

Christian Klimczak

Department of Geology

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Professional Appointments

University of Georgia, Athens GA, Department of Geology, July 2020 – present; Associate Professor

University of Georgia, Athens GA, Department of Geology, August 2014 – June 2020; Assistant Professor

University of Tennessee, Knoxville TN, Department of Earth and Planetary Sciences, April 2018 – 2021; Adjunct Assistant Professor

Carnegie Institution of Washington, Washington, DC; Department of Terrestrial Magnetism, May 2014 – July 2018; Visiting Investigator

Carnegie Institution of Washington, Washington, DC; Department of Terrestrial Magnetism, May 2011 – March 2014; MESSENGER Postdoctoral Fellowship

Education

University of Nevada, Reno, NV; Department of Geological Sciences and Engineering, Fall 2007 – Spring 2011; Doctor of Philosophy

Freie Universität Berlin, Germany; Fachbereich Geowissenschaften, Summer 2001 – Winter 2006/2007; Diplom (M.S. equivalent)

Research Interests

- Fault and fracture growth
- Tectonic and volcanic evolution of the terrestrial planets
- Rock-mechanical properties of fractured rock volumes
- Fluid-fracture interactions

Industry Experience

- MPH Consulting; Senior field geologist (Uranium exploration), June–August 2007
- Pinnacle, a Halliburton Service; Summer intern (Hydrofracturing), June–August 2009

Languages

- German (mother tongue)
- English (proficient)

- Spanish (A2 Level)

Professional Memberships

- American Association of Petroleum Geologists (2007– present)
- Geological Society of America (2009 – present)
- American Geophysical Union (2008 – 2020, 2024– present)
- American Association for the Advancement of Science (2011 – 2014)
- Association of Environmental & Engineering Geologists (2016 – 2017)

Honors

- Marie Curie Summer School 2008, Porous and Aqueous Materials (\$500)
- Outstanding International Graduate Student 2009, University of Nevada, Reno (\$1500)
- Viola Vestal Coulter Graduate Scholarship 2009/2010, University of Nevada, Reno (\$1500)
- R. D. Call Scholarship 2010, Call & Nicolas, Inc. (\$2000)
- Outstanding Ph.D. graduate in geosciences 2011, University of Nevada, Reno
- NASA Group Achievement Award, MESSENGER Project Team, June 2017
- M. G. Michael Award 2021, Franklin College, University of Georgia (\$3000)

Grant Support

- Comparing the morphological variability of shortening landforms on Mars and Mercury, NASA Solar System Workings Program; Period: August 1, 2021 to July 31, 2024; Role: PI, Amount: \$ 364,889
- Do Polygonal Impact Craters Form on Mercury's Lobate Scarps? Implications for Contractual Tectonism throughout the Solar System. NASA Discovery Data Analysis Program, June 1, 2021 to May 31, 2024, Role: Co-I, Amount: \$ 30,017
- Searching for Deep-seated Thrust Faults on the Moon, NASA Lunar Data Analysis Program, July 1, 2017 to August 31, 2020, Role: Co-I, Amount: \$ 213,998
- The Architecture of Wrinkle Ridges in the Northern Volcanic Plains of Mercury, NASA Discovery Data Analysis Program, August 1, 2016 to July 31, 2018, Role: Co-I, Amount: \$ 67,299
- Characterizing the Geomorphology of Lunar Grabens, NASA Lunar Data Analysis Program; Period: January 1, 2016 to December 31, 2018; Role: PI, Amount: \$ 150,338
- Three-dimensional Scaling of Large Thrust Faults on Mars, NASA Mars Data Analysis Program; Period: October 1, 2014 to September 30, 2018; Role: PI, Amount: \$ 157,581

Service to the Profession and Community Involvement

- Mercury Exploration Assessment Group (MExAG) steering committee Geology Discipline Member, 2020 – 2023
- NASA Review Panels
- Reviewer for peer-review journals (Journal of Geophysical Research, Geophysical Research Letters, Icarus, Hydrogeology, Meteoritics and Planetary Science, Nature Astronomy, Journal of Maps)

Development, Service, and Outreach

- Preparing to Pivot Course, July 2020
- Conflict De-escalation Training, February 2018
- Campus Active Shooter Training, November 2017
- UGA Sustainability Across the Curriculum Teaching Workshop 2017
- AAPG UGA student chapter mentor (2015 – 2016)
- AEG UGA student chapter mentor (2016 – 2017)
- Student Spaceflight Experiment Program; Review Board Missions 2 and 3

