Dr. EDGAR ULRICH ZORN

Personal Information

Date of Birth:
08.02.1992

Nationality:
German

Current Position:
Postdoctoral Researcher
at LMU-Munich

Contact

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Languages

German – Fluent
English – Fluent
Spanish – Basic
Latin – Basic

Summary

Geology Researcher specializing in volcanology. Strong background in the observation and study of volcanoes and eruptions, particularly flank instability and lava domes. Extensive fieldwork and conference experience. Well-versed remote sensing using drones and satellites with various sensors as well as laboratory testing for physical rock parameters.

Skill Highlights

- Field volcanology
- UAS Piloting and surveying
- Satellite remote sensing
- Structure-from-Motion photogrammetry
- Particle-Image-Velocimetry
- Lab-based rock deformation testing
- Analogue experiments

Education

Bachelor of Science: Geowissenschaften (Geosciences) – 2014 – University of Potsdam, Germany
Master of Science: Earth Sciences – 2017 – University of Auckland, New Zealand
Doctoral Degree: Geology –2020 – University of Potsdam, Germany

Employment

2017-2020: Doctoral Researcher – GFZ-Potsdam, Germany – ERC VOLCAPSE Project
2021-2022: Postdoctoral Researcher – GFZ-Potsdam, Germany – BMBF Tsunami_Risk Project
2022-today: Postdoctoral Researcher – LMU-München, Germany – ERC MODERATE Project

Grants and Awards

R.N. Brothers Memorial Award – 2016 – University of Auckland, New Zealand
Postgraduate Student Research Award – 2019 – University of Auckland, New Zealand
Most Cited Early Career Researcher – 2020 – Bulletin of Volcanology, IAVCEI and Springer Journal

Scientific Publications

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- Sobolewski, L., Hansteen, T. H., **Zorn, E. U.**, Stenner, C., Florea, L. J., Burgess, S. A., Ionescu, A., Cartaya, E., & Pflitsch, A. (2023). The evolving volcano-ice interactions of Crater Glacier, Mount St. Helens, Washington (USA). Bulletin of Volcanology, 85(4), 22. https://doi.org/10.1007/s00445-023-01632-5
- **Zorn, E. U.**, Vassileva, M., Walter, T. R., Darmawan, H., Röhler, L., & Amelung, F. (2023). Interactions of magmatic intrusions with the multiyear flank instability at Anak Krakatau volcano, Indonesia: Insights from InSAR and analogue modeling. Geology. https://doi.org/10.1130/G50693.1
- Walter, T. R., **Zorn, E. U.**, González, P. J., Sansosti, E., Muñoz, V., Shevchenko, A. V., Plank, S. M., Reale, D. & Richter, N. (2023). Late complex tensile fracturing interacts with topography at Cumbre Vieja, La Palma. Volcanica, 6(1), 1-17. https://doi.org/10.30909/vol.06.01.0117
- Muñoz, V., Walter, T. R., **Zorn, E. U.**, Shevchenko, A. V., González, P. J., Reale, D., & Sansosti, E. (2022). Satellite Radar and Camera Time Series Reveal Transition from Aligned to Distributed Crater Arrangement during the 2021 Eruption of Cumbre Vieja, La Palma (Spain). Remote Sensing, 14(23), 6168. https://doi.org/10.3390/rs14236168
- **Zorn, E. U.**, Orynbaikyzy, A., Plank, S., Babeyko, A., Darmawan, H., Robbany, I. F., and Walter, T. R. (2022). Identification and ranking of subaerial volcanic tsunami hazard sources in Southeast Asia, Nat. Hazards Earth Syst. Sci., 22 (9), 3083–3104, https://doi.org/10.5194/nhess-22-3083-2022
- Walter, T. R., **Zorn, E. U.**, Harnett, C. E., Shevchenko, A. V., Belousov, A., Belousova, M., & Vassileva, M. S. (2022). Influence of conduit and topography complexity on spine extrusion at Shiveluch volcano, Kamchatka. Communications Earth & Environment, 3(1), 1-10. https://doi.org/10.1038/s43247-022-00491-w
- Bindeman, I. N., Deegan, F. M., Troll, V. R., Thordarson, T., Höskuldsson, Á., Moreland, W. M., **Zorn, E. U.**, Shevchenko, A. V. & Walter, T. R. (2022). Diverse mantle components with invariant oxygen isotopes in the 2021 Fagradalsfjall eruption, Iceland. Nature Communications, 13(1), 1-12. https://doi.org/10.1038/s41467-022-31348-7
- Shevchenko, A. V., Dvigalo, V. N., **Zorn, E. U.**, Vassileva, M. S., Massimetti, F., Walter, T. R., Svirid, I. Y., Chirkov, S. A., Ozerov, A. Y., Tsvetkov, V.A., Borisov, I. A. (2021). Constructive and destructive processes during the 2018-2019 eruption episode at Shiveluch volcano, Kamchatka, studied from satellite and aerial data. Frontiers in Earth Science, 9, 457. https://doi.org/10.3389/feart.2021.680051
- Müller, D., Bredemeyer, S., **Zorn, E.**, De Paolo, E., & Walter, T. R. (2021). Surveying fumarole sites and hydrothermal alteration by unoccupied aircraft systems (UAS) at the La Fossa cone, Vulcano Island (Italy). Journal of Volcanology and Geothermal Research, 413, 107208. https://doi.org/10.1016/j.jvolgeores.2021.107208
- **Zorn, E. U.**, Walter, T. R., Heap, M. J., & Kueppers, U. (2020). Insights into lava dome and spine extrusion using analogue sandbox experiments. Earth and Planetary Science Letters, 551, 116571. https://doi.org/10.1016/j.epsl.2020.116571
- James, M. R., Carr, B., D'Arcy, F., Diefenbach, A., Dietterich, H., Fornaciai, A., Lev, E., Liu, E., Pieri, D., Rodgers, M., Smets, B., Terada, A., von Aulock, F., Walter, T., Wood, K., **Zorn, E.U.** (2020). Volcanological applications of unoccupied aircraft systems (UAS): Developments, strategies, and future challenges, Volcanica, 3(1). 67-114. https://doi.org/10.30909/vol.03.01.67114
- **Zorn, E. U.**, Walter, T. R., Johnson, J. B., Mania, R. (2020). UAS-based tracking of the Santiaguito Lava Dome, Guatemala. Scientific Reports, 10(1), 1-13. https://doi.org/10.1038/s41598-020-65386-2
- **Zorn, E. U.**, Le Corvec, N., Salzer, J. T., Varley, N. R., Walter, T. R., Navarro-Ochoa, C., Vargas-Bracamontes, D. M., Thiele, S. T., Arámbula Mendoza, R. (2019). Load stress controls on directional lava dome growth at Volcán de Colima, Mexico. Frontiers in Earth Science, 7, 84. https://doi.org/10.3389/feart.2019.00084

