

Mallory Janet Kinczyk

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EDUCATION

Ph.D., Geology

August 2016 – Present

North Carolina State University, Raleigh, NC

Research Advisor: Dr. Paul K. Byrne

Thesis Topic: “*Insights into the evolution of planetary surfaces from impact crater morphology and structural analog modeling*”

B.A., Geology

December 2012

Minor: Psychology

Wheaton College, Wheaton, IL

HONORS/AWARDS

LPI Career Development Award

March 2017

North Carolina State University Graduate Fellowship

2016 – 2017

RESEARCH EXPERIENCE

Johns Hopkins University Applied Physics Laboratory, Laurel, MD

Summer Research Intern

May 2017 – August 2017

Mentor: Gerald W. Patterson, Ph.D. & Olivier Barnouin, Ph.D.

Used statistical analysis to characterize crater distributions on the surface of Enceladus as part of a larger effort to create a global geological map of Enceladus. Mapped crater deposits of Hokusai and Abedin craters on Mercury to constrain quantity of impact melt for the purposes of understanding crater formation mechanisms.

Research Intern

September 2015 – July 2016

Mentor: Louise M. Prockter, Ph.D.

Collaborated with the MERCURY Surface, Space ENVIRONMENT, GEOchemistry, and Ranging (MESSENGER) science team to publish the first global geological map of Mercury. Responsible for the majority of the mapping, including unit boundaries and impact feature classification. Second author on associated peer-reviewed paper to be submitted in 2017. Completed additional projects focused on the Moon and Enceladus.

NASA/JHUAPL Summer Research Intern

June 2015 – August 2015

Mentor: Louise M. Prockter, Ph.D.

Collaborated with the MESSENGER science team to map and classify craters on Mercury based on degree of degradation to determine age.

Wheaton College, Wheaton, IL

November 2014 – May 2015

Independent Research

Applied terrain analyses and visibility routines to the ASTER 30-m digital elevation model of the coastal region of Israel to understand geographical influences on the settlement of the ancient seaport Ashkelon.

Cirrus Partners, LLC, Evergreen, CO

November 2012 – January 2013

Agricultural Research Associate

Gathered sensitive data to develop a remediation plan targeted at relevant agricultural areas in Kazakhstan. Proprietary project for industry client.

Morton Arboretum, Lisle, IL

May 2011 – August 2011

Research Intern

Mentor: Bryant C. Scharenbroch, Ph.D.

Developed a strategy for mapping soil types in Minnesota using ArcGIS. Analyzed differences between USGS soil types and hand collected data from Minnesota using ArcGIS to determine research potential.

PROFESSIONAL EXPERIENCE

CB&I Environmental & Infrastructure, Inc., St. Charles, IL March 2013 – April 2015
Scientist II (Geologist)
Performed regulatory record review, site reconnaissance, and report preparation related to Phase I & Phase II Environmental Site Assessments, and the Illinois State Site Remediation Program (SRP). Fieldwork consisted of drill core sampling and logging, monitoring well installations, and subcontractor oversight of excavations and associated activities.

PROFESSIONAL SERVICE & DEVELOPMENT

NCSU MEAS Department Graduate Student Association August 2017 – Present
Vice President
Susan Niebur Women in Planetary Science Networking Event Planning Committee 2016 – Present
LPI Field Training and Research Program at Meteor Crater, Flagstaff, AZ September 2016
Research Opportunities in Space & Earth Sciences (ROSES) Review Panel, NASA 2016
Executive Secretary

INVITED TALKS

Big History: Cosmos, Earth, Life, and Humanity. NCSU Honors College January 2018
Topic: *The evolution of planets and history of Earth*

TEACHING EXPERIENCE

North Carolina State University, Raleigh, NC August 2016 – December 2016
Laboratory Instructor
Physical Geology I Laboratory (Fall 2016)

Teaching Assistant
Physical Geology I (Fall 2016)

Wheaton College, Wheaton, IL August 2011 – May 2012
Teaching Assistant
Introduction to GIS (Fall 2011)
GIS Practicum (Spring 2012)

PUBLICATIONS

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., Solomon, S. C. (2016). Analysis of MESSENGER High-resolution Images of Mercury's Hollows and Implications for Hollow Formation. *Journal of Geophysical Research Planets*, 121, doi:10.1002/2016JE005070.

