

Timothy B. Keebler

ORCHID: 0000-0002-4570-6416

tkeebler@umich.edu

Education:

Ph.D. Candidate, University of Michigan

College of Engineering

Department of Climate and Space Sciences and Engineering

Advisor: Gábor Tóth

Master of Science, University of Michigan, 2020

Climate and Space Sciences and Engineering

GPA: 4.00/4.00

Bachelor of Science, Millersville University of Pennsylvania, 2019

Major: Meteorology

Minors: Mathematics; Heliophysics and Space Weather

Magna Cum Laude, University Honors, Departmental Honors

Thesis: Statistical Characterization of Aircraft Static Pressure Defect

GPA: 3.98/4.00

Pennsylvania Governor's School for the Sciences, 2014

Carnegie Mellon University

Educator Experience:

Grader, University of Michigan

Course: SPACE 574 Introduction to Space Physics

August 2021 – December 2021

Graduate Student Instructor, University of Michigan

Course: CLIMATE 102 Extreme Weather

August 2021 – December 2021

Teaching Assistant, University of Michigan

Courses: CLIMATE 102 Extreme Weather

CLIMATE 463 Air Pollution Meteorology

May 2020 – July 2021

SEGUE Module Reviewer

Module: Instrumentation and Measurement
of Surface Precipitation

May 2020 – June 2020

Grader, University of Michigan

Courses: CLIMATE 102 Extreme Weather

CLIMATE 401 Geophysical Fluid Dynamics

September 2019 – December 2020

Teaching Assistant, Millersville University

Courses: ESCI 109 The Atmosphere

ESCI 202 The Earth in Space

August 2017 – May 2019

SEGUE Student Contributor, Millersville University

June 2017 – December 2017

Developed content for meteorological instrumentation online educational modules as part of UCAR's COMET/MetEd program (funded by NSF Grant #1642643)

Research Experience:

Graduate Student Research Assistant, Toth Research Group

September 2019 – present

Running the BATS-R-US space weather model in the Outer Heliosphere physics domain to produce a dataset from 1 AU to 75 AU of solar wind propagation in the ecliptic plane. Output is publicly accessible via the MSWIM2D dataset at <http://csem.engin.umich.edu/mswim2d/>.

Temporary Assistant in Research, Liemohn Research Group

July 2019 – September 2019

Continued work from the PICASSO REU to demonstrate curlometer technique uncertainty with Cluster II mission spacecraft data in the ring current region, culminating in paper publication (currently in preparation)

PICASSO NSF REU (NSF Grant #1659248)

May 2018 – August 2018

Characterized errors in curlometer technique applied to the Earth's ring current in the inner magnetosphere using Cluster II mission spacecraft data. This research was presented as posters at the 2018 AGU Fall Meeting and 2019 AMS Annual Meeting.

SEAR-MAR Educational Deployment of the UWKA

November 4-18, 2017

Research Aircraft

Deployed a suite of meteorological ground instrumentation including stationary and mobile rawinsondes, acoustic sodar, and flux tower. Designed, planned, or modified ten flight tracks, and served as copilot for RF10: Static Pressure Calibration. The data from this flight was used for the undergraduate senior thesis 'Statistical Characterization of Aircraft Static Pressure Defect.' Other data in this project resulted in a talk at the 2018 Northeastern Storm Conference.

Presentations/Publications:

Keebler, T., Tóth, G., Opher, M., and Zieger, B. 2021. MSWIM2D: Two-dimensional data-driven Michigan Solar Wind Model for the outer heliosphere. Working Group 2: Interplanetary and Heliosphere Poster Session, Solar Heliospheric and INterplanetary Environment Workshop (SHINE), virtual, 2-5 August 2021.

Keebler, T., Liemohn, M., and Ganushkina, N. 2021. Cluster curlometry limitations in the ring current region. Preprint on <https://essoar.org> (2021) DOI: 10.1002/essoar.10502307.2

Keebler, T. and Tóth, G. 2021: "MSWIM2D Outer Heliosphere Solar Wind Dataset" presented virtually at WHPI Show and Tell Tutorial Session, 15 April 2021. Recording available at https://whpi.hao.ucar.edu/whpi_showandtell.php.

Keebler, T. and Liemohn, M., 2019: Uncertainty in Curlometer Technique: Cluster Ring Current Observations. 10th Annual Graduate Student Symposium, Michigan Institute for Plasma Science and Engineering, University of Michigan, Ann Arbor, MI, 13 November 2019.

Keebler, T. and Liemohn, M., 2019: Uncertainty in Curlometer Technique: Cluster Ring Current Observations. Emerging Graduate Student Research Poster Session, Engineering Research Symposium, College of Engineering, University of Michigan, Ann Arbor, MI, 8 November 2019.

Keebler, T. and Liemohn, M., 2019: Ring Current Density Error Analysis Using Curlometry. 16th Conference on Space Weather, 99th American Meteorological Society Annual Meeting, Phoenix, AZ, 6-10 January 2019.

Keebler, T. and Liemohn, M., 2018: Ring Current Density Error Analysis Using Curlometry. Magnetospheric Physics, Understanding Earth's Ring Current: Measurements, Theory, and Modeling II Poster Session, American Geophysical Union Fall Meeting, Washington, D.C., 9-14 December 2018.

Keebler, T., Eberwein, C., Cook, M., and Clark, R., 2018: Space Weather Academic Network (SWAN). Ionosphere Research and Applications and General Space Weather Services and Education Poster Session, Space Weather Workshop, Westminster, CO, 16-20 April 2018.

Keebler, T. and Billings, B., 2018: "Gravity Waves Observed during the SEAR-MAR UW King Air Deployment" presented at Mesoscale Meteorology Session, 43rd Annual Northeastern Storm Conference, Saratoga Springs, NY, 9-11 March 2018.

Keebler, T. and Clark, R., 2018: Statistical Methods for Determination of Aircraft Static Pressure Defect. Student Poster Session, 17th Annual AMS Student Conference, 98th American Meteorological Society Annual Meeting, Austin, TX, 6-12 January 2018

Keebler, T., Stitely, N., and Clark, R., 2017: High Altitude Balloon Payload Design using Customizable Data Acquisition. Ionosphere Research and Applications and General Space Weather Services and Education Poster Session, Space Weather Workshop, Interlocken, CO, 1-5 May 2017.

Austin, J., Catalano, R., Finger, L., Haag, R., Huffman, N., **Keebler, T.**, and Kratzer, M., 2014: A Study of High Temperature Superconductivity with Chemical Substitutions in the 123 and 2223 Systems. Journal of the Pennsylvania Governor's School for the Sciences.

Grants and Fellowships:

University of Michigan College of Engineering Board of Reagents Fellowship, 2019

AMS Space Weather Student Travel Grant, 2019

NASA Pennsylvania Space Grant Consortium Undergraduate Scholarship, 2017-2018

Professional Memberships:

American Geophysical Union, student member