

# Denny M. Oliveira, Ph.D.

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Assistant Research Scientist  
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## Personal

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Born on June 4, 1978, São Paulo, Brazil

**Languages:** Portuguese (native), English (fluent), Spanish (intermediate)

**Nationality:** Brazilian

**Immigration status:** Legal permanent resident of the United States

## Current positions held

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<b>Oct/2018 - present</b>	Assistant Research Scientist University of Maryland, Baltimore County, Baltimore, MD NASA Goddard Space Flight Center, Greenbelt, MD
<b>Aug/2021 - present</b>	Adjunct Professor of Physics American University, Washington, D.C.

## Education

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<b>Ph.D., Physics, May 2015</b>	University of New Hampshire, Durham NH Dissertation Title: <i>"A study of interplanetary shock geoeffectiveness controlled by impact angles using simulations and observations"</i> Advisor: Joachim Raeder, Professor Financial support: NASA, NSF, Air Force Office of Sponsored Research.
<b>M.Sc., Physics, June 2010</b>	University of São Paulo, São Paulo, Brazil Dissertation Title: <i>"Lorentz symmetry breaking in quantum electrodynamics"</i> Advisor: Adílson José da Silva, Professor Financial support: CNPq
<b>B.Sc., Physics, June 2005</b>	University of São Paulo, São Paulo, Brazil Dissertation Title: <i>"Classical theory of fields"</i> Advisor: Adílson José da Silva, Professor Financial support: CNPq

## Previous employment record

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<b>Aug 2015 - Sep 2018</b>	Post-doctoral Research Associate, University of Maryland, Baltimore County, Baltimore, MD
<b>Jan 2012 - May 2015</b>	Research Assistant, University of New Hampshire, Durham, NH

Aug 2011 - May 2012	Teaching Assistant, University of New Hampshire, Durham, NH
Feb 2008 - Dec 2010	Teacher of Physics, Bandeirante University of São Paulo, São Paulo, Brazil
Jan 2010 - Dec 2010	Teacher of Physics, Colégio Exatus (high school), São Paulo, Brazil
Jan 2003 - Dec 2003	Teacher of Physics, Colégio Casagrande (high school), São Paulo, Brazil
Jul 2006 - May 2007	Teaching Assistant, University of São Paulo, São Paulo, Brazil
Jul 2006 - May 2010	Research Assistant, University of São Paulo, São Paulo, Brazil

## Honors, awards and other recognition

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Jan 2020	Best science story award for the poster " <i>Revisiting Carrington event with archival materials: Spatiotemporal Evolutions of a Large Sunspot Group and Great Auroral Storms</i> " presented at NASA/GSFC's 13th Annual Sciences & Exploration Directorate New Year's Poster Party.
Nov 2018	AGU/NSF Travel Grant to attend the 2019 Chapman Conference on Scientific Challenges Pertaining to Space Weather Forecasting.
Aug 2014	UNH Graduate School Travel Grant.
Jul 2005	CNPq (National Council for Scientific and Technological Development, Brazil) Undergraduate Research Grant

## Programming skills

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**Programming languages and data visualization:** Python, IDL, R, FORTRAN, Gnuplot

**High-performance computing (HPC) experience:** extensive experience with Trillian, a Cray XE6m-200 supercomputer at the University of New Hampshire to run the OpenGGCM code.

## Teaching experience

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### American University

Fall semester, 2021	Astronomy with Laboratory (PHYS 160)
Summer term, 2022	Principles of Physics I and II (PHYS 110, PHYS 210)

### University of New Hampshire

Spring semester, 2012	Introduction to Modern Astronomy I, PHYS 405
Fall semester, 2011	Introduction to Physics I, PHYS 401

### Bandeirante University of São Paulo

Feb 2010 - Dec 2012	Courses: Electrical, Mechanical and Civil Engineering Introduction to Physics I (Classical Mechanics, theory and lab) Introduction to Physics III (Electricity & Magnetism, theory and lab)
Apr 2009 - Dec 2009	Course: Biological Sciences Biostatistics Elementary Math I History of Science

<b>Feb 2008 - Jun 2010</b>	Course: Physics Methodology of High School Physics Teaching History of Science Introduction to Physics
<b>Feb 2008 - Dec 2009</b>	Course: Mathematics Linear Algebra Differential and Integral Calculus I Introduction to Physics History of Science
<b>Feb 2008 - Dec 2008</b>	Course: Chemistry Differential and Integral Calculus I

### University of São Paulo

<b>Feb 2007 - Jun 2007</b>	Course: Physics Introduction to Quantum Mechanics II, FMA404
<b>Jul 2006 - Dec 2006</b>	Course: Physics Introduction to Quantum Mechanics I, FMA403

### Colégio Exatus (high school)

<b>Jan 2010 - Dec 2010</b>	Course: High School Elementary Physics
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### Colégio Casagrande (high school)

<b>Jan 2003 - Dec 2003</b>	Course: High School Elementary Physics
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## Professional memberships

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<b>2013 - present</b>	Member of the American Geophysical Union (AGU)
<b>2013 - present</b>	Member of the NSF Division of Atmospheric Sciences Geospace Environment Modeling (GEM)
<b>2018 - present</b>	Fellow of the American Association for the Advancement of Science (AAAS)
<b>2019 - present</b>	Member of the Sociedade Brasileira de Geofísica Espacial e Aeronomia (SBGEA, Brazilian Society of Space Geophysics and Aeronomy)
<b>2022 - present</b>	Member of the European Geophysical Union (EGU)

## Other education and training

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### Summer Schools

1. Summer School on Plasma Processes in Space Physics, Boston, MA, July-August 2014.
2. Heliophysics Summer School, Boulder, CO, July 2014.
3. CISM Space Weather Summer School, Boulder, CO, June 2013.

## Special training and skill development

1. Responsible Conduct of Research (RCR). University of New Hampshire, Durham, NH, September 2011.
2. Using material resources on the history of science in classroom. Pontifical Catholic University of São Paulo, São Paulo, Brazil, September-October 2010.
3. Teaching development program in quantum mechanics. University of São Paulo, São Paulo, Brazil, August-November 2006.

## International event participations

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### Conferences, workshops and symposiums