Kinczyk, M. J., Prockter, L. M., Chapman, C. R., Byrne, P. K., and Susorney, H. C. M. A Morphological Evaluation of Crater Degradation on Mercury: Revisiting Crater Classification with MESSENGER Data. *In Preparation*.

Prockter, L. M., **Kinczyk, M. J.**, Byrne, P. K., Denevi, B. W., Ostrach, L. R., Head, J. W., Fassett, C. I., Whitten, J. L., Thomas, R. J., Buczkowski, D. L., Hynek, B. M., Blewett, D. T., Ernst, C. M. The First Global Geological Map of Mercury. *In Preparation*.

CONFERENCE ABSTRACTS

Kinczyk, M. J., Byrne, P. K., Prockter, L. M., Susorney, H. C. M., Barnouin, O. S. Crater Degradation on Mercury: a global perspective. *Mercury: Current and Future Science*, Abstract #6116 (2018).

Kinczyk, M. J., Prockter, L. M., Byrne, P. K., Denevi, B. W., Ostrach, L. R., Skinner, J. A. A Global Geological Map of Mercury. *Mercury: Current and Future Science*, Abstract #6123 (2018).

Johnson, C., Plattner, A., Phillips, R. J., Philpott, L. C., **Kinczyk, M. J.**, Prockter, L. M. The Distribution and Origin of Mercury's Lithospheric Magnetization. Mercury: Current and Future Science, Abstract #6052 (2018).

Kinczyk, M. J., Barnouin, O. S., Ernst, C. M., Byrne, P. K. A Tale of Two Craters: Using Geological Mapping to Assess the Role of Impact Melt in the Formation of Hokusai Crater, Mercury. Lunar and Planetary Science Conference, 49, Abstract #2916 (2018).

Johnson, C., Plattner, A., Phillips, R. J., Philpott, L. C., **Kinczyk, M. J.**, Prockter, L. M. The Distribution and Origin of Mercury's Lithospheric Magnetization. Lunar and Planetary Science Conference, 49, Abstract #1505 (2018).

Kinczyk, M. J., Byrne, P. K., Prockter, L. M., Susorney, H. C. M., Chapman, C. R., Barnouin, O. S. Crater Degradation on Mercury: a global perspective. Abstract P51G-07 presented at 2017 Fall Meeting, AGU, New Orleans, LA., 11-15 Dec.

Johnson, C., Phillips, R. J., Philpott, L. C., Al Asad, M., Plattner, A., Mast, S., **Kinczyk, M. J.**, Prockter, L. M. Mercury's Lithospheric Magnetization. Abstract P51G-01 presented at 2017 Fall Meeting, AGU, New Orleans, LA., 11-15 Dec.

Kinczyk, M. J., Byrne, P. K., Prockter, L. M., Denevi, B. W., Ostrach, L. R., Skinner, J. A., Buczkowski, D. L., Hynek, B. M. Creating a Global Geological Map of Mercury with MESSENGER Datasets. Planetary Geologic Mappers Meeting, Abstract #7116 (2017).

Denevi, B. W., Boyd, A. K., Clegg-Watkins, R. N., Hapke, B. W., Henriksen, M. R., **Kinczyk, M. J.**, Robinson, M. S., Sato, H. High-Resolution Photometric Observations of Lunar Swirls and Fresh Impact Craters. 5th European Lunar Symposium (2017).

Kinczyk, M. J., Susorney, H. C. M., Prockter, L. M., Byrne, P. K., Ernst, C. M., Barnouin, O. S., Bohnenstiehl, D. R. Roughness of Impact Crater Ejecta Deposits on Mercury as a Proxy for Crater Degradation. Lunar and Planetary Science Conference, 48, Abstract #2717 (2017).

Kinczyk, M. J., Patterson, G. W., Perkins, R. P., Collins, G. C., Borrelli, M., Becker, T. L., Bland, M. T., Pappalardo, R. T. Evaluation of Impact Crater Distributions for Geological Terrains on Enceladus. Lunar and Planetary Science Conference, 48, Abstract #2926 (2017).

