Joana R. C. Voigt

CONTACT INFORMATION

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RESEARCH SUMMARY

I am a planetary geologist and interested in eruption products on Earth, Mars, the Moon, as well as on Icy Satellites. Connecting interior processes with remote sensing observations of volcanic terrains is vital for understanding the thermal dynamic evolution of planetary bodies. In particular, my research focuses on the relationship of emplacement dynamics of lava flow-fields and the final lava morphologies of effusive eruptions.

EDUCATION

PhD Candidate in Planetary Science — 2018 – Present
University of Arizona, Lunar and Planetary Laboratory, United States.
Flood Lava Flows on Earth and Mars—Advisor: Christopher W. Hamilton.

Master of Science in Planetary Science — May 2020
University of Arizona, Lunar and Planetary Laboratory, United States.

Master of Science in Geological Science — December 2017
Freie Universität Berlin, Germany.
Investigating the Volcanic versus Aqueous Origin of the Surficial Deposits in Eastern Elysium Planitia, Mars—Advisors: Ralf Jaumann and Anne Bernhardt.

Bachelor of Science in Geological Sciences — December 2017
Freie Universität Berlin, Germany.
Geomorphological and Topographical Investigations of Patterned Ground on Svalbard—Advisors: Ralf Jaumann and Stephan van Gasselt.

SELECTED RESEARCH EXPERIENCE

Graduate Research Assistant — 2018 – Present
Lunar and Planetary Laboratory, University of Arizona, Tucson.

Student Research Assistant — 2011 – 2017
German Aerospace Center (DLR), Institute of Planetary Research
Department of Planetary Geology, Berlin Adlershof, Germany.

Exchange Graduate Program in Planetary Science — 2015 – 2016
The University of Arizona, Lunar and Planetary Laboratory, United States.

SCHOLARSHIPS AND AWARDS

Future Investigators in NASA Earth and Space Science and Technology (FINESST)	September 2020 – present
Zonta International Amelia Earhart Fellowship for the 2020–2021 academic year	April 2020
Galileo Circle Scholarship, UA College of Science Galileo Circle Scholarships	April 2020
Galileo Circle Scholarship, UA College of Science Galileo Circle Scholarships	April 2018
Lipman Research Award GSA (Geological Society of America) Research Grant	2016
German Academic Exchange Service (DAAD) Scholorship for Graduate -and PhD students	2015 – 2016
Deutsche Physikalische Gesellschaft e.V. DPG (German Society of Physics) Abitur Award	2010

TEACHING EXPERIENCES AND PUBLIC OUTREACH

Graduate Teaching Assistant for PTYS170A1 - Planet Earth: Evolution of the Habitable World. Spring 2019
—Lecturer: Dr. Steve Kortenkamp
Graduate Teaching Assistant for PTYS170B - The Universe and Humanity: Origin and Destiny. Fall 2018
—Lecturer: Dr. Tommy Koskinen
Guest Lecturer for PTYS170B - The Universe and Humanity: Origin and Destiny. Fall 2018
Graduate Teaching Assistant for PTYS206 - Our Golden Age of Planetary Exploration. Spring 2018
—Lecturer: Dr. Jeff Andrews-Hanna

Invited Talk at Tucson Amateur Astronomy Association. January 2021
Volcanism and Cryovolcanism in the Solar System: Examples from Earth, Mars, and Europa.
The Art of Planetary Science, University of Arizona. 2018 – 2019
Public outreach at Night of Science, Berlin. 2011 – 2017
Public outreach at ILA Berlin Air Show. 2014

SELECTED PRESS

CBS News 60 Minutes Overtime: Iceland's newest volcano provides insight into Mars. 2021
Arizona Illustrated: Flight of the RAVEN: Drone testing in Iceland may lead to exploring inaccessible places on Mars.
University of Arizona News: Plumes on Icy Worlds Hold Clues About What Lies Beneath. 2020
NASA JPL News: Potential Plumes on Europa Could Come From Water in the Crust.
Stanford News: Stanford researchers model source of eruption on Jupiter's moon Europa.

