faculty Advisor	UM College of Engineering Post-Doctoral Fellows (M-PACE)
Co-Chair	2023 S&SP Decadal Survey State of the Profession Panel
Chair	2023 Heliophysics Senior Review
Director	NASA Michigan Space Grant Consortium
Director	UM Office of Postdoctoral Affairs

Recent NASA Funded Research Support (over \$50M total all sources in career)

75) Principal-Investigator, Instrument Concepts for Europa Exploration (ICEE2), NASA, \$920K, 6/1/2019-5/31/2021

- 78) Principal-Investigator, Space weather electromagnetic pulse impacts on modern smart cities and Internet of Things technologies: Observations and modeling of fast and small-scale induced currents in the context of GICs, NASA LWS, \$933,770, 8/1/2020 – 7/31/2024
- 79) Deputy Principal-Investigator, HERMES NEMISIS for NASA Artemis Lunar Gateway, NASA, \$869K, 4/1/2020-12/31/2024
- 80) Principal-Investigator, GDC NEMISIS magnetometer instrument Phase A, NASA \$250K, 10/1/2022-12/30/2022 and instrument Phase A-F, 2/1/2023-12/31/2032, \$21M.

Selected Recent NASA Funded or Mission-Related Publications

Google Scholar h-index = 51

Over 200 publications and six patents with 9500+ total citations

- 207) McCuen², B. A., **Moldwin, M. B.**, Steinmetz, E. S., & Engebretson, M. J. (2023). Automated high-frequency geomagnetic disturbance classifier: A machine learning approach to identifying noise while retaining high-frequency components of the geomagnetic field. *Journal of Geophysical Research: Space Physics*, 128, e2022JA030842. <https://doi.org/10.1029/2022JA030842>
- 208) Hoffmann², A. P., **Moldwin, M. B.**, Strabel², B. P., & Ojeda, L. V. (2023). Enabling boomless CubeSat magnetic field measurements with the Quad-Mag magnetometer and an improved underdetermined blind source separation algorithm. *Journal of Geophysical Research: Space Physics*, 128, e2023JA031662. <https://doi.org/10.1029/2023JA031662>
- 209) A. P. Hoffmann² and **M. B. Moldwin**, (2023) "Wavelet-Adaptive Interference Cancellation for Underdetermined Platforms: Enhancing Boomless Magnetic Field Measurements on Compact Spacecraft," in IEEE Transactions on Aerospace and Electronic Systems, doi: 10.1109/TAES.2023.3315220.
- 210) Gulson-Castillo², Eric R., Benjamin M. Van Doren, Michelle X. Bui, Kyle G. Horton, Jing Li, **Mark B. Moldwin**, Kerby Shedden, Daniel T. Welling, and Benjamin M. Winger. "Space weather disrupts nocturnal bird migration." *Proceedings of the National Academy of Sciences* 120, no. 42 (2023): e2306317120.
- 211) McCuen², B. A., **Moldwin, M. B.**, Engebretson, M. J., Weygand, J. M., & Nishimura, Y. (2023). Magnetosphere–ionosphere drivers of transient-large-amplitude geomagnetic disturbances: Statistical analysis and event study. *Journal of Geophysical Research: Space Physics*, 128, e2023JA031587. <https://doi.org/10.1029/2023JA031587>
- 212) Engebretson, M. J., Yang, L., Steinmetz, E. S., Pilipenko, V. A., **Moldwin, M. B.**, McCuen², B. A., et al. (2024). Extreme geomagnetic disturbances (GMDs) observed in Eastern Arctic Canada: Occurrence characteristics and solar cycle dependence. *Journal of Geophysical Research: Space Physics*, 129, e2023JA031643. <https://doi.org/10.1029/2023JA031643>
- 213) Mark J Engebretson, Sean A Gaffaney, Jesus A Ochoa, Andrei Runov, James M Weygand, Yukitoshi Nishimura, Michael D Hartinger, Vyacheslav A Pilipenko, **Mark B Moldwin**, Martin G Connors, Ian R Mann, Zhonghua Xu, Juan V Rodriguez (2024). Signatures of dipolarizing flux bundles in the nightside auroral zone. *Journal of Geophysical Research: Space Physics*, 129, e2023JA032266. <https://doi.org/10.1029/2023JA032266>

¹Undergraduate Student Advisee, ²Graduate Student Advisee, ³Post-Doctoral Advisee