

ANDREW C. GASE

GEOPHYSICS, TECTONOPHYSICS, VOLCANOES

I use seismic and electromagnetic geophysical methods to probe earth properties and structure at lithospheric and environmental scales. My recent interests include subduction zone structure and seismicity, volcanic geomorphology, and magma-tectonic interactions.

University of Texas at Austin
Institute for Geophysics
Jackson School of Geosciences
10100 Burnet Rd, Austin, TX 78758
agase@utexas.edu

EDUCATION

Ph.D. Geological Sciences, University of Texas at Austin – Summer 2022 (anticipated)

Dissertation title: “Seismic investigations of forearc structure and intraarc rifting at the Hikurangi margin”

Advisors: Harm Van Avendonk and Nathan Bangs

Committee: Jaime Barnes, Kyle Spikes, Nicola Tisato, Dan Bassett

M.S. Geophysics, Boise State University – May 2017

Thesis title: “Geophysical investigations of pyroclastic density current processes and deposit properties at Mount St. Helens, Washington (USA)”

Advisors: Brittany Brand and John Bradford

Committee: Lee Liberty

B.S. Earth and Atmospheric Sciences, Georgia Institute of Technology – May 2014

Highest Honors

Advisor: Josef Dufek

APPOINTMENTS

[2018-present] Graduate Research Assistant, University of Texas at Austin

[2017-present] Graduate Fellow, University of Texas at Austin

[2014-2016] Graduate Teaching Assistant, Boise State University

[2013-2014] Undergraduate Research Assistant, Georgia Tech

[2011-2013] Materials Laboratory Assistant, Nanotechnology Research Center, Georgia Tech

PEER-REVIEWED PUBLICATIONS

3. **Gase, A. C.**, H. J. A. Van Avendonk, N. L. Bangs, T. W. Luckie, D. H. N. Barker, S. A. Henrys, D. Bassett, D. A. Okaya, K. M. Jacobs, S. Kodaira, G. Fujie, A. Arnulf, Y. Yamamoto, 2019, Seismic evidence of magmatic rifting in the offshore Taupo Volcanic Zone, New Zealand, *Geophysical Research Letters*, 46, 12,949–12,957, <https://doi.org/10.1029/2019GL08526>.
2. **Gase, A. C.**, J. H. Bradford, B. D. Brand, 2018, Estimation of porosity and water saturation in dual porosity pyroclastic deposits from joint analysis of compression, shear, and electromagnetic velocities, *Geophysics*, 83 (3), <https://doi.org/10.1190/geo2017-0234.1>.
1. **Gase, A. C.**, B. D. Brand, and J.H. Bradford, 2017, Evidence of erosional self-channelization of pyroclastic density currents revealed by ground-penetrating radar imaging at Mount St. Helens, Washington (USA), *Geophysical Research Letters*, 44, 2220–2228, <https://doi.org/10.1002/2016GL072178>.

CONFERENCE PRESENTATIONS

Oral Presentations

6. **Gase, A.**, Van Avendonk, H. J., Bangs, N. L., Okaya, D. A., Henrys, S. A., Barker, D. H. N., Jacobs, K., Kodaira, S., Fujie, G. Crustal structure of the northern Hikurangi margin and Bay of Plenty from marine seismic reflection imaging and double-sided onshore-offshore seismic tomography. American Geophysical Union Fall Meeting, Washington, D.C., December, 2018.
5. Bangs, N. L., Van Avendonk, H. J., Arnulf, A. F., **Gase, A.**, Henrys, S. A., Okaya, D. A., Barker, D. H. N., Jacobs, K., Fujie, G., Arai, R. Large underplated structures along the southern Hikurangi margin: Preliminary results from the SHIRE seismic imaging experiment. American Geophysical Union Fall Meeting, Washington, D.C., December, 2018.
4. Brand, B. D., N. M. Pollock, **A. C. Gase**, D. Sarocchi, and O. Roche, The erosive nature of pyroclastic density currents – A summary of findings from the 18 May 1980 Mt. St. Helens (USA) deposits, IAVCEI Scientific Assembly, Portland, Oregon, August, 2017.
3. **Gase, A. C.**, B. D. Brand, J. H. Bradford, Erosional self-channelization of pyroclastic density currents – Evidence from ground-penetrating radar imaging at Mt. St. Helens, Washington (USA). American Geophysical Union Fall Meeting, San Francisco, California, December, 2016.
2. **Gase, A. C.**, J. H. Bradford, B. D. Brand, D. Gravley, S. Hampton, A. Dougherty, GPR investigation of pyroclastic density current deposits at Mount St Helens, Washington. 2nd Near Surface Asia Pacific Conference, Society for Exploration Geophysics, Waikoloa, Hawaii, July, 2015.
1. Mendez-Harper, J., **A. C. Gase**, J. Dufek, and J. McAdams, The formation of bomb-sags during phreatic eruptions. 5th International Maar Conference, Queretaro, Mexico, November, 2014.