FIELD EXPERIENCE

Data collections and monitoring of Iceland's eruption on the Reykjanes peninsula. 2021
Planetary analogs field trip to Chiricahua mountains and the San Bernardino volcanic field, U.S.
NASA GSFC-led field campaign to Holuhraun 2014–2015 eruption site and Askja volcano, Iceland. 2019
Planetary analogs field trip to Zuni-Bandera Volcanic Field, U.S.
NASA GSFC-led field campaign to Holuhraun 2014–2015 eruption site and Kverkfjoll volcano, Iceland. 2018
Planetary analogs field trip to Death Valley, U.S.
Geomorphology and sedimentology field trip: From source to sink, Pyrenees Spain. 2017
Volcanology field campaign to Holuhraun 2014–2015 eruption site, Iceland. 2016
Planetary analogs field trip to Chiricahuas and San Bernardino Valley, U.S.
Field trip to evolution of planetary surfaces in the Flagstaff area, U.S. 2015
Planetary analogs field trip practicums to Salton Sea region, U.S.
Field trip to Barberton Belt, Greenstone Belt and the Vredefort Impact Structure, South Africa. 2014
Sedimentology and Stratigraphy flied trip to Harz, Germany. 2013
Tectonic field trip to Erz Mountains, Germany.
Mapping field trip in the Rheinisches Schiefergebirge, Germany.
Impact geology field trip to Ries Crater, Germany. 2011
System of the Earth fielt trip to Harz, Germany.

SERVICE

Served as executive secretary on NASA review panels. Co-convener for the session *Terrestrial Analogues for Planetary Volcanism* at the IAVCEI 2023 scientific assembly.

PEER-REVIEWED PUBLICATIONS

In Review G. D. Tolometti, C. D. Neish, C. W. Hamilton, G. R. Osinski, A. Kukko, and **J. R. C. Voigt** (in Review): Differentiating Lava Facies and Lava Types Using RADAR and LiDAR: Applications to the 2014–2015 Holuhraun lava flow-field and Mars. Journal of Geophysical Research-Solid Earth.

G. Steinbrügge, M. S. Haynes, D. M. Schroeder, K. M. Scanlan, A. Stark D. A. Young, C. Grima, S. Kempf, G. Ng, D. Buhl, **J. R. C. Voigt**, T. Roatsch, and D. D. Blankenship (in Revision): Altimetry Measurements from Planetary Radar Sounders and Application to SHARAD on Mars. IEEE Transactions on Geoscience and Remote Sensing.

2021 **J. R. C. Voigt**, C. W. Hamilton, G. Steinbrügge, and S. P. Scheidt, (2021): Roughness Characterization of the 2014–2015 Holuhraun Lava Flow-Field in Iceland: Implications for Facies Mapping and Remote Sensing. Bulletin of Volcanology 83, 82 (2021). 10.1007/s00445-021-01499-4.

J. R. C. Voigt, C. W. Hamilton, G. Steinbrügge, Á. Höskuldsson, I. Jónsdottir, and T. Thordarson (2021): Linking Lava Morphologies to Effusion Rates for the 2014–2015 Holuhraun Lava Flow-Field, Iceland. Geology. 10.1130/G49251.1.

E. Lev, C. W. Hamilton, **J. R. C. Voigt**, A. C. Stadermann, Y. Zhan, and C. D. Neish (2021): Emplacement conditions of lunar impact melt flows. Icarus. Vol. 369, 114578, 10.1016/j.icarus.2021.114578.

J. R. C. Voigt, C. W. Hamilton, S. P. Scheidt, U. Münzer, Á. Höskuldsson, I. Jónsdottir, and T. Thordarson (2021): Geomorphological Characterization of the 2014–2015 Holuhraun Lava Flow-Field in Iceland. Journal of Volcanology and Geothermal Research. Vol. 419, 107278. 10.1016/j.jvolgeores.2021.107278.

2020 G. Steinbrügge*, **J.R.C. Voigt***, N. S. Wolfenbarger, C. W. Hamilton, K. M. Soderlund, D. A. Young, D. D. Blankenship, S. D. Vance, D. M. Schroeder, (2020): Brine Migration and Impact-Induced Cryovolcanism on Europa. Geophysical Research Letters, 47, e2020GL090797. 10.1029/2020GL090797. *Corresponding Authors.

G. Steinbrügge, **J. R. C. Voigt** , D.M. Schroeder, A. Stark, M.S. Haynes, K. Scanlan, D.A. Young, C. Grima, H. Hussmann, D.D. Blankenship (2020): The Surface Roughness of Europa from Galileo Stereo Images. Icarus. Vol. 343, 113669. doi:10.1016/j.icarus.2020.113669.

2018 **J. R. C. Voigt**, and C. W. Hamilton (2018): Investigating the Volcanic versus Aqueous Origin of the Surficial Deposits in Eastern Elysium Planitia, Mars. Icarus. Vol. 309, 389–410, doi:10.1016/j.icarus.2018.03.009.