1. 103<sup>rd</sup> AMS (American Meteorological Society) Annual Meeting, Denver, CO, Jan 2023 (virtual).
2. AGU (American Geophysical Union) Fall Meeting, Chicago, IL, December 2022.
3. GDC (Geospace Dynamics Constellation) Science Team Meeting, held by NASA Goddard Space Flight Center, Greenbelt, MD, November 2022.
4. GEM (Geospace Environment Modeling) Summer Workshop, Honolulu, HI, June 2022.
5. EGU (European Geophysical Union) General Assembly, Vienna, Austria, 23-27 May 2022 (virtual participation).
6. Machine Learning in Heliophysics (2022 ML-Helio) Conference, Boulder, CO, 21-25 March 2022.
7. 15th Quadrennial Solar-Terrestrial Physics Symposium (STP-15), Navi Mumbai, India, 21-25 February 2022 (virtual).
8. AGU (American Geophysical Union) Fall Meeting, New Orleans, LA, December 2021.
9. XII Latin American Conference on Space Geophysics (Colage 2021), Santiago, Chile, November 2021, virtual.
10. GEM (Geospace Environment Modeling) Summer Workshop, (virtual), June 2021.
11. VIII SBGEA (Simpósio Brasileiro de Geofísica Espacial e Aeronomia) (virtual), held by the Associação Brasileira de Geofísica Espacial e Aeronomia and Universidade do Vale do Paraíba (UNIVAP), São José dos Campos, Brazil, 22-26 March 2021.
12. AGU (American Geophysical Union) Fall Meeting, (virtual), December 2020.
13. SEASONS (Space Environment Applications Systems and Operations for National Security) Conference (virtual), held by the Johns Hopkins University Applied Physics Laboratory, Laurel, MD, 4-5 November 2020.
14. MMS (Magnetospheric Multiscale) 2020 Fall Science Working Team Meeting (virtual), held by NASA Goddard Space Flight Center, Greenbelt, MD, October 2020.
15. MMS (Magnetospheric Multiscale) 2020 Spring Science Working Team Meeting (virtual), held by NASA Goddard Space Flight Center, Greenbelt, MD, April 2020.
16. AGU (American Geophysical Union) Fall Meeting, San Francisco, CA, December 2019.
17. GEM (Geospace Environment Modeling) Summer Workshop, Santa Fe, NM, June 2019.
18. AGU (American Geophysical Union) Chapman Conference on Scientific Challenges Pertaining to Space Weather Forecasting Including Extremes, Pasadena, CA, February 2019.
19. AGU (American Geophysical Union) Fall Meeting, Washington, D.C., December 2018.

20. GEM (Geospace Environment Modeling) Summer Workshop, Santa Fe, NM, June 2018.
21. 1<sup>st</sup> SEEC (Sellers Exoplanet Environments Collaboration) Symposium, Greenbelt, MD, April 2018.
22. AGU (American Geophysical Union) Fall Meeting, New Orleans, LA, December 2017.
23. 13<sup>th</sup> International Conference on Substorms (ICS-13), Portsmouth, NH, September 2017.
24. GEM (Geospace Environment Modeling) Summer Workshop, Portsmouth, VA, June 2017.
25. 15<sup>th</sup> International Ionospheric Effects Symposium, Alexandria, VA, May 2017.
26. AGU (American Geophysical Union) Fall Meeting, San Francisco, CA, December 2016.
27. GEM (Geospace Environment Modeling) Summer Workshop, Santa Fe, NM, June 2016.
28. AGU (American Geophysical Union) Fall Meeting, San Francisco, CA, December 2015.
29. GEM (Geospace Environment Modeling) Summer Workshop, Snowmass, CO, June 2015.
30. AGU (American Geophysical Union) Fall Meeting, San Francisco, CA, December 2014.
31. 12<sup>th</sup> International Conference on Substorms (ICS-12), Ise, Japan, November 2014.
32. GEM (Geospace Environment Modeling) Summer Workshop, Portsmouth, VA, June 2014.
33. AGU (American Geophysical Union) Fall Meeting, San Francisco, CA, December 2013.
34. GEM-CEDAR (Geospace Environment Modeling - Coupling, Energetics and Dynamics of Atmospheric Region) joint Workshop, Boulder, CO, June 2013.
35. GEM (Geospace Environment Modeling) Summer Workshop, Snowmass, CO, June 2013.
36. HPC (Heavy Photon Search) Collaboration Meeting, Newport News, VA, September-October 2011.

## Work presentations (Oliveira in color bold, students in *italic*)

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### Given talks

#### Invited

1. Improving satellite orbital drag prediction in LEO: Benchmarking extreme magnetic storms and understanding density dynamics at altitudes higher than 500 km. (**D. M. Oliveira** and Eftyhia Zesta). Talk given at the Space Weather Research-to-Operations and Operations-to-Research session, 2023 AMS Annual Meeting, Denver, CO, 2023.
2. Perspectives on thermosphere mass density modeling during extreme magnetic storms: A look to the future with an eye in the past. (**D. M. Oliveira**, Eftyhia Zesta, P. M. Mehta, R. L. Licata, M. D. Pilinski, W. Kent Tobiska, Barbara L. Giles, and H. Hayakawa). Talk given at the Space Science Seminar, hosted by NASA's Marshall Space Flight Center. Huntsville, AL, April 2022.
3. Perspectives on thermosphere mass density modeling during extreme magnetic storms: A look to the future with an eye in the past. (**D. M. Oliveira**, Eftyhia Zesta, P. M. Mehta, R. L. Licata, M. D. Pilinski, W. Kent Tobiska, Barbara L. Giles, and H. Hayakawa). Talk given at the Online Seminars on Heliosphysics and Planetary Sciences, hosted by INPE's Space Geophysics Post-graduate Program and Print/CAPES Research in Heliosphysics. São José dos Campos, Brazil, March 2022.
4. Perspectives on the thermosphere response during the extreme storm cycle: Current status of forecasting and specification models (**D. M. Oliveira**, E. Zesta, P. M. Mehta, R. L. Licata, M. D. Pilinski, W. Kent Tobiska, and H. Hayakawa). Talk given at the discussion panel "Understanding the Low-Earth Orbit Environment and its Impacts on Space-Based Technology", 2021 AGU Fall Meeting, New Orleans, LA, December 2021.

5. Factors controlling the magnetosphere response to interplanetary shocks (D. M. Oliveira, J. M. Weygand, E. Zesta, C. M. Ngwira, M. D. Hartinger, Z. Xu, B. L. Giles, D. J. Gershman, M. V. D. Silveira, and V. M. Souza). Talk given at the "Space Plasma Physics and Nonlinear processes in Space Geophysics", XII Latin American Conference on Space Geophysics (Colage 2021), virtual (held in Chile), November, 2021.
6. Satellite Orbital Drag During Extreme Geomagnetic Storms: How Accurate are our Predictions? (D. M. Oliveira). Talk given at the 2019 AGU Chapman Conference on Scientific Challenges Pertaining to Space Weather Forecasting Including Extremes, Pasadena, CA, February 2019.
7. Impact angle controls geoeffectiveness of interplanetary shocks: Current results and perspectives (D. M. Oliveira, E. Zesta, A. J. Halford, D. M. Arel, J. Raeder, C. M. Ngwira, E. Yizengaw, B. A. Carter, B. T. Tsurutani, J. T. Rudd, A. Bhaskar, and J. W. Gjerloev). Talk given at Space@VT Space Science Seminar at Space@VT, Virginia Tech, Blacksburg, VA, January 2019.
8. Timing thermosphere responses to geomagnetic storms (D. M. Oliveira, E. Zesta, P. W. Schuck, & E. K. Sutton). Talk given at the Heliophysics Director's Seminar (Hosted by the Geospace Physics Laboratory, Code 673), NASA Goddard Space Flight Center, Greenbelt, MD, October 2016.
9. Global time response of thermospheric neutral density to geomagnetic storms (D. M. Oliveira, E. Zesta, P. W. Schuck, E. K. Sutton, & Y. Shi). Talk given at the SSC seminar, University of New Hampshire, Durham, NH, August 2016.
10. Geoeffectiveness of interplanetary shocks: Results of global MHD simulations (D. M. Oliveira & J. Raeder). Talk given on the Dayside Science teleconference, Goddard Space Flight Center, NASA, January 2014.

