

Jacob Buffo

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Education

Georgia Institute of Technology

2014-Current

Ph.D. Program: Planetary Science
Atlanta, Georgia, United States

University of Iowa

2013

B.S. Double Major: Physics and Astronomy
Iowa City, Iowa, United States
Mathematics Minor

Experience

Georgia Institute of Technology Department of Earth and Atmospheric Sciences

Research Assistant-Ph.D. oriented individual research

August 2014-Current

Teaching Assistant-Laboratory/Lecture TA

January 2015-December 2015

August 2017-December 2017

University of Iowa Physics and Astronomy Department

Research Assistant-Radio Astronomy/Plasma Physics: Heliophysics using VLA data

February 2012-December 2013

Research Assistant-MARSIS mission

May 2011-August 2011

Research Assistant-Particle Physics: CERN's CMS group at the University of Iowa

May 2010-August 2010

University of Iowa Hospitals and Clinics

Research Assistant-Radiology Department: COPD Research

May 2009-December 2011

Fellowships and Grants

NASA Earth and Space Science Fellowship (2016-Current) \$30,000-\$45,000/yr

Presidential Fellowship (2014-2018) \$5500/yr

Van Allen Grant (2010) \$1500

Awards

EAS Research Excellence Award (2018)

EAS Kurt Frankel Award (2019)

Publications

In Review:

[3] – “Modeling Transmission Windows in Titan’s Lower Troposphere: Implications for Infrared Spectrometers Aboard Future Aerial and Surface Missions,” by G. D. McDonald, P. M. Corlies, A. G. Hayes, J. J. Wray, M. Adamkovics, M. J. Malaska, M. L. Cable, J. D. Hofgartner, S. Horst, L. R. Liuzzo, **J. J. Buffo**, R. D. Lorenz, E. Turtle, *Icarus*, (In Review)

[2] – “Entrainment and Dynamics of Ocean-derived Impurities within Europa’s Ice Shell,” by **J. J. Buffo**, B. E. Schmidt, C. Huber, and C. C. Walker, *Science Advances*, (In Review)

[1] – “Landslides on Ceres: Diversity and Geologic Context,” by K. D. Duarte, B. E. Schmidt, H. T. Chilton, K. H. G. Hughson, H. G. Sizemore, K. L. Ferrier, **J. J. Buffo**, J. E. C. Scully, A. Nathues, T. Platz, M. Landis, S. Byrne, M. Bland, C. T. Russell, and C. A. Raymond, *JGR: Planets*, (In Review – Minor Revisions)

In Refereed Journals:

[4] – “Multiphase Reactive Transport and Platelet Ice Accretion in the Sea Ice of McMurdo Sound, Antarctica,” by **J. J. Buffo**, B. E. Schmidt, and C. Huber, *JGR: Oceans*, (2018)

[3] – “VLA Measurements of Faraday Rotation through Coronal Mass Ejections,” by J. E. Kooi, P. D. Fischer, **J. J. Buffo**, and S. R. Spangler, *Solar Physics* #292:56, (2017)

[2] – “Under Ice in Antarctica,” by A. Spears, M. West, M. Meister, C. Walker, **J. Buffo**, T. Collins, A. M. Howard, and B. E. Schmidt, *IEEE Robotics and Automation Magazine* #23.4, (2016)

[1] – “Measurements of Coronal Faraday Rotation at 4.6 Solar Radii,” by J. E. Kooi, P. D. Fischer, **J. J. Buffo**, and S. R. Spangler, *The Astrophysical Journal* #784.1, (2014)

Presentations and Abstracts:

* - Invited

[28]* – “Entrainment and Dynamics of Ocean-derived Impurities within Europa’s Ice Shell,” by **J. J. Buffo**, B. E. Schmidt, C. Huber., and C. C. Walker, *Europa Science Series* (2019)

[27]* – “Frozen Fingerprints: Deciphering the Physical and Biogeochemical Signatures of Planetary Ices,” by **J. J. Buffo**, *Brown University Department of Earth, Environmental, and Planetary Sciences: Planetary Seminar* (2019)

