Hannah C.M. Susorney

Postdoctoral Fellow
Department of Earth, Atmospheric and Ocean Science
University of British Columbia
Vancouver, BC Canada
hsusorney@eoas.ubc.ca
hannahsus.github.io

RESEARCH INTERESTS

Impact Cratering, Surface Roughness, Laser Altimetry, Surface Geology (asteroids and terrestrial planets), Impact Simulations, Polar Deposits

EDUCATION

2017	Ph.D., **Johns Hopkins University**, Baltimore, Maryland Earth and Planetary Science *Advisors:* Olivier S. Barnouin & Darrell F. Strobel *Thesis:* Using Altimetry to Investigate Impact Cratering in the Solar System
2015	M.A., **Johns Hopkins University**, Baltimore, Maryland Earth and Planetary Science
2013	B.S., **Montana State University**, Bozeman, Montana Major: Earth Science: Geology Minor: Mathematics

RESEARCH EXPERIENCE

2020–2021	Marie Sklodowska-Curie Fellow, **University of Bristol**, Bristol, United Kingdom
2018–present	Visiting Research Associate, **University of Bristol**, Bristol, United Kingdom
2017–present	Postdoctoral Fellow, **University of British Columbia**, Vancouver, Canada *Advisor:* Catherine L. Johnson
2013–2017	Graduate Research Assistant, **Johns Hopkins University**, Baltimore, Maryland and **Johns Hopkins University Applied Physics Laboratory**, Laurel, Maryland *Advisor:* Olivier S. Barnouin
2012, 2013	Intern, **Johns Hopkins University Applied Physics Laboratory**, Laurel, Maryland *Advisors:* Carolyn M. Ernst, Nancy L. Chabot, and Olivier S. Barnouin

SPACECRAFT MISSION EXPERIENCE

OSIRIS-REx, OSIRIS-REx Laser Altimeter (OLA) Team Member	2017-present
OSIRIS-REx, Science Collaborator	2018-present

PUBLICATIONS

Publications in review

13. Kinczyk, M.J., Byrne, P.B., Prockter, L.M., **Susorney, H.C.M.**, and Barnouin, O. S. A morphological evaluation of crater degradation on Mercury: Revisiting crater classification with MESSENGER data (in review Icarus)
12. Barnouin O.S., Daly, M. G., Palmer, E. E. Johnson, C. L., Gaskell, R.W., Al Asad, M., Bierhaus, E. B., Craft, K. L., Ernst, C.M., Espiritu, R.C., Nair, H., Neumann, G.A., Nguyen, L., Nolan, M.C., Mazarico, E., Perry, M.E., Philpott, L.C. Roberts, J.H., Steele, R.J., Seabrook, J., **Susorney, H.C.M.,** Weirich, J.R., Lauretta, D.S., and the OSIRIS-REx Team. Digital Terrain Mapping by the OSIRIS-REx Mission (in review. Planetary and Space Sciences).