#### Other

1. Inter-hemispheric comparisons of Poynting flux and particle precipitation during magnetic storms with different intensities (D. M. Oliveira, Eftyhia Zesta, Kevin DELano, and John Dorelli). Talk given in the Magnetosphere-Ionosphere-Thermosphere Coupling During Disturbed Times session, 2022 AGU Fall Meeting, Chicago, IL, December 2022 (virtual).
2. Using historical data to predict satellite orbital drag during magnetic superstorms (D. M. Oliveira, Eftyhia Zesta, Ankush Bhaskar, and Hisashi Hatakawa). Talk given at the Special Session on "Geomagnetism – The connecting link between Sun and Earth" of the 15th Quadrennial Solar-Terrestrial Physics Symposium (STP-15), February 2022.
3. Impact angle control of local intense dB/dt variations during shock-induced substorms (D. M. Oliveira, M. D. Hartinger, Z. Xu, E. Zesta, S. Pilipenko, B. L. Giles, and M. V. D. Silveira). Talk given at the ULF Wave Modeling, Effects, and Applications (UMEA) focus group of the 2021 Virtual GEM (Geospace Environment Modeling) Summer Workshop (virtual), July 2021.
4. Factors controlling the generation of shock-induced ULF waves (D. M. Oliveira, J. M. Weygand, C. M. Ngwira, E. Zesta, M. D. Hartinger, Z. Xu, and M. V. D. Silveira). Talk given at ULF Wave Modeling, Effects, and Applications (UMEA) joint with 3D Ionospheric Electrodynamics and its Impact on MIT Coupling (IEMIT) focus group of the 2021 Virtual GEM (Geospace Environment Modeling) Summer Workshop (virtual), July 2021.
5. Estimating satellite orbital drag during historical magnetic superstorms ( $Dst < -500$  nT) (D. M. Oliveira, E. Zesta, H. Hayakawa & A. Bhaskar). Talk given at the VIII SBGEA (Simpósio Brasileiro de Geofísica Espacial e Aeronomia) at the Space Weather and Sun-Earth Connections session, São José dos Campos, Brazil, March 2021.
6. Can interplanetary shock impact angles control magnetospheric ULF wave activity? (D. M. Oliveira, M. D. Hartinger, Z. Xu, E. Zesta, S. Pilipenko, B. L. Giles & M. V. D. Silveira). Talk given at the MMS (Magnetospheric Multiscale) 2020 Fall Science Working Team Meeting (virtual) in the Shock Physics Science Splinter Session, Greenbelt, MD, October 2020.

7. Ionosphere-thermosphere system heating and cooling during storms (E. Zesta & **D. M. Oliveira**). Talk given at the AGU session Multiscale Coupling and Energy Transfer in the Magnetosphere-Ionosphere-Thermosphere-Mesosphere System I, San Francisco, CA, December 2019.
8. Modeling satellite orbital drag during extreme magnetic storms (**D. M. Oliveira**, E. Zesta, A. Bhaskar, G. Vichare, A. K. Sinha, H. Hayakawa & B. T. Tsurutani). Talk given at the AGU session Physics of Space Weather Interactions and Societal Impacts I, San Francisco, CA, December 2019.
9. Inter-hemispheric comparison of ground magnetic response to interplanetary shocks: Shock impact angle versus timing and intensities of ground magnetic response (Z. Xu, M. D. Hartinger, **D. M. Oliveira**, C. R. Clauer, S. Coyle & D. R. Weimer). Talk given at the AGU session Geospace Research from Polar Environments I, San Francisco, CA, December 2019.
10. Sporadic aurorae, the pariah of Space Weather phenomena (**D. M. Oliveira**, H. Hayakawa, E. Zesta, A. Bhaskar & G. Vichare). Talk given at GEM Summer Workshop, 3D Ionospheric Electrodynamics and Its Impact on the Magnetosphere-Ionosphere-Thermosphere Coupled System, Santa Fe, NM, June 2019.
11. Asymmetric satellite orbital drag effects during magnetic storms (**D. M. Oliveira**, E. Zesta, P. W. Schuck, E. K. Sutton & S. Krauss). Talk given at GEM Summer Workshop, Interhemispheric Approaches to Understand M-I Coupling, Santa Fe, NM, June 2019.
12. Magnetic storms heat the atmosphere and reign satellites (E. Zesta, & **D. M. Oliveira**). Talk given at the Heliophysics Director's Seminar (Hosted by the Geospace Physics Laboratory, Code 673), NASA Goddard Space Flight Center, Greenbelt, MD, March 2019.
13. LEO satellite orbital drag effects caused by CME-driven geomagnetic storms (**D. M. Oliveira** & E. Zesta). Talk given at the Magnetosphere Science Discussion Group (MSDG), NASA Goddard Space Flight Center, Greenbelt, MD, March 2019.
14. Zesta, E., **D. M. Oliveira**, P. W. Schuck, & G. Wilson (2018), Ionosphere-thermosphere system response to extreme geomagnetic storms, in *Final paper abstract number: SM51A-08*, Presented at 2018 AGU Fall Meeting, Washington, D.C., 10-14 Dec.
15. Geomagnetically induced currents and interplanetary shocks (**D. M. Oliveira**, D. Arel, J. Raeder, E. Zesta, C. M. Ngwira, B. A. Carter, E. Yizengaw, A. J. Halford, B. T. Tsurutani, and J. W. Gjerloev). Talk given at the joint session between the InterHemispheric approaches to understand M-I Coupling (IHMIC) and 3D ionospheric electrodynamics and its impact on MIT coupling (IEMIT) focus groups, Santa Fe, NM, June 2018.
16. Geomagnetically induced currents caused by interplanetary shocks with different impact angles and speeds (**D. M. Oliveira**, D. Arel, J. Raeder, E. Zesta, C. M. Ngwira, B. A. Carter, E. Yizengaw, A. J. Halford, B. T. Tsurutani, J. W. Gjerloev). Talk given at the GPHI All Hands Meeting, NASA Goddard Space Flight Center, Greenbelt, MD, April 2018.
17. New insights on the understanding of interplanetary shock impact angle control of magnetosphere-ionosphere response: Shock geo-efficiency and geomagnetically induced currents (**D. Oliveira**, T. Rudd, E. Zesta, A. Bhaskar, A. Halford, D. Arel, J. Raeder, C. Ngwira, E. Yizengaw, & B. Carter). Talk given at the Magnetosphere Science Discussion Group (MSDG), NASA Goddard Space Flight Center, Greenbelt, MD, January 2018.
18. Investigating geomagnetic activity controlled by solar wind with different phase front angles using pointwise mutual information. (T. G. Cameron, B. Jackel, & **D. M. Oliveira**). Talk given at the 13<sup>th</sup> International Conference on Substorms, Portsmouth, NH, September 2017.
19. Statistical study of the thermosphere global time response to magnetic storms caused by CMEs. (**D. M. Oliveira**, E. Zesta, P. W. Schuck, & E. K. Sutton). Talk given at GEM Summer Workshop, 3D Ionospheric Electrodynamics and Its Impact on the Magnetosphere-Ionosphere-Thermosphere Coupled System, Portsmouth, VA, June 2017.