D. Tirsch, G. Erkeling, J. Bishop, **J. R. C. Voigt**, L. Tornabene, and R. Jaumann (2018): Geology of central Libya Montes, Mars: Aqueous alteration history from mineralogical and morphological mapping. Icarus. Vol. 314, 12–34, doi:10.1016/j.icarus.2018.05.006.

M. Golombek, M. Grott, G. Kargl, J. Andrade, J. Marshall, N. Warner, N. A. Teanby, H. E. Abarca, R. G. Deen, V. Ansan, E. Hauber, **J. Voigt**, R. Lichtenheldt, B. Knapmeyer-Endrun, A. Trebi-Ollennu, J. Singer, J. Maki, C. Schmelzbach, S. Kedar, D. Banfield, I. J. Daubar, D. Kipp, N. Muller, P. Lognonné, W. Folkner, S. Le Maistre, D. Mimoun, N. Murdoch, S. Piqueux, P. Delage, W. T. Pike, C. Charalambous, R. Lorenz, L. Fayon, S. Smrekar, A. Lucas, S. Rodriguez, P. Morgan, A. Spiga, T. Gudkova, Ö. Karatekin, M. Panning, R. Garcia, D. Giardini, U. Christensen, T. Nicollier, D. Sollberger, J. Robertsson, K. Ali, W. Kim, O. Khan, C. Sorice, P. Bailey, B. Kenda, M. Siegler, C. Vrettos, and W. B. Banerdt (2018): Geology and Physical Properties Investigations by the InSight Lander. Space Science Reviews. Vol. 214: 84, doi:10.1007/s11214-018-0512-7.

2015 R. Jaumann, D. Tirsch, E. Hauber, V. Ansan, G. Di Achille, G. Erkeling, F. Fueten, J. Head, M. G. Kleinhans, N. Mangold, G. G. Michael, G. Neukum, A. Pacificii, T. Platz, M. Pondrelli, J. Raack, D. Reiss, D. A. Williams, S. Adeli, D. Baratouxl, G. de Villiers, B. Foing, S. Gupta, K. Gwinner, H. Hiesinger, H. Hoffmann, L. Le Deit,L. Marinangeli, K.-D. Matz, V. Mertens, J. P. Muller, J. H. Pasckert, T. Roatsch, A. P. Rossi, F. Scholten, M. Sowe, **J. Voigt**, N. Warner (2015): Quantifying Geological Processes on Mars - Results of the High Resolution Stereo Camera (HRSC) on Mars Express. Planetary and Space Science. Vol. 112, 53–97, doi:10.1016/j.pss.2014.11.029.

2014 K. Krohn, R. Jaumann, D. Elbeshausen, T. Kneissl, N. Schmedemann, R. Wagner, **J. Voigt**, K. Otto, K. D. Matz, F. Preusker, T. Roatsch, K. Stephan, C. A. Raymond, C. T. Russell (2014): Asymmetric craters on Vesta: Impact on sloping surfaces. Planetary and Space Science. Vol. 103, 36–56, doi:10.1016/j.pss.2014.04.011.

2013 J. L. Bishop, D. Tirsch, L. L. Tornabene, R. Jaumann, A. S. McEwen, P. C. McGuire, A. Ody, F. Poulet, R. N. Clark, M. Parente, N. K. McKeown, J. F. Mustard, S. L. Murchie, **J. Voigt**, Z. Aydin, M. Bamberg, A. Petau, G. Michael, F. P. Seelos, C. D. Hash, G. A. Swayze, and G. Neukum (2013): Mineralogy and morphology of geologic units at Libya Montes, Mars: Ancient aqueously derived outcrops, mafic flows, fluvial features, and impacts. Journal of Geophysical Research: Planets. Vol. 118, 487–513, doi:10.1029/2012JE004151.

CONFERENCE PRESENTATIONS

2021 D. Tirsch, et al. (2021). Spatial Trends in Mineral Abundances Across Tyrrhena Terra on Mars. Lunar and Planetary Science Conference LXXXIII-1193.

M. D. Lane, et al. (2021). Identifying Two Distinct Olivine Compositions in Tyrrhena Terra and Libya Montes, Mars. Lunar and Planetary Science Conference LXXXIII-2550.

D. Tirsch, et al. (2021). Spatial Trends in Mineral Abundances across Tyrrhena Terra on Mars derived from Geomorphological and Mineralogical Mapping. EGU21-7440.