Course Instruction

- GEOL 100 Earthquakes, Volcanoes, and Natural Disasters, teaching assistant at UNR, Fall 2007
- GPH 333 Plate Tectonics and Earth Physics, teaching assistant at UNR, Spring 2008, 2010, 2011
- GEOL 332 Structural Geology, teaching assistant at UNR, Fall 2009, 2010
- GEOL 1121 Earth Processes and Environments, instructor of record at UGA, Fall 2015 – 2020, Fall 2022
- GEOL 3000 Alien Worlds in our Backyard, instructor of record at UGA, Fall 2021
- GEOL 4060/6060 Structural Geology, instructor of record at UGA, Spring 2015 – 2024
- GEOL 4270/6270 Geology Field School, instructor of record at UGA, Summer 2018 – 2024
- GEOL 4360/6360 Introduction to Rock Mechanics, instructor of record at UGA, Spring 2016, Fall 2017, 2019, 2021
- GEOL 4400 Research in Planetary Geology (directed study)
- GEOL 4490 Research in Structure/Tectonics (directed study)
- GEOL 8090 Advanced Topics in Structural Geology (directed study)

Graduate Committees

- Corbin Kling (UGA, M.S. 2016); Role: Main Advisor
- E. Quentin Anlian (UGA, M.S. 2017); Role: Main Advisor
- Erik Alberts (UGA, M.S. 2017); Role: Committee Member
- Devon Verellen (UGA, M.S. 2017); Role: Committee Member
- Rose Borden (UTK, M.S. 2018); Role: External Committee Member
- Kelsey Crane (UGA, Ph. D. 2019); Role: Main Advisor
- William Jenkins (UGA, M.S. 2019); Role: Main Advisor
- Andrew Clements (UGA, M.S. 2019); Role: Committee Member
- Sierra Ramsey (UGA, M.S. 2020); Role: Main Advisor
- Melanie Callihan (UGA, Ph.D. 2020); Role: Main Advisor
- Gustavo Larramendi (UGA, M.S. 2020); Role: Committee Member
- Barrett Jordan (UGA, M.S. 2020); Role: Committee Member
- Rachel Rotz (UGA, Ph.D. 2020); Role: Committee Member
- Laura Fackrell (UGA, Ph.D. 2021); Role: Committee Member
- Işık Su Yazıcı (UGA, M.S. 2021); Role: Main Advisor
- Michael Cuilik (UGA, M.S. 2022); Role: Committee Member

- Hiu Ching Jupiter Cheng (UGA, Ph.D. 2023); Role: Main Advisor
- Laura Hannawalt (UGA, M.S. 2023); Role: Committee Member
- Leta McCullough (MS State, M.S. 2023); Role: External Committee Member
- Abubakar Aliyu (UGA, M.S. 2024); Role: Main Advisor
- Sydney Briggs (UGA, M.S. 2023; Ph.D. student, expected 2027); Role: Main Advisor
- Stephan Loveless (UGA, Ph.D. candidate, expected 2025); Role: Main Advisor

Undergraduate Research Mentoring and Senior Theses

- Iona Summerson, B.S. 2012 (Université II Montpellier) Deformation Bands in the Orange Quarry, Provence, France
- Mya Habermann, B.S. 2015 (UGA) Pyroclastic Volcanism on Mercury.
- Anthony Arbise, B.S. 2018 (UGA) Strike-slip Tectonics on Europa.
- Patrick Trent, B.S. 2019 (UGA) Petrographic analysis of hydrothermally altered Bishop Tuff, California.
- Cash Owens, B.S. 2020 (UGA) Geologic History and Lava-Fracture Interaction at King's Bowl, Craters of the Moon National Monument, Idaho.
- Davis Hardin, B.S. 2023 (UGA) Investigating a Crater Saturation Equilibrium on Asteroid 4 Vesta.
- Madelyn Hurd, B.S. student 2024 (UGA) Modeling the 3D architecture of the Carnegie Rupes fault system, Mercury.
- James Muilenburg, B.S. student, expected 2025 (UGA) Analysis of structural reliefs of thrust faults on Mercury.
- Javier Fajardo, B.S. student, expected 2025 (UGA) A tectonic map of the Orientale Basin on the Moon.
- Michael Petersen, B.S. student, expected 2026 (UGA) Investigating Fracture Networks in the South Polar Terrain of Enceladus.

Community White Papers

- **Klimczak, C.**, Beddingfield, C., Byrne, P. K., Cheng, H. C. J., Crane, K. T., and Annex, A. +28 signatories: Opportunities and Challenges for Structural Geology and Tectonics in the Planetary Sciences. 2020. White paper submitted to the Planetary Science and Astrobiology Decadal Survey 2023-2032.
- Vander Kaaden, K. E., Vervack, R. J., Rampe, E., McCubbin, F. M., **Klimczak, C.**, Cline, C. J., II, Byrne, P. K., and Azures, B. A.: Recommended laboratory and field studies ahead of future Mercury exploration. 2020. White paper submitted to the Planetary Science and Astrobiology Decadal Survey 2023-2032.
- Hauck, S. A., II, Blewett, D., Byrne, P. K., Chabot, N. L., Ernst, C. M., Johnson, C. L., Mazarico, E., Raines, J. M., Vander Kaaden, K. E., Vervack, R. J., Deutsch A., DiBraccio, G., Imber, S., **Klimczak, C.**, and Poh, G.: Fundamental and Interdisciplinary Questions Drive the Scientific Exploration of Mercury. 2020. White paper submitted to the Planetary Science and Astrobiology Decadal Survey 2023-2032.
- Vander Kaaden, K. E, Hauck, S. A., Ernst, C. M., Vervack, R. J., Jr., **Klimczak, C.**, Johnson C. L., DiBraccio, G., Deutsch, A. N., Poh, G., and Imber, S.: The Next Decade of Funding

Opportunities for Mercury-Related Science and Mission Support. White paper submitted to the Planetary Science and Astrobiology Decadal Survey 2023-2032.