20. Ionosphere-thermosphere global time response to geomagnetic storms (D. M. Oliveira, E. Zesta, P. W. Schuck, H. K. Connor, & E. K. Sutton). Talk given at the 15<sup>th</sup> International Ionospheric Effects Symposium, Alexandria, VA, May 2017.
21. Superposed epoch analysis of thermosphere global time response to geomagnetic storms (D. M. Oliveira, E. Zesta, P. W. Schuck, & E. K. Sutton). Talk given at the Magnetosphere Science Discussion Group (MSDG), NASA Goddard Space Flight Center, Greenbelt, MD, January 2017.
22. Global time response of thermospheric neutral density to geomagnetic storms (D. M. Oliveira, E. Zesta, P. W. Schuck, E. K. Sutton, & Y. Shi). Talk given at the M-ITM meeting, NASA Goddard Space Flight Center, Greenbelt, MD, October 2016.
23. Superposed epoch analysis of the thermosphere global time response to geomagnetic storms (D. M. Oliveira, E. Zesta, P. W. Schuck, E. K. Sutton, & Y. Shi). Talk given at GEM Summer Workshop, Magnetospheric energy input and its role in the MIT coupling focus group, Santa Fe, NM, June 2016.
24. Impact angle control of interplanetary shock geoeffectiveness: Modeling and experimental results (D. M. Oliveira, J. Raeder, B. T. Tsurutani, & J. W. Gjerloev). Talk given at the Radiation Belts Science Discussion Group (RBSDG), NASA Goddard Space Flight Center, Greenbelt, MD, January 2016.
25. Impact angle control of interplanetary shocks using simulations and observations (D. M. Oliveira, J. Raeder, B. T. Tsurutani, & J. W. Gjerloev). Talk given at GEM Summer Workshop, Transient Phenomena at the Magnetopause and Bow Shock and Their Ground Signatures focus group, Snowmass, CO, June 2015.
26. Shocked Magnetotail: ARTEMIS Observations and MHD simulations (X.-Y. Zhou, X.-Z. Zhou, V. Angelopoulos, J. Raeder, D. M. Oliveira, & Q. Shi). Talk given at GEM Summer Workshop, Tail Environment and Dynamics at Lunar Distances focus group, Snowmass, CO, June 2015.
27. Geomagnetic Activity Triggered by Interplanetary Shocks: Controlling Factors (J. Raeder & D. M. Oliveira). AOGS 12th Annual Meeting, 2015, Suntec City, Singapore. Solar and Terrestrial Sciences Session, 2015.
28. Role of symmetry in the geo-effectiveness of interplanetary shocks (D. M. Oliveira). Thesis proposal defense, EOS Space Science Center, University of New Hampshire, May 2014.
29. Role of symmetry in the geo-effectiveness of interplanetary shocks (D. M. Oliveira & J. Raeder). Talk given at GEM Summer Workshop, Transient Phenomena at the Magnetopause and Bow Shock and Their Ground Signatures focus group, June 2015.

## Posters

1. D. M. Oliveira and E. Zesta (2023). The Starlink Event of February 2022: Space Weather Conditions and Subsequent Drag Effects, presented at the 103<sup>rd</sup> AMS Annual Meeting, Denver, CO, 2023.
2. Xu, Z., M. D. Hartinger, D. M. Oliveira, S. Coyle, D. R. Weimer & C. R. Clauer (2021), The correlation study of geomagnetic field variations at interhemispheric conjugate points in high latitude regions, in *Final paper abstract number SM55B-1784*, presented at 2021 AGU Fall Meeting, New Orleans, LA, 12-17 December.
3. Oliveira, D. M., J. M. Weygand, C. M. Ngwira, M. D. Hartinger, Z. Xu, M. V. D. Silveira, E. Zesta & B. L. Giles (2021), Factors controlling local intense  $dB/dt$  variations during shock-induced substorms, in *Final paper abstract number SA25B-1968*, presented at 2021 AGU Fall Meeting, New Orleans, LA, 12-17 December.
4. Brady, B., E. Zesta & D. M. Oliveira (2021), High-latitude Nitric Oxide time response during CME-driven geomagnetic storms, in *Final paper abstract number SM35B-1965*, presented at 2021 AGU Fall Meeting, New Orleans, LA, 12-17 December.



5. **Oliveira, D. M.** & E. Zesta (2020), Nitric oxide response to geomagnetic storms: A superposed epoch analysis study, in *Final paper abstract number SA022-0004*, presented at 2020 AGU Fall Meeting, virtual, 1-17 December.
6. Blake, S. P., A. A. Pulkkinen, P. W. Schuck, A. Glocer, **D. M. Oliveira**, & D. T. Welling (2020), Recreating the Horizontal Magnetic Field at Colaba during the Carrington Event with Geospace Simulations, in *Final paper abstract number SM011-10*, presented at 2020 AGU Fall Meeting, virtual, 1-17 December.
7. Xu, Z., M. D. Hartinger, **D. M. Oliveira**, A. A. Pilipenko, S. Coyle, & C. R. Clauer (2020), Inter-hemispheric asymmetries in the ground magnetic ULF waves response to interplanetary shocks, in *Final paper abstract number SM039-0005*, presented at 2020 AGU Fall Meeting, virtual, 1-17 December.
8. Bhaskar, A., D. G. Sibeck, S.-B. Kang, Q. Schiller, **Oliveira, D. M.** & S. G. Kanekal (2019), Understanding the Evolution of Particle Drift Echoes Induced by Interplanetary Shocks, in *Final paper abstract number SM41C-3249*, presented at 2019 AGU Fall Meeting, San Francisco, CA, 9-13 December.
9. Zesta, E. & **Oliveira, D. M.** (2019), Extreme magnetic storms heat the atmosphere and rein satellites, in *Final paper abstract number SM13E-3347*, presented at 2019 AGU Fall Meeting, San Francisco, CA, 9-13 December.
10. **Oliveira, D. M.**, H. Hayakawa, Y. Ebihara, D. M. Willis, S. Toriumi, T. Iju, K. Hattori, M. Wild, J. Ribeiro, I. Ermoli, A. P. Correia, A. I. Ribeiro, D. J. Knipp & E. Zesta (2019), SM13E-3353 - Revisiting Carrington event with archival materials: Spatiotemporal Evolutions of a Large Sunspot Group and Great Auroral Storms, in *Final paper abstract number SM13E-3353*, presented at 2019 AGU Fall Meeting, San Francisco, CA, 9-13 December.
11. Shi, Y., **D. M. Oliveira**, D. J. Knipp, T. Matsuo & B. J. Anderson (2019), Effects of Nearly Frontal and Highly Inclined Interplanetary Shocks on High-latitude Field-aligned Currents (FACs), in *Final paper abstract number SA43B-3194*, presented at 2019 AGU Fall Meeting, San Francisco, CA, 9-13 December.
12. Komar, C. M., **D. M. Oliveira**, A. T. Bhaskar, & S.-B. Kang (2019), Modeling an Extreme Coronal Mass Ejection and its Consequences for the Earth's Magnetosphere, in *2019 AGU Chapman Conference on Scientific Challenges Pertaining to Space Weather Forecasting Including Extremes*, Pasadena, CA, 11-15 February.
13. Shi, Y., D. J. Knipp, T. Matsuo, **D. M. Oliveira**, & B. J. Anderson (2019), Effects of Frontal and Inclined Interplanetary Shocks on High-latitude Field-aligned Currents Response, in *2019 AGU Chapman Conference on Scientific Challenges Pertaining to Space Weather Forecasting Including Extremes*, Pasadena, CA, 11-15 February.
14. Bhaskar, A., D. G. Sibeck, S. G. Kanekal, H. J. Singer, G. D. Reeves, V. Angelopoulos, & **D. M. Oliveira** (2018), Radiation belt response to fast reverse shock at geosynchronous orbit, in *Final paper abstract number SM31C-1792*, Presented at 2018 AGU Fall Meeting, Washington, D.C., 10-14 December.
15. Kim, H., A. R. Soto-Chavez, K. Takahashi, M. Adewuyi, A. J. Gerrard, L. J. Lanzetta, M. D. Hartinger, & **D. M. Oliveira** (2018), Van Allen Probes observations of symmetric, compressional ULF waves in association with interplanetary shocks, in *Final paper abstract number SM11C-1209*, Presented at 2018 AGU Fall Meeting, Washington, D.C., 10-14 Dec.
16. **Oliveira, D. M.**, D. M. Arel, J. Raeder, E. Zesta, C. M. Ngwira, B. A. Carter, E. Yizengaw, A. J. Halford, B. T. Tsurutani, J. W. Gjerloev, J. T. Rudd, & A. Bhaskar (2018), Causes of unusually high  $dB/dt$  variations at magnetic equatorial regions, in *Final paper abstract number, SM31C-1794*, Presented at 2018 AGU Fall Meeting, Washington, D.C., 10-14 Dec.