- Walter, T. R., Harnett, C. E., Varley, N., Bracamontes, D. V., Salzer, J., **Zorn, E. U.**, Bretón, M., Arámbula, R., Thomas, M. E. (2019). Imaging the 2013 explosive crater excavation and new dome formation at Volcán de Colima with TerraSAR-X, time-lapse cameras and modelling. Journal of Volcanology and Geothermal Research, 369, 224-237. https://doi.org/10.1016/j.jvolgeores.2018.11.016
- **Zorn, E. U.**, Rowe, M. C., Cronin, S. J., Ryan, A. G., Kennedy, L. A., Russell, J. K. (2018). Influence of porosity and groundmass crystallinity on dome rock strength: a case study from Mt. Taranaki, New Zealand. *Bulletin of Volcanology*, *80*(4), 35. https://doi.org/10.1007/s00445-018-1210-8
- **Zorn, E.**, Walter, T. R. (2016). Influence of volcanic tephra on photovoltaic (PV)-modules: an experimental study with application to the 2010 Eyjafjallajökull eruption, Iceland. *Journal of Applied Volcanology*, *5*(1), 2. https://doi.org/10.1186/s13617-015-0041-y

Articles

- https://themenspezial.eskp.de/vulkanismus-und-gesellschaft/inhalt/vulkangefahren-einschaetzen/verhalten-an-vulkanen-937257/ (In German)
- https://www.eskp.de/naturgefahren/aktuelle-vulkanische-krise-am-mount-agung-935970/ (In German)

Datasets

- **Zorn, E. U.**; Vassileva, M.; Walter, T. R.; Darmawan, H.; Röhler, L.; Amelung, F. (2023): Processed Sentinel-1 InSAR data of the multi-year gradual flank destabilisation of Anak Krakatau volcano, Indonesia. GFZ Data Services. https://doi.org/10.5880/GFZ.2.1.2022.003
- Shevchenko, A.; Dvigalo, V.; **Zorn, E.**; Vassileva, M.; Walter, T.; Svirid, I.; Chirkov, S. (2021): Shiveluch volcano 2012-2019 photogrammetric dataset. GFZ Data Services. https://doi.org/10.5880/GFZ.2.1.2021.002
- **Zorn, E. U.**; Walter, T. R.; Johnson, J. B.; Mania, R. (2020): High-resolution photogrammetry data of the Santiaguito lava dome collected by UAS surveys. GFZ Data Services. https://doi.org/10.5880/GFZ.2.1.2020.001