Books and Edited Works

- Planetary Tectonism across the Solar System, 1st Edition, Volume 2, Editors: **Klimczak, C.**, Collins, G. C., and Byrne, P. K., Paperback ISBN: 9780128160923

Published Datasets¹

- Bledsoe, S.A., **Klimczak, C.** (2024): Global Distribution of Lava Channels on Venus, Mendeley Data, V1, doi: 10.17632/frsh4z5f4v.1
- Cheng, H. C. J., **Klimczak, C.**, and Matsuyama, I. (2024): Supplementary Data - Reorientation and despinning of 4 Vesta formed the Divalia Fossae”, Mendeley Data, V1, doi: 10.17632/tgjr6d4pp.1
- Jenkins, W. T., **Klimczak C.**, Trent, P. M., and Crowe, D. E. (2021): Revised supplementary material to "Fumarolic pathways were structurally controlled by a strike-slip fault system beneath the Bishop Tuff, Bishop, California". Zenodo, V2, doi: 10.5281/zenodo.5527165
- **Klimczak, C.**, Byrne, P. K., and Crane, K. T. (2022): A Global Tectonic Map of Mercury. Mendeley Data, V2, doi: 10.17632/p43b9wttpj.2
- Loveless, S. R., **Klimczak, C.**, Crane, K. T., and Byrne, P.K. (2024): Models, topographic profiles, and data for 'Geometric forward modeling of thrust systems underlying shortening landforms on Mercury.', Mendeley Data, V1, doi: 10.17632/k4yrmr5j6k.1
- Loveless, S. R., **Klimczak, C.**, McCullough, L R., Crane, K. T., Holland, S. M., and Byrne, P.K. (2024): Code and Data for 'A statistical evaluation of the morphological variability of shortening landforms on Mercury.', Revised, Mendeley Data, V2, doi: 10.17632/8968vkgpds.2
- McCullough, L. R., Crane, K. T., Loveless, S. R., and **Klimczak, C.** (2023): Morphological and Structural Characterization of Shortening landforms on Mars datasets. Zenodo, V1, doi: 10.5281/zenodo.8322706
- Yazıcı, I. S., **Klimczak, C.**, and Crane, K. T. (2021): Supplement to "Fracture patterns on Mercury revealed by polygonal impact craters". Mendeley Data, V1, doi: 10.17632/2kswgbgcvf.1

Peer-reviewed Publications

In Preparation

61. Byrne, P. K., Ghail, R. C., James, P. B., **Klimczak C.**, Şengör A. M. C., and Solomon, S. C.: Geologically recent formation of some tessera terrain on Venus by plains accretion. In review.
60. Byrne, P. K, Dawson, H. G., **Klimczak, C.**, Regensburger, P. V., Catalano, J. G., Daswani, M. M., Elder, C. E., Foley, B. J., German, C. R., Green, A. P., Hemingway, D. J., Panning, M. P.,

¹ Underlined names represent current or former advisees at UGA

- Randolph-Flagg, N., Sherwood Lollar, B., Skemer, P. A., Wiens, D. A., and Vance, S. D.: Little to No Active Faulting Likely at Europa's Modern-Day Seafloor. In review.
59. Byrne, P. K., Padovan, S., and Matsuyama, I., **Klimczak, C.**: Tectonics Driven by Changes in Planetary Shape. In: Klimczak, C., Collins, G., and Byrne, P. K.: *Comparative Tectonism across the Solar System*. (Chapter 7), *Accepted Book Chapter*.
58. Cheng, H. C. J., Mrazek, J., and **Klimczak, C.**: The Transition from Jointing to Faulting observed at the Koa'e Fault System, Hawai'i Volcanoes National Park, Hawaii. In review.
57. Cheng, H. C. J., **Klimczak, C.**, and Matsuyama, I.: Reorientation and despinning of 4 Vesta formed the Divalia Fossae. In review.
56. Collins, G., **Klimczak, C.**, and Byrne, P. K.: Introduction to the volume. In: Klimczak, C., Collins, G., and Byrne, P. K.: *Comparative Tectonism across the Solar System*. (Chapter 1), *Accepted Book Chapter*.
55. **Klimczak C.** and McCarthy, C.: Planetary Geomechanics. In: Klimczak, C., Collins, G., and Byrne, P. K.: *Comparative Tectonism across the Solar System*. (Chapter 3), *Accepted Book Chapter*.
54. **Klimczak, C.**, Collins, G., and Byrne, P. K.: Outlook. In: Klimczak, C., Collins, G., and Byrne, P. K.: *Comparative Tectonism across the Solar System*. (Chapter 8), *Accepted Book Chapter*.
53. **Klimczak, C.**, Crane, K. T., and Byrne, P. K.: Mercury has Multiple, Superposed Global Tectonic Patterns. In review.
52. Loveless, S. R., **Klimczak, C.**, Crane, K. T., and Byrne, P.K.: Geometric forward modeling of thrust systems underlying shortening landforms on Mercury. In review.
51. Loveless, S. R., and **Klimczak, C.**: Several kilometers of global contraction on Mercury: A sample-size independent assessment of fault strain. In preparation.