17. **Oliveira, D. M.**, D. M. Arel, J. Raeder, E. Zesta, C. M. Ngwira, B. A. Carter, E. Yizengaw, A. J. Halford, B. T. Tsurutani, & J. W. Gjerloev (2018), Geomagnetically induced currents caused by interplanetary shocks with different impact angles and speeds. Poster presentation, GEM Summer Workshop, Santa Fe, NM, 2018.
18. Xu, Z., M. D. Hartinger, **D. M. Oliveira**, C. R. Clauer, & S. Coyle (2018), Inter-hemispheric asymmetries in the ground magnetic response to interplanetary shocks: The role of shock impact angle, in *Final paper abstract number, SM11C-1207*, Presented at 2018 AGU Fall Meeting, Washington, D.C., 10-14 Dec.
19. **Oliveira, D. M.**, E. Zesta, P. W. Schuck, E. K. Sutton, & Y. Shi, North-south asymmetric thermosphere response to geomagnetic storms caused by coronal mass ejections, *Final paper abstract number, SM41A-2682*, Presented at 2017 AGU Fall Meeting, New Orleans, LA, 10-14 Dec.
20. Superposed epoch analysis of the thermosphere global time response to geomagnetic storms (**D. M. Oliveira**, E. Zesta, P. W. Schuck, & E. K. Sutton). Poster Presentation, Abstract SM51C-2499. AGU Fall Meeting, San Francisco, CA, 2016.
21. Superposed epoch analysis of the thermosphere global time response to geomagnetic storms (**D. M. Oliveira**, E. Zesta, P. W. Schuck, E. K. Sutton, & Y. Shi). Poster Presentation, GEM Summer Workshop, Santa Fe, NM, 2016.
22. Superposed Epoch Analysis of Storm Time Orbital Drag (SEASTOD): IRAD Midterm Status Report (P. W. Schuck, E. Zesta, & **D. M. Oliveira**). Poster presentation, Annual IRAD (Internal Research and Development Achievements) Poster Session, NASA Goddard Space Flight Center, Greenbelt, MD, 2016.
23. Superposed epoch analysis of storm time response of the ionosphere–thermosphere (IT) system (**D. M. Oliveira**, E. Zesta, H. K. Connor, Y.-J. Su, E. K. Sutton, C. Y. Huang, D. M. Ober, S. Delay, & P. W. Schuck. Poster Presentation, Abstract SM23B-2565. AGU Fall Meeting, San Francisco, CA, 2015.
24. Geomagnetic activity triggered by interplanetary shocks: The shock impact angle as a controlling factor (**D. M. Oliveira**, J. Raeder, B. T. Tsurutani, & J. W. Gjerloev). Poster Presentation, Abstract SM41B-223. AGU Fall Meeting, San Francisco, CA, 2015.
25. A study of interplanetary shock geoeffectiveness controlled by impact angles using simulations and observations (**D. M. Oliveira**, J. Raeder, B. T. Tsurutani, & J. W. Gjerloev). Poster Presentation, GEM Summer Workshop, Snowmass, CO, 2015.
26. Shocked Magnetotail: ARTEMIS Observations and MHD simulations (X.-Y. Zhou, X.-Z. Zhou, V. Angelopoulos, J. Raeder, & **D. M. Oliveira**). Poster presentation, EGU General Assembly, Vienna, Austria, 2015.
27. Impact angle control of interplanetary shock geoeffectiveness (**D. M. Oliveira** & J. Raeder). Poster Presentation, Abstract SM31D-4226. AGU Fall Meeting, San Francisco, CA, 2014.
28. Observations and MHD Simulations for a Shocked Magnetotail (X.-Y. Zhou, X-Z Zhou, V. Angelopoulos, J. Raeder, & **D. M. Oliveira**, Q. Shi). Poster Presentation, Abstract SM31D-4225. AGU Fall Meeting, San Francisco, CA, 2014.
29. Role of interplanetary shock impact angles in substorm triggering (**D. M. Oliveira** & J. Raeder). Poster Presentation, 12<sup>th</sup> International Conference on Substorms, Ise, Japan, 2014.
30. Geoeffectiveness of inclined interplanetary shocks: Results of numerical MHD simulations (**D. M. Oliveira** & J. Raeder). Poster Presentation, GEM Summer Workshop, Portsmouth, VA, 2014.
31. Role of symmetry in the geo-effectiveness of interplanetary shocks (**D. Oliveira** & J. Raeder). Poster Presentation, Abstract SM41B-2232. AGU Fall Meeting, San Francisco, CA, 2013.
32. OpenGGCM simulation of the April 24, 2009 interplanetary shock interaction with Earth's magnetosphere: effects of symmetry (**D. Oliveira** & J. Raeder). Poster Presentation, GEM Summer Workshop, Snowmass, CO, 2013.

## Mentorship

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### Graduate thesis co-adviser

1. Yining Shi (2019), *High-latitude Ionospheric Field-aligned Currents (FACs) Derived with Inverse and Assimilative Analysis of Iridium Magnetic Perturbation Data: New Insights Gained*, Ph.D. thesis, University of Colorado Boulder, Boulder, Colorado.
2. Taylor G. Cameron (2019), *Planar Structures in the Solar Wind and Their Effect on the Magnetosphere*, Ph.D. thesis, University of Calgary, Calgary, Canada.
3. Andrew B. Baker (2019), *Effect of Interplanetary Shock Impact Angle on the Occurrence Rate and Properties of Pc5 Waves Observed by High-Latitude Ground Magnetometers*, Master's thesis, Virginia Tech, Blacksburg, Virginia.

### Undergraduate research internship

1. Brett Brady, United States Navy Academy (USNA). Project title: Nitric Oxide global time response to magnetic storms with different intensities. May 2017 - June 2017
2. John T. Rudd, United States Navy Academy (USNA). Project title: Space and ground magnetometer response to impacts of interplanetary shocks with different orientations. May 2017 - June 2017
3. Samnang Heng, United States Naval Academy (USNA). Project title: Modeling of radiation belt response to impacts of interplanetary shocks with different impact angles. June 2017 - July 2017.

## Professional service

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### Scientific journal editor

1. Guest editor of the research topic "Understanding the Causes of Asymmetries in Earth's Magnetosphere-Ionosphere System", in *Frontiers in Astronomy and Space Science* (2022). Co-editors: Daniel T. Welling, Hyomin Kim, Christine E. Gabrielse, Jone P. Reistad, and Karl Laundal.