2020 J. Bishop, et al. (2020). Characterizing the Aqueous Geochemical History at Tyrrhena Terra, Mars. AGU2020-P079-0008.

G. D. Tolometti, et al. (2020). Roughness Analysis of the Holuhraun Lava Flow-Field for Lunar and Martian Volcanic Analogs. AGU2020-P063-14.

J.R.C. Voigt, et al. (2020). Platy Lavas at the Holuhraun 2014-2015 Lava Flow-Field as an Analog for Platy-Ridged Terrains on Mars. Lunar and Planetary Science Conference LXXXII-2358.

J.R.C. Voigt*, G. Steinbrügge* et. al. (2020). Melt Mobilization on Europa and Its Application to Manannan Crater. Lunar and Planetary Science Conference LXXXII-1392.*Correspondance.

G. D. Tolometti, et al. (2020): Quantifying the Surface Roughness of the 2014–2015 Holuhraun Lava Flow Using Radar and LiDAR Remote Sensing. Lunar and Planetary Science Conference LXXXII-1417.

2019 G. Steinbrügge, et al. (2019): Reassessing Europa's Surface Roughness. European Planetary Science Congress 2019-865-2.

S. S. Sutton, et al. (2019): The Onset of Degradation of the Holuhraun Spatter Rampart. GSA meeting-239-3.

J. R. C. Voigt and C. W. Hamilton, (2019): Constraining Effusive Eruption Styles Throughout Elysium Planitia, Mars. Lunar and Planetary Science Conference L-2620.

C. N. Achilles et al., (2019): Acidic Alteration in a Young Basaltic Lava Field: Sulfur-Bearing Products and Implications for Mars. Lunar and Planetary Science Conference L-3043.

2018 **J. R. C. Voigt**, et al. (2018): Facies Characterization of the 2014–2015 Holuhraun Lava Flow Field from Remote Sensing Data and Field Observations. AGU2018-P31H-3796.

G. Steinbrügge, et al. (2018): Reassessing the surface roughness of Europa using Galileo stereo images. AGU2018-P42B-05.

P. Whelley, et al. (2018): Analogs of Ice and Fire: Conducting Fieldwork in the Icelandic Highlands to Inform Volcanic Interpretations on Mars and Instrument Development for Europa. AGU2018-P31H-3795.
C. A. Nixon, et al. (2018): Characterization of a Europa analog environment at Kverkfjöll, Iceland. AGU2018-P33G-3911.

D. Tirsch, et al. (2018): Aqueous Alteration at Libya Montes Reveals Changing Geochemical Environments on Early Mars. European Planetary Science Congress 2018-365.

J. R. C. Voigt, et al. (2018): A revised Geologic History for the Major Flow Units in Eastern Elysium Planitia, Mars. Lunar and Planetary Science Conference XLIX-1493.

2017 **J. Voigt**, et al. (2017): Holuhraun 2014–2015 Eruption Site on Iceland: A Flood Lava Analogue for Mars. European Planetary Science Congress 2017-848.

J. Voigt, et al. (2017): Facies Relationships and Emplacement History of the 2014–2015 Eruption at Holuhraun, Iceland. EGU2017-8255.

L. E. Bonnefoy, et al. (2017): Landscape Evolution after the 2014–2015 Lava Flow at Holuhraun, Iceland. Lunar and Planetary Science XLVIII-1652.

R. J. Wagner, et al. (2017): Samarkand Sulci, Enceladus: Topography and Geology from the data of Cassini 228En Non-Targeted Flyby in Global Context. Lunar and Planetary Science XLVIII-2262.

2016 R. J. Wagner, et al. (2016): Stratigraphy in the Samarkand Sulci Region of Enceladus. AGU2016-P33A-2125.

J. Voigt, et al. (2016): Investigating the Volcanic or/and Fluvioglacial Origin of Surficial Deposits in Eastern Elysium Planitia, Mars. Lunar and Planetary Science 2016-2849.

2015 D. Tirsch, et al. (2015): Diverse Morphology and Mineralogy of Aqueous Outcrops at Libya Montes, Mars. Lunar and Planetary Science Conference XLVI-1738.

J. Voigt, et al. (2015): Topographic control of sorted circle morphology on Svalbard. EGU2015-10263.

D. Tirsch, et al. (2015): Aqueous outcrops at Libya Montes, Mars: A close eye on morphology and mineralogy. EGU2015-3870.

2014 D. Tirsch, et al. (2014): Photogeological Mapping of Ancient Aqueous Outcrops at Libya Montes, Mars. European Planetary Science Congress 2014-687.