Refereed Publications

11. Barnouin, O.S., Daly, M.G., Palmer, E.E., Gaskell, R.W., Weirich, J.R., Johnson, C.L., Al Asad, M.M., Roberts, J.H., **Susorney, H.C.M.,** Daly, T., Bierhaus, E.B., Seabrook, J., Perry, M.E., Espiritu, R.M., Nair, A.H., Nguyen, L., Neumann, G.A., Ernst, C.M., Boynton, W.V., Nolan, M.C. Adam, C. Moreau, M.C. Risk, B., D'Aubigny, C., Jawin, E.R., Walsh, K.J., Michel, P., Schwartz, S.R. Ballouz, R.-L., DellaGiustina, D.N., Mazarico, E.M., Scheeres, D.J., McMahon, J., Sugita, S., Hirata, N., Watanabe, S., and Lauretta, D.S., Shape of (101955) Bennu indicative of a rubble pile with internal stiffness (2019), Nature Geoscience, 12, 247-252.
10. Scheeres, D.J., McMahon, J.W., French, A.S., Brack, D.N., Chesley, S.R., Farnocchia, D., Takahashi, Y., Leonard, J., Geeraert, J., Page, B., Antreasian, P., Getzandanner, K., Rowlands, D., Mazarico, E., Small, J., Moreau, M., Emery, J., Rozitis, B., Hirabayashi, M., Sanchez, P., Van wal, S., Tricarico1, P., Ballouz, R.-L., Johnson, C.L., Al Asad, M.M., **Susorney, H.C.M.,** Barnouin, O.S., Daly, M.G., Gaskell, R.W., Palmer, E.E., Weirich, J.R., Walsh, K.J., Jawin, E.R., Bierhaus, E.B., Michel, P., Bottke, W.F., Nolan, M.C., Lauretta, D.S., Connolly Jr., H.C., and the OSIRIS-REx Team. The dynamic geophysical environment of (101955) Bennu based on OSIRIS-REx measurements (2019), Nature Astronomy, 3, 352-361.
9. Walsh, K.J., Jawin, E.R, Ballouz, R.L., Barnouin, O.S., Bierhaus, E.B., Connolly Jr., H.C., Malaro, J.L., McCoy, T, Lauretta, D.S., Delbo, M., Hartzell, C., Pajola, M., Schwartz, S.R., Trang, D., Asphaug, E., Becker, K., Beddingfield, C. B., Bottke, W.F., Bennett, C.A., Burke, K., Clark, B.C., Daly, M.G., DellaGuistina, D.D., Dworkin, J.P., Elder, C.M., Golish, D., Hildebrand, A.R., Malhotra, R., Marshall, J., Michel, P., Nolan, M., Perry, M.E., Rizk, B., Ryan, A., Sandford, S., Scheeres, D.J., **Susorney, H.C.M.**, Thuillet, F., and the OSIRIS-REx Team, Craters, boulders and regolith of (101955) Bennu indicative of an old and dynamic surface (2019), Nature Geoscience, 12, 242-246.
8. **Susorney, H.C.M.**, Johnson, C.L., Barnouin, O.S., Daly, M.G., Seabrook, J., Bierhaus, E.B., and Lauretta, D.S. The Surface Roughness of 25143 Itokawa from the Hayabusa Laser Rangefinder and its Implications for Detecting Asteroid Interior Structure Using Topography (2019), Icarus, 325, 141-152.
7. **Susorney, H.C.M.**, James, P. B., Johnson, C.L., Chabot, N.L., Ernst, C. M., Mazarico, E. M., and Neumann, G. A. Measuring the Thickness of Radar-Bright Deposits on Mercury from Individual Mercury Laser Altimeter (MLA) Tracks (2019), Icarus, 323, 40-45.
6. **Susorney, H.C.M.**, Barnouin, O.S. The Surface Roughness of 433 Eros from the NEAR-Shoemaker Laser Rangefinder (2018), Icarus, 314, 299-310.
5. **Susorney, H.C.M.**, Barnouin, O.S., Ernst, C.M., Stickle, A.M. The Surface Roughness of Large Craters on Mercury (2018), J. Geophys. Res. Planets., 123 (7), 1581-1595.
4. **Susorney, H.C.M.**, Barnouin, O.S., Stickle, A.M., Ernst, C.M., Crawford, D.A., and Cintala, M.J. The Role of Target Heterogeneity in Impact Crater Formation: Numerical Results (2017), Procedia Engineering, 204, 421-428.
3. **Susorney, H.C.M.**, Barnouin, O.S., Ernst, C.M., and Byrne, P.K. Surface Roughness from the Mercury Laser Altimeter (2017). J. Geophys. Res. Planets, 122 (6), 1372-1390.

2. Blewett, D.T., Stadermann, A.C., **Susorney, H.C.**, Ernst, C.M., Xiao, Z., Chabot, N.L., Denevi, B.W., Murchie, S.L., McCubbin, F.M., Kinczyk, M.J., Gillis-Davis, J.J., and Solomon, S.C. Analysis of MESSENGER high-resolution images of Mercury's hollows and implications for hollow formation (2016). J. Geophys. Res. Planets, 121(9), 1798-1813.
1. **Susorney, H.C.M.**, Barnouin, O.S., Ernst, C.M., Johnson, C.L. Impact Crater Morphology on Mercury from MESSENGER Altimetry and Imaging (2016). Icarus, 271, 180-193.