### Scientific journal referee

1. Publisher: American Geophysical Union (AGU), United States  
*Geophysical Research Letters*  
*Journal of Geophysical Research*  
*Space Weather*
2. Publisher: American Institute of Mathematical Sciences (AIMS), United States  
*AIMS Geosciences*
3. Publisher: American Meteorological Society (AMS), United States  
*Journal of Atmospheric and Oceanic Technology*
4. Publisher: European Geophysical Union (EGU), Germany  
*Annales Geophysicae*
5. Publisher: Frontiers Media S.A., Switzerland  
*Frontiers in Astronomy and Space Science*
6. Publisher: Committee on Space Research (COSPAR), France  
*Advances in Space Research*

7. Publisher: Society of Geomagnetism and Earth, Planetary and Space Sciences (SGEPSS), Japan.  
*Earth, Planets and Space*
8. Publisher: Sociedade Brasileira de Física (SBF), Brazil.  
*Brazilian Journal of Physics*  
*Revista Brasileira de Ensino de Física*
9. Publisher: Instituto Nazionale di Geofisica e Vulcanologia, Italy.  
*Annals of Geophysics*
10. Publisher: Indian Association for the Cultivation of Science, India.  
*Indian Journal of Physics*
11. Publisher: Institute for Electrical and Electronics Engineers (IEEE), United States  
*IEEE Access*
12. Publisher: Springer Science+Business Media, Germany  
*Astrophysics and Space Science*
13. Publisher: Institution of Engineering and Technology (IET), England.  
*High Voltage*
14. Publisher: Multidisciplinary Digital Publishing Institute (MDPI), Switzerland  
*Atmosphere*  
*Universe*
15. Publisher: Taylor & Francis, United Kingdom  
*Geomatics, Natural Hazards and Risk*

### Federal grant proposal reviewer

1. NASA Small Business Innovation Research (SBIR) & Small Business Technology Transfer (STTR) Program mail-in reviewer
2. NASA Postdoctoral Program (NPP) mail-in reviewer (multiple times)
3. External NASA proposal grant reviewer
4. Primary and secondary panelist/reviewer of NASA proposal grants

### Convener of scientific meeting sessions

1. Lead proposer, primary convener and liaison of the session SM050 *Understanding Extreme Space Weather for a Modern Technological Society eLightning*, held at the virtual 2020 AGU Fall Meeting, December 2020.
2. Chair of the splinter scientific session *Shock Physics*, held by NASA/GSFC at the virtual MMS (Magnetospheric Multiscale) Spring 2020 Science Working Team Meeting in April 2020.
3. Lead proposer, primary convener and liaison of the session SM001 *Challenges in Extreme Space Weather Research: Science, Applications, and Policies for Rare Events*, held at the 2018 AGU Fall Meeting in Washington, D.C., December 2018.

### Member of organizing committees

1. Member of the local organizing committee for the 1<sup>st</sup> Sellers Exoplanet Environments Collaboration (SEEC) Symposium, held at NASA Goddard Space Flight Center, 9-13 April 2018.

## Special attributions

1. Outstanding Student Poster Award (OSPA) judge. AGU Fall Meeting, 2016-2019.
2. Student poster judge. GEM Summer Workshop, 2017-2019.

## Outreach

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### Volunteer presentations

1. Presented *Understanding Space Weather Events for a Modern Technological Society* at the AVID/STEM Old Mill Middle South College and Career Day, 6th-7th grades, Anne Arundel County, Millersville, MD, 28 February 2020.

### Online news/blog reports

1. Paper Welling et al. (2020), *Numerical simulations of the geospace response to a perfect interplanetary coronal mass ejection*, reported in the *spaceweather.com* science story "What if...A Perfect CME Hit Earth" <https://tinyurl.com/528prz5>
2. Paper Oliveira et al. (2020), *Estimating satellite orbital drag during historical magnetic superstorms*, reported in the NASA LIVE science story "Solar Superstorms of the Past Help NASA Scientists Understand Risks for Satellites" <https://tinyurl.com/y2xu8r6f>
3. Paper Hayakawa et al. (2019), *Temporal and Spatial Evolutions of a Large Sunspot Group and Great Auroral Storms around the Carrington Event in 1859*, reported by the AGU blog GeoSpace (<https://bit.ly/2N860uc>).

## Federal research funding

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### Awarded proposals

1. NASA GDC (Geospace Dynamics Constellation). Title: *Near Earth Magnetometer Instrument in a Small Integrated System (NEMISIS)*. PI: Mark Moldwin. Rorl: CO-I. **Budget: \$25M.**  
ASA GDC (Geospace Dynamics Constellation). Title: *Comprehensive Auroral Precipitation Experiment (CAPE)*. PI: Daniel Gershman. Role: CO-I. **Budget: \$55M.**
2. NASA LWS (Living With a Star) Strategic Capabilities (2022-2026). Title: *Magnetosphere Aurora Reconnection Boundary Layer Emulator (MARBLE): Magnetosphere-Ionosphere Coupling on Multiple Scales*. PI: John Dorelli. Role: CO-I. **Budget: \$4M.**
3. NASA HGIO: Heliophysics Guest Investigator Open (2022-2024). Title: *Assessing interplanetary shock-induced dB/dt variations controlled by impact angles*. PI: **Denny Oliveira**. **Budget: \$409.7K.**
4. NASA SWO2R: Space Weather Science Applications Operations 2 Research (2021-2023). Title: *Orbital drag effects for LEO satellites at altitudes higher than 500 km during geomagnetic storms*. PI: Eftyhia Zesta. Role: CO-I. **Budget: \$552.8K.**
5. NASA HIF: Heliophysics Innovation Fund (2018-2019). Title: *Realistic precipitation patterns and their impact on Ionosphere-Thermosphere simulations during moderate, intense, and extreme storms: Science for the Geospace Dynamics Constellation (GDC) mission*. PI: Eftyhia Zesta. Role: CO-I. **Budget: \$140K.**
6. NASA HISFM18: Heliophysics Internal Scientist Funding Model (2018-2020). Title: *Dynamics, Coupling, and Chemistry of the Upper Atmosphere/Ionosphere – Improved physical understanding, model input, and predictive capability*. PI: Robert Pfaff. Role: CO-I. **Budget: \$2.38M.**

7. NASA/GSFC IRAD: Internal Research and Development (Aug 2015 - Feb 2016). Title: *Superposed Epoch Analysis of Storm Time Orbital Drag (SEASTOD)*. PI: Peter Schuck. Role: CO-I. **Budget: \$50K.**

Total awarded budget: **\$87.533M**

### Participating proposals

1. NASA NNH13ZDA001N-ROSES: Heliophysics Supporting Research. Title: *Tracking the location and temporal evolution of energy input into the ionosphere - thermosphere (IT) system during different solar wind and IMF driving* (Aug 2015 - Aug 2-18). PI: Yong Shi. Role: budget recipient. Budget: \$750K.

### Pending proposals

Total of 5 proposals. 3 proposals as a PI (NASA LWS, NASA H-SR, and NASA H-ECIP), 3 proposals as a Co-I (NASA LWS and NASA Heliophysics Innovation Fund).