2025

50. Bledsoe, S. A., and **Klimczak, C.**: Global distribution of canali on Venus. *Journal of Maps* 21(1), 2465669, 2025. doi:10.1080/17445647.2025.2465669
49. Cheng, H. C. J., and **Klimczak, C.**: Tectonic patterns on Vesta and Ceres revealed by polygonal impact craters. *Icarus* 433, 116528, 2025. doi:10.1016/j.icarus.2025.116528

2024

48. Beddingfield, C., Crane, K. T., **Klimczak, C.**, and Cartwright, R.: Mercury's Lobate Scarps Reveal that Polygonal Impact Craters Form on Contractual Structures. *The Planetary Science Journal* 5:52, 32pp, 2024. doi:10.3847/PSJ/ad1fff
47. Loveless, S. R., **Klimczak, C.**, McCullough, L. R., Crane, K. T., Holland, S. M., and Byrne, P.K.: A statistical evaluation of the morphological variability of shortening landforms on Mercury. *Icarus* 416, 116106, 2024. doi:10.1016/j.icarus.2024.116106
46. McCullough, L. R., Crane, K. T., Loveless, S. R., and **Klimczak, C.**: Morphological and Structural Characterization of Shortening Landforms on Mars. *Journal of Geophysical Research (Planets)* 129, e2023JE008196, 2024. doi:10.1029/2023JE008196.

45. Yazıcı, I. S., Cheng, H. C. J., Crane, K. T., and **Klimczak, C.**: Straight impact crater rim segments on Mercury. *Journal of Maps* 20(1), 2308687, 2024. doi:10.1080/17445647.2024.2308687

2023

44. Collins, M. S., Byrne, P. K., **Klimczak, C.**, and Mazarico, E.: Thrust Faults Bound an Elevated Mantle Plug Beneath Several Lunar Basins. *Journal of Geophysical Research (Planets)* 128, e2022JE007682, 2023. doi:10.1029/2022JE007682

2022

43. Cheng, H. C. J., and **Klimczak, C.**: Structural relationships in and around the Rheasilvia basin on Vesta. *Journal of Structural Geology* 161, 104677, 2022. doi:10.1016/j.jsg.2022.104677
42. Cheng, H. C. J., and **Klimczak, C.**: Large-scale troughs on Asteroid 4 Vesta accommodate opening-mode displacement. *Journal of Geophysical Research (Planets)*, 127, e2021JE007130, 2022. doi:10.1029/2021JE007130

2021

41. Byrne, P. K., Ghail, R. C., Şengör A. M. C., James, P. B., **Klimczak C.**, and Solomon, S. C.: A Globally Fragmented and Mobile Lithosphere on Venus. *Proceedings of the National Academy of Sciences of the United States of America*, 118, e2025919118, 2021. doi:10.1073/pnas.2025919118
40. Byrne, P. K., Ghail, R. C., Gilmore, M. S., Şengör A. M. C., **Klimczak C.**, Senske, D. A., Whitten, J. L., Khawja, S., Ernst, R. E., and Solomon, S. C.: Venus tesserae feature layered, folded, and eroded rocks. *Geology* 46, 81–85, 2021. doi:10.1130/G47940.1
39. Cheng, H. C. J., **Klimczak, C.** and Fassett, C. I.: Age relationships of large-scale troughs and impact basins on Vesta. *Icarus* 366, 114512, 2021. doi:10.1016/j.icarus.2021.114512
38. Jenkins, W. T., **Klimczak C.**, Trent, P. M., and Crowe, D. E.: Fumarolic pathways were structurally controlled by a strike-slip fault system beneath the Bishop Tuff, Bishop, California. *Minerals* 11, 1167, 2021. doi:10.3390/min11111167

2019

37. Callihan, M. B., and **Klimczak, C.**: Topographic Expressions of Lunar Graben. *Lithosphere* 11, 294–305, 2019. doi:10.1130/L1025.1.
36. Crane, K. T., and **Klimczak, C.**: A 3-D Structural Model of the Saddle Mountains, Yakima Fold Province Washington, USA: Implications for Late Tertiary Tectonic Evolution of the Columbia River Flood Basalt Province. *Tectonophysics* 766, 1–13, 2019. doi: 10.1016/j.tecto.2019.05.015.
35. Crane, K. T., and **Klimczak, C.**: Tectonic Patterns of Shortening Landforms in Mercury's Northern Smooth Plains. *Icarus* 317, 66–80, 2019. doi:10.1016/j.icarus.2018.05.034.
34. **Klimczak, C.**, Byrne, P. K., Şengör, A. M. C., and Solomon, S. C.: Principles of structural geology on rocky planets. *Canadian Journal of Earth Sciences* 56, 1437–1457, 2019. doi:10.1139/cjes-2019-0065.