Invited Seminars

Laser Altimetry from Ice to Rocks, Department of Physical Sciences Open University, UK — Fall 2018

HONORS

Johns Hopkins University Department of Earth and Planetary Science — 2016
Best 60 minute Journal Club Graduate Student Presentation
Stephen E. Dwornik Award — 2015
Best Graduate Student Poster at Lunar and Planetary Science Conference
Johns Hopkins University Department of Earth and Planetary Science — 2014
Best 30 minute Journal Club Graduate Student Presentation
National Science Foundation Graduate Research Fellowship, *Honorable Mention* — 2014
Montana State University Top Geology Undergraduate — 2013
Montana State University Undergraduate Scholars Program Research Grant — 2011, 2012

PROFESSIONAL SERVICE

Reviewed Papers in: Journal of Geophysical Research-Planets, Advances in Space Research, Planetary and Space Sciences
Lunar Planetary Science Conference, *2019 Scientific Program Committee Member* — 2019
NASA Small Body Advisory Group, *Committee Member* — 2017-2020
The Small Body Advisory Group identifies scientific priorities and opportunities for the exploration of small bodies (asteroids, comets, etc.) and reports findings to NASA headquarters.
NASA Review Panel, *External Reviewer* — 2018
NASA Review Panel, *Panelist* — 2017
NASA Review Panel, *Executive Secretary* — 2015, 2017
Geological Society of America Student Advisory Council, *Chair* — 2015-2016
Geological Society of America Planetary Geology Division, *Student Representative* — 2014-2016
Local Organizing Committee for the Geological Society of America Annual Meeting — 2015

RESEARCH ACTIVITIES

Lunar Planetary Institute's Meteor Crater Field Camp, *Participant* — Meteor Crater, AZ, October 2014
NSF International Research Experience for Students (IRES), *Participant* — Hangzhou, China, Summer 2011

GRANTS AWARDED

Marie Sklodowska-Curie Individual Fellowship — *225k EUR*, starts 2020–2021
Johns Hopkins Applied Physics Laboratory Graduate Student Fellowship — *240k USD*, 2014–17
Hopkins Extreme Materials Institute (HEMI) Student Travel Grant — *1k USD*, 2017

Hypervelocity Impact Society Alex Charters Student Scholar — *2k USD*, 2017
Asteroids, Comets, and Meteorites 2017 Travel Grant — *1k USD*, 2017

TEACHING EXPERIENCE

Johns Hopkins University
Guest Lecturer Planetary Surface Processes (1 lecture) — Fall 2015
Guest Lecturer Tour of the Solar System (1 lecture) — Spring 2015, 2016, 2017

Montana State University
Undergraduate Teaching Assistant for Honors Earth System Science — Fall 2011, 2012

OUTREACH ACTIVITIES

Roots and Branches Elementary School West Baltimore, MD — May 2015
- Presented on asteroids and impact craters to $\sim$ 200 elementary age children.

The Johns Hopkins University Applied Physics Lab Laurel, MD — Summer 2012, 2013
- Produced Images of the Day for the MESSENGER Public Website
- Assisted in responding to the public's question about Mercury and the MESSENGER mission

Father Marquette Middle School Marquette, MI — May 2012
- Presented an hour long talk to two 6th grade classes ($\sim$ 30 students each) about planetary science.

SELECTED CONFERENCE ABSTRACTS

- **Susorney, H.C.M.,** Johnson, C.L., Barnouin, O.S., Daly, M.G., Rozitis, B., Al Asad, M.M., Walsh, K.J., Jawin, E., Gaskell, R.W., Palmer, E., Weirich, J., DellaGiustina, D., Rizk, B. Nolan, M.C., Lauretta, D.S., (2019) The Global Surface Roughness of (101955) Bennu: Results from the OSIRIS-REx Mission. 50th Lunar and Planetary Science Conference 2019, 1429. Houston, TX. USA.
- **Susorney, H.C.M.,** Barnouin, O.S., Stickle, A.M., Ernst, C.M., Crawford, D.A., and Cintala, M.J. (2017) The Role of Target Heterogeneity in Impact Crater Formation: Numerical Results. 14th Hypervelocity Impact Symposium. Canterbury, United Kingdom.
- **Susorney, H.C.M.,** and Barnouin, O.S. (2017) The Global Surface Roughness of 433 Eros:Implications for the Geology of Eros. Parellel5.b.2, Asteroids, Comets, and Meteors 2017. Montevideo, Uruguay.

COMPUTING SKILLS

Python, Unix, IDL, ISIS, Git, R, GMT, MatLab, LaTeX, CTH

MEMBERSHIPS

American Geophysical Union, Planetary Sciences Section, 2011-present
Geological Society of America, Planetary Geology Division, 2010-present
AAS Division of Planetary Science, 2015-present