## Publications (Oliveira in color bold, students in *italic*)

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### Refereed publications

- Oliveira, D. M.**, Welling, D. T., Kim, H., Gabrielse, C., Reistad, J. P., & Laundal, K. M. (2023). Editorial: Understanding the Causes of Asymmetries in Earth's Magnetosphere-Ionosphere System. *Frontiers in Astronomy and Space Science*, 10. <https://doi.org/10.3389/fspas.2023.1173630> (Published in the Frontiers in Astronomy and Space Science research topic "**Understanding the Causes of Asymmetries in Earth's Magnetosphere-Ionosphere System**")
- Weygand, J. M., Zesta, E., Kadokura, A., & **Oliveira, D. M.** (2022). Investigation of the Differences in Onset Times for Hemispherically Conjugate Magnetometers. *Frontiers in Astronomy and Space Science*. <https://doi.org/10.3389/fspas.2022.896199> (Published in the Frontiers in Astronomy and Space Science research topic "**Understanding the Causes of Asymmetries in Earth's Magnetosphere-Ionosphere System**")
- Oliveira, D. M.**, Weygand, J. M., Zesta, E., Ngwira, C. M., Hartinger, M. D., Xu, Z., Giles, B. L., Gershman, D. J., Silveira, M. V. S., & Souza, V. M. (2021). Impact angle control of local intense dB/dt variations during shock-induced substorms. *Space Weather*, 19(12), e2021SW002933. <https://doi.org/10.1029/2021SW002933> (Published in the Space Weather special issue "**Space Weather Impacts on Electrically Grounded Systems at Earth's Surface**")
- Hayakawa, H., **Oliveira, D. M.**, Shea, M. A., Smart, D. F., Blake, S. P., Hattori, K., Bhaskar, A. T., Curto, J. J., Franco, D. R., & Ebihara, Y. (2021). The Extreme Solar and Geomagnetic Storms on 21-27 March 1940. *Monthly Notices of the Royal Astronomical Society*. <https://doi.org/10.1093/mnras/stab3615>
- Oliveira, D. M.**, Zesta, E., Mehta, P. M., Licata, R. J., Pilinski, M. D., Kent Tobiska, W., & Hayakawa, H. (2021). The current state and future directions of modeling thermosphere density enhancements during extreme magnetic storms. *Frontiers in Astronomy and Space Science*, 8(764144). <https://doi.org/10.3389/fspas.2021.764144>
- Blake, S. P., Pulkkinen, A., Schuck, P. W., Glocer, A., **Oliveira, D. M.**, & Welling, D. (2021). Recreating the Horizontal Magnetic Field at Colaba during the Carrington Event with Geospace Simulations. *Space Weather*, 19(5), e2020SW002585. <https://doi.org/10.1029/2020SW002585>
- Bhaskar, A., Sibeck, D., Kanekal, S. G., Singer, H. J., Reeves, G., **Oliveira, D. M.**, Kang, S.-B., & Komar, C. M. (2021). Radiation belt response to fast reverse shock at geosynchronous orbit. *The Astrophysical Journal*, 910(2), 154. <https://doi.org/10.3847/1538-4357/abd702>
- Hayakawa, H., Blake, S. P., Bhaskar, A., Hattori, K., **Oliveira, D. M.**, & Ebihara, Y. (2021). The Extreme Space Weather Event in 1941 February/March. *The Astrophysical Journal*, 908(2), 209. <https://doi.org/10.3847/1538-4357/abb772>

- Welling, D. T., Love, J. J., Joshua Rigler, E., **Oliveira, D. M.**, Komar, C. M., & Morley, S. K. (2020). Numerical simulations of the geospace response to a perfect interplanetary coronal mass ejection. *Space Weather*, 19(2), e2020SW002489. <https://doi.org/10.1029/2020SW002489> (Reported in the [spaceweather.com](https://tinyurl.com/528prz5) science story "What if...A Perfect CME Hit Earth" <https://tinyurl.com/528prz5>)
- Oliveira, D. M.**, Hartinger, M. D., Xu, Z., Zesta, E., Giles, B. L., & Silveira, M. V. D. (2020). Interplanetary shock impact angles control magnetospheric ULF wave activity: Wave amplitude, frequency, and power spectra. *Geophysical Research Letters*, 47(12), e2020GL090857. <https://doi.org/10.1029/2020GL090857>
- Smith, A. W., Rae, J., Forsyth, C., **Oliveira, D. M.**, Freeman, P. M., & Jackson, D. (2020). Probabilistic Forecasts of Storm Sudden Commencements from Interplanetary Shocks using Machine Learning. *Space Weather*, 18(11), e2020SW002603. <https://doi.org/10.1029/2020SW002603>
- Oliveira, D. M.**, Zesta, E., Hayakawa, H., & Bhaskar, A. (2020). Estimating satellite orbital drag during historical magnetic superstorms. *Space Weather*, 18(11), e2020SW002472. <https://doi.org/10.1029/2020SW002472> (Reported in the NASA LIVE science story "Solar Superstorms of the Past Help NASA Scientists Understand Risks for Satellites" <https://tinyurl.com/y2xu8r6f>)
- Bhaskar, A., Hayakawa, H., **Oliveira, D. M.**, Blake, S., Silverman, S., & Ebihara, Y. (2020). An analysis of Trouvelot's Auroral Drawing on 1/2 March 1872: Plausible Evidence for Recurrent Geomagnetic Storms. *Journal of Geophysical Research: Space Physics*, 125(10), e2020JA028227. <https://doi.org/10.1029/2020JA028227>
- Hayakawa, H., Ebihara, Y., Pevtsov, A., Bhaskar, A., Karachik, N., & **Oliveira, D. M.** (2020). Intensity and Time Series of Extreme Solar-Terrestrial Storm in March 1946. *Monthly Notices of the Royal Astronomical Society*, 497(4), 5507-5517. <https://doi.org/10.1093/mnras/staa1508>
- Oliveira, D. M.**, Hayakawa, H., Zesta, E., Bhaskar, A., & Vichare, G. (2020). A possible case of sporadic aurora observed at Rio de Janeiro. *Earth, Planets and Space*, 72(1), 82-90. <https://doi.org/10.1186/s40623-020-01208-z> (Published in the Earth, Planets and Space special issue "Solar-Terrestrial Environment Prediction: Toward the Synergy of Science and Forecasting Operation of Space Weather and Space Climate")
- Xu, Z., Hartinger, M. D., **Oliveira, D. M.**, Coyle, S., Clauer, C. R., Weimer, D., & Edwards, T. R. (2020). Inter-hemispheric asymmetries in the ground magnetic response to interplanetary shocks: The role of shock impact angle. *Space Weather*, 18(3), e2019SW002427. <https://doi.org/10.1029/2019SW002427>
- Hayakawa, H., Ribeiro, P., Vaquero, J. M., Gallego, M. C., Knipp, D. J., Mekhaldi, F., Bhaskar, A., **Oliveira, D. M.**, Notsu, Y., Carrasco, V. M. S., Caccavari, A., Veenadhari, B., Mukherjee, S., & Ebihara, Y. (2020). The Extreme Space Weather Event in 1903 October/November: An Outburst from the Quiet Sun. *The Astrophysical Journal Letters*, 897(1), L10. <https://doi.org/10.3847/2041-8213/ab6a18>
- Shi, Y., **Oliveira, D. M.**, Knipp, D. J., Zesta, E., Matsuo, T., & Anderson, B. (2019). Effects of Nearly Frontal and Highly Inclined Interplanetary Shocks on High-latitude Field-aligned Currents (FACs). *Space Weather*, 17(12), 1659-1673. <https://doi.org/10.1029/2019SW002367> (Published in the *Space Weather* special collection "Scientific Challenges of Space Weather Forecasting Including Extremes")
- Zesta, E., & **Oliveira, D. M.** (2019). Thermospheric heating and cooling times during geomagnetic storms, including extreme events. *Geophysical Research Letters*, 46(22), 12,739-12,746. <https://doi.org/10.1029/2019GL085120>
- Oliveira, D. M.** (2020). Uma andorinha só não faz verão: 160 anos do legado de Richard Carrington. *Revista Brasileira de Ensino de Física*, 42(1), 1-9. <https://doi.org/10.1590/1806-9126-RBEF-2019-0213>
- Oliveira, D. M.**, & Zesta, E. (2019). Satellite orbital drag during magnetic storms. *Space Weather*, 17(11), 1510-1533. <https://doi.org/10.1029/2019SW002287> (Published in the *Space Weather* special collection "Scientific Challenges of Space Weather Forecasting Including Extremes")
- Hayakawa, H., Ebihara, Y., Willis, D. M., Toriumi, S., Iju, T., Hattori, K., Wild, M. N., **Oliveira, D. M.**, Ermolli, I., Ribeiro, J. R., Correia, A. P., Ribeiro, A. I., & Knipp, D. J. (2019). Temporal and Spatial Evo-