[26] – “Frozen Fingerprints: Chemical and Biological Entrainment in Planetary Ices,” by **J. J. Buffo**, B. E. Schmidt, A. Pontefract, and J. D. Lawrence, *Astrobiology Science Conference* (2019)

[25] – “Quantifying Impurity Entrainment at Ice-Liquid Interfaces,” by **J. J. Buffo**, B. E. Schmidt, C. Huber., and C. C. Walker, *Ocean Worlds 4* (2019)

[24] – “Entrainment and Dynamics of Ocean-derived Impurities within Europa’s Ice Shell,” by **J. J. Buffo**, B. E. Schmidt, C. Huber., and C. C. Walker, *Lunar and Planetary Science Conference* (2019)

[23] – “Not so Solid: The Effects of Multiphase Reactive Transport Processes on the Spatiotemporal and Physicochemical Properties of Europa’s Ice Shell,” by **J. J. Buffo**, B. E. Schmidt, C. C. Walker, and C. Huber, *American Geophysical Union Fall Meeting* #P41B-05 (2018)

[22] – “Cold Case: Fractional Crystallization in Cryomagmatic Systems,” by **J. J. Buffo**, B. E. Schmidt, C. C. Walker, and C. Huber, *Division of Planetary Sciences Meeting* #415.08 (2018)

[21] – “Not So Solid: The Multiphase Nature of Sea Ice - Lessons from Earth and What it Means for Europa’s Ice Shell,” by **J. J. Buffo**, B. E. Schmidt, C. C. Walker, and C. Huber, *Europa Deep Dive II: Composition* #3014 (2018)

[20] – “Cold Case: Fractional Crystallization in Cryomagmatic Systems,” by **J. J. Buffo**, B. E. Schmidt, and C. C. Walker, *Cryovolcanism in the Solar System* #2009 (2018)

[19] – “The Multiphase Nature of Oceanic Ices and Its Role in Shaping Europa’s Icy Shell,” by **J. J. Buffo**, B. E. Schmidt, and C. Huber, *American Geophysical Union Fall Meeting* #P43C-2898 (2017)

[18] – “The Role of Small Scale Reactive Transport Processes in Ice,” by **J. J. Buffo**, B. E. Schmidt, and C. Huber, *Europa Deep Dive I: Ice-Shell Exchange Processes* #7004 (2017)

[17] – “Not So Solid: The Impact of Multiphase Physics on Ice Shelves, Sea Ice, and Icy Moons,” by **J. J. Buffo**, B. E. Schmidt, and C. Huber, *Forum for Research into Ice Shelf Processes* (2017)

[16] – “Downside Up: Europa’s Ice-Ocean Interface as an Inverted Benthos,” by **J. J. Buffo**, B. E. Schmidt, and C. Huber, *Astrobiology Science Conference* #3695 (2017)