2018

33. Byrne, P. K., **Klimczak, C.**, and Şengör, A. M. C.: The Tectonic Character of Mercury. In: Solomon, S. C., Nittler, L. R., and Anderson, B. J.: *Mercury: The View after MESSENGER* (Chapter 10), 249–286, 2018, Cambridge Planetary Science. doi:10.1017/9781316650684.011
32. Byrne, P. K., Whitten, J. L., **Klimczak, C.**, McCubbin, F. M., and Ostrach, L. R.: The Volcanic Character of Mercury. In: Solomon, S. C., Nittler, L. R., and Anderson, B. J.: *Mercury: The View after MESSENGER* (Chapter 11), 287–323, 2018, Cambridge Planetary Science. doi:10.1017/9781316650684.012
31. **Klimczak, C.**, Kling, C. L., and Byrne P. K.: Topographic Expressions of Large Thrust Faults on Mars. *Journal of Geophysical Research (Planets)*, 123, 1973–1995, 2018. doi:10.1029/2017JE005448.
30. **Klimczak, C.**, Crane, K. T., Habermann, M. A., and Byrne P. K.: The spatial distribution of Mercury's pyroclastic activity and the relation to lithospheric weaknesses. *Icarus* 315, 115–123, 2018. doi:10.1016/j.icarus.2018.06.020.

2017

29. Crane K. T., and **Klimczak, C.**: Timing and Rate of Global Contraction on Mercury. *Geophysical Research Letters* 44, 3082–3089, 2017. doi: 10.1002/2017GL072711.

2016

28. Byrne, P. K., Ostrach, L. R., Fassett, C. I., Chapman, C. R., Denevi, B. W., Evans, A. J., **Klimczak, C.**, Banks, M. E., Head, J. W., and Solomon, S. C.: Widespread effusive volcanism on Mercury likely ended by about 3.5 Ga. *Geophysical Research Letters* 43, 7408–7416, 2016. doi:10.1002/2016GL069412.
27. Weider, S. Z., Nittler, L. R., Murchie, S. L., Peplowski, P. N., McCoy, T. J., Kerber, L., **Klimczak, C.**, Ernst, C. M., Goudge, T. A., Starr, R. D., Izenberg, N. R., Klima, R. L., and Solomon, S. C.: Evidence from MESSENGER for sulfur- and carbon-driven explosive volcanism on Mercury. *Geophysical Research Letters* 43, 3653–3661, 2016. doi:10.1002/2016GL068325.

2015

26. Banks, M. E., Xiao, Z., Watters, T. R., Strom, R. G., Braden, S. E., Chapman, C. R., Solomon, S. C., **Klimczak, C.**, and Byrne, P. K.: Duration of Activity on Lobate-Scarp Thrust Faults on Mercury. *Journal of Geophysical Research (Planets)* 120, 1751–1762, 2015. doi: 10.1002/2015JE004828.
25. Byrne, P. K., **Klimczak, C.**, McGovern, P. J., Mazarico, E., James, P. B., Neumann, G. A., Zuber, M. T., and Solomon, S. C.: Deep-seated reverse faults bound the Mare Crisium lunar mascon. *Earth and Planetary Science Letters* 427, 183–190, 2015. doi:10.1016/j.epsl.2015.06.022
24. Ernst, C. M., Denevi, B. W., Barnouin, O. S., **Klimczak, C.**, Chabot, N. L., Head, J. W., Murchie, S. L., Neumann, G. A., Prockter, L. M., Robinson, M. S., Solomon, S. C., Watters, T.

- R.: Volcanic Plains in Caloris Basin: Thickness, Timing, and What Lies Beneath. *Icarus* 250, 413–429, 2015. doi:10.1016/j.icarus.2014.11.003
23. Ferrari, S., Massironi, M., Marchi, S., Byrne, P. K., **Klimczak, C.**, Martellato, E., and Cremonese, G.: Age relations of the Rembrandt basin and associated scarp system, Mercury. In: Platz, T., Massironi, M., Byrne, P. K. & Hiesinger, H. (eds) *Volcanism and Tectonism Across the Inner Solar System. Geological Society, London, Special Publications 401*, 159–172, 2015. doi:10.1144/SP401.20.
22. **Klimczak, C.**, Byrne, P. K., and Solomon, S. C.: A rock-mechanical assessment of Mercury's global tectonic fabric. *Earth and Planetary Science Letters* 416, 82–90, 2015. doi:10.1016/j.epsl.2015.02.003
21. **Klimczak, C.**: Brittle strength of planetary lithospheres undergoing global contraction. *Journal of Geophysical Research (Planets)* 120, 2135–2151, 2015. doi: 10.1002/2015JE004851.