- lutions of a Large Sunspot Group and Great Auroral Storms around the Carrington Event in 1859. *Space Weather*, 17(11), 1553-1569. <https://doi.org/10.1029/2019SW002269> (Published in the *Space Weather* special collection "Scientific Challenges of Space Weather Forecasting Including Extremes" | Space Weather featured article and cover image | Best science story presented at NASA/GSFC's 13th Annual Sciences & Exploration Directorate New Year's Poster Party | Reported by the AGU blog GeoSpace <https://bit.ly/2N860uc> | Feature article in <https://spaceweatherarchive.com> celebrating the 161<sup>th</sup> birthday of the Carrington event)
- Cameron, T. G., Jackel, B. J., **Oliveira, D. M.** (2019). Using mutual information to investigate geoeffectiveness of solar wind phase fronts with different front orientations. *Journal of Geophysical Research: Space Physics*, 124(3), 1582-1592. <https://doi.org/10.1029/2018JA026080>
- Rudd, J. T., **Oliveira, D. M.**, Bhaskar, A., & Halford, A. J. (2019). How do interplanetary shock impact angles control the size of the geoeffective magnetosphere? *Advances in Space Research*, 63(1), 317-326. <https://doi.org/10.1016/j.asr.2018.09.013>
- Oliveira, D. M.**, Arel, D., Raeder, J., Zesta, E., Ngwira, C. M., Carter, B. A., Yizengaw, E., Halford, A. J., Tsurutani, B. T., & Gjerloev, J. W. (2018). Geomagnetically induced currents caused by interplanetary shocks with different impact angles and speeds. *Space Weather*, 16(6), 636-647. <https://doi.org/10.1029/2018SW001880> (Space Weather featured article and cover image)
- Oliveira, D. M.**, & Samsonov, A. A. (2018). Geoeffectiveness of interplanetary shocks with different impact angles: A review. *Advances in Space Research*, 61(1), 1-44. <https://doi.org/10.1016/j.asr.2017.10.006> (Advances in Space Research invited review)
- Shi, Y., Zesta, E., Connor, H. K., Su, Y.-J., Sutton, E. K., Huang, C. Y., Ober, D. M., Christodoulo, C., Delay, S., & **Oliveira, D. M.** (2017). High-latitude thermosphere neutral density response to solar wind dynamic pressure enhancement. *Journal of Geophysical Research: Space Physics*, 122(11), 11,559-11,578. <https://doi.org/10.1002/2017JA023889>
- Oliveira, D. M.**, Zesta, E., Schuck, P. W., & Sutton, E. K. (2017). Thermosphere global time response to geomagnetic storms caused by coronal mass ejections. *Journal of Geophysical Research: Space Physics*, 122(10), 10,762-10,782. <https://doi.org/10.1002/2017JA024006>
- Oliveira, D. M.**, & Ngwira, C. M. (2017). Geomagnetically Induced Currents: Principles. *Brazilian Journal of Physics*, 47(5), 552-560. <https://doi.org/10.1007/s13538-017-0523-y>
- Oliveira, D. M.**, & Silveira, M. V. D. (2017). Reação da termosfera a tempestades geomagnéticas. *Revista Brasileira de Ensino de Física*, 39(3), e3305. <https://doi.org/10.1590/1806-9126-RBEF-2016-0219>
- Oliveira, D. M.** (2017). Magnetohydrodynamic shocks in the interplanetary space: A theoretical review. *Brazilian Journal of Physics*, 47(1), 81-95. <https://doi.org/10.1007/s13538-016-0472-x>
- Oliveira, D. M.**, & Emygdio, A. S. (2016). A science fiction novel for high school students. *A Física na Escola*, 14(1).
- Oliveira, D. M.**, & Silveira, M. V. D. (2016). Clima espacial e choques interplanetários. *Revista Brasileira de Ensino de Física*, 38(1), 1-18. <https://doi.org/10.1590/S1806-11173812083>
- Oliveira, D. M.**, Raeder, J., Tsurutani, B. T., & Gjerloev, J. W. (2016). Effects of interplanetary shock inclinations on nightside auroral power intensity. *Brazilian Journal of Physics*, 46(1), 97-104. <https://doi.org/10.1007/s13538-015-0389-9>
- Oliveira, D. M.**, & Raeder, J. (2015). Impact angle control of interplanetary shock geoeffectiveness: A statistical study. *Journal of Geophysical Research: Space Physics*, 120(6), 4313-4323. <https://doi.org/10.1002/2015JA021147>
- Oliveira, D. M.**, & Raeder, J. (2014a). Impact angle control of interplanetary shock geoeffectiveness. *Journal of Geophysical Research: Space Physics*, 119(10), 8188-8201. <https://doi.org/10.1002/2014JA020275>
- Oliveira, D.** (2014). Ionosphere-magnetosphere coupling and field-aligned currents. *Revista Brasileira de Ensino de Física*, 36(1), 1305. <https://doi.org/10.1590/S1806-11172014000100005>
- Oliveira, D. M.** (2011). A proposal for the teaching of quantum field theory in the undergraduation



level: The Maxwell-Chern-Simons electrodynamics as motivation. *Revista Brasileira de Ensino de Física*, 33(3), 3309. <https://doi.org/10.1590/S1806-11172011000300009>

### Non-refereed publications

Oliveira, D. M., Zesta, E., Schuck, P. W., Connor, H. K., & Sutton, E. K. (2017). Ionosphere-thermosphere global time response to geomagnetic storms. In K. M. Groves & M. S. Magoun (Eds.), *Proceedings of the 15<sup>th</sup> International Ionospheric Effects Symposium*. Alexandria, VA.

### Publications under review

Oliveira, D. M., Welling, D. T., Kim, H., Gabrielse, C., Reistad, J. P., & Laundal, K. M. (2023). Editorial: Understanding the Causes of Asymmetries in Earth's Magnetosphere-Ionosphere System. *Frontiers in Astronomy and Space Science*, 10. [10.3389/fspas.2023.1173630](https://doi.org/10.3389/fspas.2023.1173630)