Schmieder, M., Boschi, S., Caudill, C., Chandnani, M., DiFrancesco, N. J., Hibbard, S. M., Highson, K., **Kinczyk, M.**, Lawrence, J., Martin, A. C., Martin, E., Martinot, M., McCarty, C. B., Powell, K. E., Sarafian, A., Schaub, D., Shirley, K., Kring, D. A. Mapping Ejecta on the East and Southeast Side of Barringer Meteorite Crater (a.k.a. Meteor Crater), Arizona. Lunar and Planetary Science Conference, 48, Abstract #2180 (2017).

Kinczyk, M. J., Patterson, G. W., Collins, G. C., Pappalardo, R. T., and Becker, T. L. Impact Crater Distributions for Geological Terrains on Enceladus. Enceladus and the Icy Moons of Saturn Conference, Abstract #3608 (2016).

Kinczyk, M. J., Prockter, L. M., Byrne, P. K., Denevi, B. W., Ostrach, L. R., Head, J. W., Fassett, C. I., Whitten, J. L., Thomas, R. J., Buczkowski, D. L., Hynek, B. M., Blewett, D. T., Ernst, C. M. Preparing the First Global Geological Map of Mercury. Planetary Geologic Mappers Meeting, Abstract #7027 (2016).

Kinczyk, M. J., Prockter, L. M., Chapman, C. R., and Susorney, H. C. M. A Morphological Evaluation of Crater Degradation on Mercury: Revisiting Crater Classification with MESSENGER Data. Lunar and Planetary Science Conference, 47, Abstract #1573 (2016).

Kinczyk, M. J., Denevi, B. W., Boyd, A. K., Clegg-Watkins, R. N., Hapke, B. W., Henriksen, M., Robinson, M. S., and Sato, H. Controls on the Photometric Properties of Lunar Swirls in Comparison to Fresh Crater Ejecta. Lunar and Planetary Science Conference, 47, Abstract #2343 (2016).

Goosmann, E. A., Buczkowski, D. L., Ernst, C. M., Denevi, B. W., **Kinczyk, M. J.** Geologic Map of the Caloris Basin, Mercury. Lunar and Planetary Science Conference, 47, Abstract #1254 (2016).

Denevi, B. W., Ernst, C. M., Prockter, L. M., Robinson, M. S., Spudis, P. D., Klima, R. L., Murchie, S. L., Solomon, S. C., Whitten, J. L., Povilaitis, R. Z., **Kinczyk, M. J.** The Origin of Mercury's Oldest Surfaces and the Nature of Intercrater Plains Resurfacing. Lunar and Planetary Science Conference, 47, Abstract #1624 (2016).

Prockter, L. M., **Kinczyk, M. J.**, Byrne, P. K., Head, J. W., Fassett, C. I., Whitten, J. L., Thomas, R. J., Buczkowski, D. L., Hynek, B. M., Ostrach, L. R., Denevi, B. W., Blewett, D. T., Ernst, C. M. The First Global Geological Map of Mercury. Lunar and Planetary Science Conference, 47, Abstract #1245 (2016).

Prockter, L. M., Head, J. W., Byrne, P. K., Denevi, B. W., **Kinczyk, M. J.**, Fassett, C. I., Whitten, J. L., Thomas, R. J., Ernst, C. M. The First Global Geological Map of Mercury. Abstract P53A-2106 presented at 2015 Fall Meeting, AGU, San Francisco, Calif., 14-18 Dec.

Goosmann, E. A., Buczkowski, D. L., Ernst, C. M., Denevi, B. W., **Kinczyk, M. J.** Geologic Map of the Caloris Basin, Mercury. Geological Society of America Abstracts with Programs. 47(7), 777 (2015).

Kinczyk, M. J., Moshier, S. O., Clark, J. A. Terrain Analysis Applied to the Siting of Ancient Seaport Ashkelon, Israel. North Central Section Geological Society of America Abstracts with Programs. 47(5), 11 (2015).

PROFESSIONAL/ACADEMIC AFFILIATIONS

Geological Society of America – Planetary Science Division
American Geophysical Union

2017 – Present
2017 – Present