2014

20. Byrne, P. K., **Klimczak, C.**, Şengör, A. M. C., Solomon, S. C., Watters, T. R., and Hauck II, S. A.: Mercury's global contraction much greater than earlier estimates. *Nature Geoscience* 7, 301–307, 2014. doi:10.1038/NNGEO2097.
19. **Klimczak, C.**: Geomorphology of Lunar Grabens Requires Igneous Dikes at Depth. *Geology* 42, 963–966, 2014. doi:10.1130/G35984.1.
18. Xiao, Z., Strom, R. G., Chapman, C. R., Head, J. W., **Klimczak, C.**, Ostrach, L. R., Helbert, J., and D'Incecco, P.: Controlling factors in impact excavation processes: Insights from comparisons of fresh complex impact craters on Mercury and the Moon. *Icarus* 228, 260–275, 2014. doi:10.1016/j.icarus.2013.10.002.

2013

17. Blair, D. M., Freed, A. M., Watters, T. R., Byrne, P. K., **Klimczak, C.**, Prockter, L. M., Ernst, C. M., Solomon, S. C., Melosh, H. J., and Zuber, M. T.: The origin of graben and ridges in Rachmaninoff, Raditladi, and Mozart basins, Mercury. *Journal of Geophysical Research (Planets)* 118, 47–58, 2013. doi:10.1029/2012JE004198.
16. Byrne, P. K., **Klimczak, C.**, Williams D. A., Hurwitz, D. M., Solomon, S. C., Head, J. W., Preusker, F., and Oberst, J.: An Assemblage of Lava Flow Features on Mercury. *Journal of Geophysical Research (Planets)* 118, 1303–1322, 2013. doi:10.1002/jgre.20052.
15. Denevi, B. W., Ernst, C. M., Meyer, H. M., Robinson, M. S., Murchie, S. L., Whitten, J. L., Head, J. W., Watters, T. R., Solomon, S. C., Ostrach, L. R., Chapman, C. R., Byrne, P. K., **Klimczak, C.**, and Peplowski, P. N.: The Distribution and Origin of Smooth Plains on Mercury. *Journal of Geophysical Research (Planets)* 118, 891–907, 2013. doi:10.1002/jgre.20075.
14. **Klimczak, C.**, Ernst, C. M., Byrne, P. K., Solomon, S. C., Watters, T. R., Murchie, S. L., Preusker, F., and Balcerski, J. A.: Insights into the subsurface structure of the Caloris basin, Mercury, from assessments of mechanical layering and changes in long-wavelength topography. *Journal of Geophysical Research (Planets)* 118, 2030–2044, 2013. doi:10.1002/jgre.20157.

13. **Klimczak, C.**, and Schultz, R. A.: Shear-enhanced compaction in dilating granular materials. *International Journal of Rock Mechanics and Mining Sciences* 64, 139–147, 2013. doi:10.1016/j.ijrmms.2013.08.012.
12. **Klimczak, C.**, and Schultz, R. A.: Fault damage zone origin of the Teufelsmauer, Subhercynian Cretaceous Basin, Germany. *International Journal of Earth Sciences/Geologische Rundschau* 102, 121–138, 2013. doi:10.1007/s00531-012-0794-z.
11. Schultz, R. A., **Klimczak, C.**, Fossen, H., Olson, J. E., Exner, U., Reeves, D. M., and Soliva, R.: Statistical tests of scaling relationships for geologic structures. *Journal of Structural Geology* 48, 85–94, 2013. doi:10.1016/j.jsg.2012.12.005.