- [15] – “Slush Fund: Modeling the Multiphase Physics of Oceanic Ices,” by **J. J. Buffo**, B. E. Schmidt, and C. Huber, *American Geophysical Union Fall Meeting* #P34A-04 (2016)
- [14] – “Thermal and Chemical Characteristics of Europa’s Ice Shell: A Scaling Argument Based on the Multiphase Nature of Terrestrial Sea Ice,” by **J. J. Buffo**, B. E. Schmidt, and C. Huber, *Division of Planetary Sciences Meeting* #429.16 (2016)
- [13] – “Not So Solid: Modeling the Multiphase Physics of Floating Ice (Congelation and Buoyancy Driven Sedimentation),” by **J. J. Buffo**, B. E. Schmidt, and C. Huber, *Scientific Committee on Antarctic Research Open Science Conference* (2016)
- [12] – “Transmission Windows in Titan’s Lower Troposphere: Implications for IR Spectrometers Aboard Future Aerial and Surface Missions,” by G. D. McDonald, P. Corlies, J. J. Wray, J. D. Hofgartner, S. M. Horst, A. G. Hayes, L. R. Liuzzo, and **J. J. Buffo**, *47th American Astronomical Society Division for Planetary Sciences Meeting* #236.5159 (2015)
- [11] – “Astronomical Ice: The Effects of Treating Ice as a Porous Media on the Dynamics and Evolution of Extraterrestrial Ice-Ocean Environments,” by **J. J. Buffo**, and B. E. Schmidt, *American Geophysical Union Conference* #80902 (2015)
- [10] – “Icefin: A New Small Modular AUV for Polar Under-Ice Exploration,” by B. E. Schmidt, M. Meister, A. Spears, C. C. Walker, M. E. West, and **J. J. Buffo**, *International Symposium on Contemporary Ice-Sheet Dynamics* #73A.1958 (2015)
- [9] – “The Ice-Ocean Interface; A Dynamic Boundary (The Effects of Treating Ice as a Porous Medium),” by **J. J. Buffo**, C. C. Walker, and B. E. Schmidt, *International Symposium on Contemporary Ice-Sheet Dynamics* #73A.1943 (2015)
- [8] – “Sub-Ice Marine and Planetary Ecosystems: First Results from Below the McMurdo Ice Shelf,” by B. E. Schmidt, S. Kim, C. C. Walker, M. E. West, M. M. Meister, A. Spears, **J. J. Buffo**, J. S. Greenbaum, M. Skidmore, L. Barker, J. Burnett, M. Hynes, G. Echeverry, K. M. Soderlund, E. VanTil, D. D. Blankenship, N. Bramall, P. Doran, A. Johnson, F. Rack, V. Siegel, W. C. Stone, and D. A. Young, *Astrobiology Science Conference* #7511 (2015)
- [7] – “Icefin: A New Small Modular AUV for Polar and Planetary Exploration,” by B. E. Schmidt, M. E. West, M. Meister, A. Spears, C. C. Walker, and **J. J. Buffo**, *Astrobiology Science Conference* #7691 (2015)
- [6] – “The Mushy Layer: Ice Water Interfaces as Ecological Niches,” by **J. J. Buffo**, and B. E. Schmidt, *Astrobiology Science Conference* #7351 (2015)
- [5] – “VLA Measurements of Faraday Rotation through a Coronal Mass Ejection,” by J. E. Kooi, P. D. Fischer, **J. J. Buffo**, and S. R. Spangler, *American Astronomical Society/American Geophysical Union Triennial Earth-Sun Summit #1*, #114.01 (2015)
- [4] – “Altitude-Dependence of Titan’s Methane Transmission Windows: Informing Future Missions,” by G. D. McDonald, P. Corlies, J. J. Wray, S. M. Hörst, J. D. Hofgartner, L. R. Liuzzo, **J. J. Buffo**, A. G. Hayes, *Lunar and Planetary Science Conference*, #2307, (2015)
- [3] – “The Dissipation Range of Interstellar Turbulence,” by S.R. Spangler and **J. J. Buffo**, *American Astronomical Society Meeting* #222, #216.06, (2013)
- [2] – “Probing Coronal Mass Ejections with Faraday Rotation,” by S. R. Spangler, P. D. Fischer, J. E. Kooi, and **J. J. Buffo**, *American Astronomical Society, Solar Physics Division meeting* #44, #100.15, (2013)
- [1] – “Measurements of Coronal Faraday Rotation at 4.6 Solar Radii,” by J. E. Kooi, P. D. Fischer, **J. J. Buffo**, and S. R. Spangler, *American Astronomical Society, Solar Physics Division meeting* #44, #300.02, (2013)

Acknowledged In:

- [2] – “Transient Forearc Sliver Transport Found During Postseismic Recovery,” by T. E. Hobbs, A. V. Newman, and M. Protti, *Geophysical Research Letters*, (In Review – Minor Revisions)
- [1] – “Plasma Diagnostics of the Interstellar Medium with Radio Astronomy,” by M. Haverkorn, and S. R. Spangler, *Microphysics of Cosmic Plasmas* pp. 407-435, (2014)