Posters

5. Luckie, T., **A. C. Gase**, K. Jacobs, S. A. Henrys, D. A. Okaya, H. J. Van Avendonk, N. L. Bangs et al. Initial wide-angle seismic results from the Seismogenesis at Hikurangi Integrated Research Experiment (SHIRE), North Island, New Zealand. American Geophysical Union Fall Meeting, San Francisco, California, December, 2019.
4. **Gase, A. C.**, N. L. Bangs, H. J. Van Avendonk, T. Luckie, D. H. N. Barker, D. Bassett, K. Jacobs et al. Subduction of rough seafloor facilitates sediment underplating beneath a low velocity prism. American Geophysical Union Fall Meeting, San Francisco, California, December, 2019.
3. Brand, B. D., N. M. Pollock, **A. C. Gase**, D. Sarocchi, O. Roche, The erosive nature of pyroclastic density currents – A summary of findings from the 18 May 1980 Mt St Helens (USA) deposits with implications for future work. Cities on Volcanoes 9, Puerto Varas, Chile, November, 2016.
2. **Gase, A. C.**, J. H. Bradford, B. D. Brand, Ground penetrating radar and active seismic investigation of stratigraphically verified pyroclastic deposits. American Geophysical Union Fall Meeting, San Francisco, California, December, 2015..
1. **Gase, A.C.**, J. H. Bradford, B. D. Brand, D. Gravley, S. Hampton, A. Dougherty, GPR investigation of pyroclastic density current deposits at Mount St Helens, Washington. IUGG Annual Meeting, Prague, Czech Republic, June, 2015.

TEACHING EXPERIENCE

- [2016] Field methods in volcanology TA, Boise State University, 1 semester
- [2016] Communication in earth sciences TA, Boise State University, 1 semester
- [2015] Introduction to geophysics TA, Boise State University, 1 semester
- [2014-2015] Fundamentals of geosciences TA, Boise State University, 2 semesters

AWARDS AND HONORS

- [2019] Early Grad. Best Poster, Student Research Symposium, University of Texas at Austin (\$800)
- [2018] GeoPRISMS AGU Student Prize, Honorable Mention for Oral Presentation
- [2017-2021] Graduate School Fellowship, University of Texas at Austin (\$43,000)
- [2015] National Science Foundation Graduate Research Fellowship, Honorable Mention
- [2015] Exxon Mobil Global Recruiting Award (\$2500)
- [2015] Geological Society of America Student Research Award (\$1750)
- [2015] IUGG Graduate Student Travel Award, IUGG General Assembly 2015, Prague (\$500)
- [2014] Graduate Residential Fellowship, Boise State University
- [2014] Outstanding Undergraduate Research Award, Georgia Institute of Technology (\$750)
- [2014] President's Undergraduate Research Award, Georgia Institute of Technology (\$1000)
- [2014] Rutt S. Bridges Undergraduate Research Initiative Award, Georgia Institute of Technology (\$1500)

FIELD EXPERIENCE

- [2019] Alaska Amphibious Community Seismic Experiment, R/V Sikuliaq, ROV Jason, 23 days at sea
- [2019] Seismogenesis at Hikurangi Integrated Research Experiment, onshore seismic explosion survey, 14 days
- [2018] University of Texas, Marine geology and geophysics field course, Galveston Bay, 4 days at sea
- [2018] Seismogenesis at Hikurangi Integrated Research Experiment, onshore seismograph recovery, 14 days
- [2018] Seismogenesis at Hikurangi Integrated Research Experiment, R/V Langseth, 36 days at sea
- [2014-2016] Investigations of pyroclastic current dynamics at Mount St. Helens, 3 field seasons.
- [2014-2016] Surveying granite weathering in Idaho mountainous watersheds, seismic and ERT, 4 surveys
- [2013-2014] Undergraduate field work studying phreatomagmatic volcanic deposits in the U.S. and Mexico

WORKSHOPS AND SHORT COURSES

- [2019] GeoPRISMS AGU Mini-Workshop: Strategies for Synthesis, Integration, & Future Opportunities, S.F., CA.
- [2019] GeoPRISMS TEI and Synthesis, San Antonio, TX
- [2018] GeoPRISMS Investigating subduction processes at the Hikurangi Margin, New Zealand
- [2016] Deep Submergence new users program, San Francisco, CA
- [2015] P-P azimuthal anisotropy on-line short course, Houston Geophysical Society
- [2015] Melts, glasses, and magmas short course, LMU, Munich, Germany

SERVICE

Peer reviewer: *Geomorphology*

- [2019] Break-out discussion facilitator, "Linking geophysical imaging to active composition/state/properties", GeoPRISMS AGU Mini-Workshop: Strategies for Synthesis, Integration, & Future Opportunities.
- [2019] Session co-chair, "Interplay between structure, fluids, and deformation processes at subduction zones" AGU fall meeting
- [2015] AGU Fall meeting student volunteer
- [2015] Activity leader, GeoGirls, STEM summer camp at Mount St Helens for middle school girls

INVITED PRESENTATIONS

- [2019] GNS Science, New Zealand