2012

10. Fassett, C. I., Head, J. W., Baker, D. M., Zuber, M. T., Smith, D. E., Neumann, G. A., Solomon, S. C., **Klimczak, C.**, Strom, R. G., Chapman, C. R., Prockter, L. M., Phillips, R. J., Oberst J., and Preusker, F.: Large impact basins on Mercury: Global distribution, characteristics, and modification history from MESSENGER orbital data. *Journal of Geophysical Research (Planets)* 117, E00L08, 2012. doi:10.1029/2012JE004154.
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152. Crane, K. T., Byrne, P. K., **Klimczak, C.**, Solomon, S. C., James, P. B., and Ghail, R. C.: Substantial shortening at some plains–tessera margins on Venus. *55th Lunar and Planetary Science Conference*, 2024, #2727, The Woodlands, TX, USA.
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148. Loveless, S. R., **Klimczak, C.**, McCullough, L. R., Crane, K. T., and Byrne, P. K.: A Comparison of Thrust Fault Systems Underlying Wrinkle Ridges and Lobate Scarps on Mercury. *55th Lunar and Planetary Science Conference*, 2024, #2176, The Woodlands, TX, USA.
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125. Cheng H. C. J., and **Klimczak, C.**: Systematic fracture pattern on Vesta revealed by polygonal impact craters. *52nd Lunar and Planetary Science Conference*, 2021, #1015, virtual meeting.
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64. **Klimczak, C.**, and Byrne, P. K., Bimodality of pure compaction bands, Buckskin Gulch, Utah, *American Geophysical Union, Fall Meeting*, 2015, MR41D-2679, San Francisco, CA, USA.
63. **Klimczak, C.**, Byrne, P. K., Banks, M. E., and Solomon, S. C.: Amount, timing, and rate of global contraction on Mercury, *American Geophysical Union, Fall Meeting*, 2015, P41F-06, San Francisco, CA, USA.
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39. **Klimczak, C.**, Byrne, P. K., and Solomon, S. C.: Flood volcanism on a contracting planet: Insights from Mercury and the Moon. American Geophysical Union, Fall Meeting, 2013, P13A-1738, San Francisco, CA, USA.
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34. Byrne, P. K., **Klimczak, C.**, Solomon, S. C., Watters, T. R., and Murchie, S. L.: Tectonic structural complexity in Caloris basin, Mercury. *European Planetary Science Congress*, 2012, p. 765, Madrid, Spain.
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23. Watters, T. R., Solomon, S. C., Robinson, M. S., Head, J. W., Strom, R. G., **Klimczak, C.**, Byrne, P. K., Enns, A. C., Ernst, C. M., Prockter, L. M., Murchie, S. L., Oberst, J., Preusker, F., Zuber, M. T., Hauck, II, S. A., and Phillips, R. J.: Tectonic features on Mercury: An orbital

view with MESSENGER. *43rd Lunar and Planetary Science Conference*, 2012, p. 2121, Houston, TX, USA.

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16. Hurwitz, D. M., Head, J. W., Zuber, M. T., Smith, D. E., Neumann, G. A., Strom, R. G., Fassett, C. I., Denevi, B. W., Blewett, D. T., Ernst, C. M., Watters, T. R., Solomon, S. C., Byrne, P. K., **Klimczak, C.**, Murchie, S. L., Prockter, L. M., Chabot, N. L., Gillis-Davis, J. J., Whitten, J. L., Goudge, T. A., Baker, D. M., Ostrach, L. R., Xiao, Z., Merline, W. J., Dickson, J. L., Oberst, J., and Nittler, L. R.: Lava erosion on Mercury: Model results using new observations from MESSENGER. *American Geophysical Union, Fall Meeting*, 2011, P41A-1591, San Francisco, CA, USA.

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14. **Klimczak, C.**, Watters, T. R., Byrne, P. K., Ernst, C. M., Solomon, S. C., Goudge, T. A., Head, J. W., and Xiao, Z.: Strain analysis of extension in volcanically flooded impact craters on Mercury. *Geological Society of America, Annual Meeting*, 2011, vol. 43, no. 5, p. 359, Minneapolis, MN, USA.
13. **Klimczak, C.** and Schultz, R. A.: Compactional shear bands in dilational sands and soils. *American Geophysical Union, Fall Meeting*, 2011, T33C-2426, San Francisco, CA, USA.
12. Watters, T. R., Solomon, S. C., Head, J. W., Ernst, C. M., Denevi, B. W., Robinson, M. S., **Klimczak, C.**, and Goudge, T. A.: Extension in the northern plains of Mercury. *Geological Society of America, Annual Meeting*, 2011, vol. 43, no. 5, p. 358, Minneapolis, MN, USA.
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9. **Klimczak, C.**, Nahm, A. L., and Schultz, R. A.: Evaluation of the Origin Hypotheses of Pantheon Fossae, Mercury. *40th Lunar and Planetary Science Conference*, 2009, #1251, Houston, TX, USA.
8. **Klimczak, C.** and Schultz, R. A.: Strain localization in porous sandstone associated with the Northern Harz Mountains Border Fault, Germany. *American Geophysical Union Fall Meeting*, 2009, T43A-2050, San Francisco, CA, USA.

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7. **Klimczak, C.**, Wittek, A., Doman, D., and Riller, U.: Heterogeneous fabric development in the Onaping Formation and the Sudbury Igneous Complex as indications for a fold origin of the NE-lobe of the Sudbury basin, Canada. *39th Lunar and Planetary Science Conference*, 2008, #1391, Houston, TX, USA.
6. **Klimczak, C.** and Schultz, R. A.: Cubic law for fluid flow becomes quintic: An extension of the parallel plate model to natural fracture sets. *Marie Curie Summer School – Knowledge Based Materials (Aqueous and Porous Materials)*, 2008, Třešt, Czech Republic.

5. **Klimczak, C.**, Schultz R. A., Parasar, R., and Reeves, D. M.: The Cubic Law Re-evaluated: Quintic Law for Joint Sets. American Geophysical Union Fall Meeting, 2008, H31B-0832, San Francisco, CA, USA.

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4. **Klimczak, C.** and Riller, U.: Deformation of the Onaping Formation in the NE-lobe of the Sudbury Igneous Complex, Canada: Evidence for fold adjustment flow in the core of a km-scale fold. *11. Symposium "Tektonik, Struktur- und Kristallingeologie"*, 2006, Göttingen, Germany.
3. **Klimczak, C.** and Riller, U.: Fold-origin of the Sudbury Igneous Complex, Canada: Fold-adjustment flow in the core of its NE-lobe. IODP-ICDP Kolloquium, 2006, Greifswald, Germany.
2. **Klimczak, C.**, Wittek, A., Doman D., and Riller, U.: Deformation of the Onaping Formation: Mechanisms of orogenic folding of the central Sudbury Impact Structure, Canada. *Impact craters as indicators for planetary environmental evolution and astrobiology conference*, 2006, Lockne, Sweden.
1. Grieve, R., Riller U., and **Klimczak, C.**: Potential new constraints on deformation at the Sudbury Structure, Canada. *15th Deformation Mechanisms, Rheology and Tectonics*, 2005, Zurich, Switzerland.

Invited Lectures

26. Signatures of Planetary Tectonics: Examples from Asteroid 4 Vesta and Mercury. September 2022, *Invited seminar* at the Georgia State University, Atlanta, GA.
25. Deciphering global tectonic patterns on Mercury. September 2021, *Invited seminar* at the Georgia Institute of Technology, Atlanta, GA.
24. Towards unriddling global tectonic patterns on Mercury. March 2021, *Invited seminar* at the Illinois State University, Normal, IL.
23. The Tectonics of Mercury. February 2021, *Invited Lecture* at University of Edinburgh, UK.
22. Interactions of Faulting and Volcanism: Examples from Earth, Mercury, and Beyond. November 2019, *Invited Lecture* at University of Alabama, Tuscaloosa, AL.
21. Amount, Timing, and Rate of Global Contraction on Mercury. January 2018, *Invited Lecture* at Ernst Moritz Arndt Universität Greifswald, Germany.
20. Deep-Seated Thrust Faults in Mare Crisium, the Moon. January 2018, *Invited seminar* at the Universität Hamburg, Germany.
19. The Tectonics of Mercury. December 2016, *Invited seminar* at the University of South Carolina, Columbia, SC.
18. Tectonic geomorphology as a tool to understand the structural geologic history of the Moon. November 2015, *Invited seminar* at the University of Illinois at Chicago, Chicago, IL.

17. The surface Geology on Mercury. June 2015, *Invited Presentation* at the 5th MESSENGER-BepiColombo Joint Science Meeting, Berlin, Germany.
16. Tectonic geomorphology as a tool to understand the structural geologic history of the Moon. June 2015, *Invited seminar* at the Lunar and Planetary Institute, Houston, TX.
15. The MESSENGER mission to Mercury: The geology of the innermost planet as seen after 4 years of orbital observations. April 2015, *Invited seminar* at Tulane University, New Orleans, LA.
14. Thrust Fault Tectonics on Rocky Planets. March 2015, *Invited seminar* at the University of Tennessee, Knoxville, TN.
13. The MESSENGER mission to Mercury: The geology of the innermost planet as seen after 4 years of orbital observations. March 2015, *Brownbag talk* at the University of Tennessee, Knoxville, TN.
12. The MESSENGER mission to Mercury: The geology of the innermost planet as seen after almost 4 years of orbital observations. November 2014, *Invited seminar* at the Georgia Institute of Technology, Atlanta, GA.
11. Nature and relative timing of tectonics and volcanism on Mercury. June 2014, *Invited seminar* at the German Aerospace Center (DLR), Berlin, Germany.
10. Thrust Fault Tectonics on Earth and Mercury. March 2014, *Invited Seminar* at the University of Georgia, Athens, GA.
9. Thrust Fault Tectonics on Earth and Mercury. February 2014, *Invited Seminar* at the University of Missouri, Columbia, MO.
8. Mercury: Tectonic Processes on a Contracting Planet. December 2013, *Invited Seminar* at the University of California Los Angeles, Los Angeles, CA.
7. Tectonic Controls of Volcanism on One-Plate Planets. November 2013, *Invited Seminar* at the University of Colorado, Boulder, CO.
6. Igneous Dikes on the Moon and Mercury. September 2013, *Invited Seminar* at the Goddard Space and Flight Center, Greenbelt, MD.
5. Long-wavelength topographic changes on Mercury. April 2013, *Contributed Presentation* at the 4th MESSENGER-BepiColombo Joint Science Meeting, Chicago, IL.
4. Large-scale lithospheric deformation on Mercury. March 2013, *Invited Seminar* at the Virginia Polytechnic Institute, Blacksburg, VA.
3. Faults and Folds on Mercury. May 2012, *Invited seminar* at the Lunar and Planetary Institute, Houston, TX.
2. Fracturing behavior of geological materials during volumetric, brittle deformation. September 2011, *Seminar* at the Carnegie Institution of Washington, Washington, DC.
1. Deformation bands in sandstone: An example from the Subhercynian Cretaceous Basin, Germany. January 2010, *Invited lecture* at Geoforschungszentrum (GFZ) Potsdam, Germany.