

Curriculum Vitae

Andrew Gase

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

EDUCATION

- Ph.D.** Geological Sciences, University of Texas at Austin, Austin, Texas (2021)
Dissertation: “Seismic investigations of subduction and intra-arc rifting at the Hikurangi margin”
- M.S.** Geophysics, Boise State University, Boise, Idaho (2017)
Thesis: “Geophysical investigations of pyroclastic density current processes and deposit properties at Mount St. Helens, Washington (USA)”
- B.S.** Earth and Atmospheric Sciences, Georgia Institute of Technology, Atlanta, Georgia (2014)

APPOINTMENTS/EMPLOYMENT

- [2022] Postdoctoral Fellow, University of Texas Institute for Geophysics
[2018-2021] Graduate Research Assistant, University of Texas at Austin
[2017-2018] Graduate Fellow, University of Texas at Austin
[2014-2016] Graduate Teaching Assistant, Boise State University

PUBLICATIONS

Peer Reviewed and Published:

5. Bassett, D., A. Arnulf, S. Henrys, D. Barker, H. Van Avendonk, N. Bangs, S. Kodaira, H. Seebeck, L. Wallace, **A. C. Gase**, T. Luckie, K. Jacobs, B. Tozer, R. Arai, D. Okaya, K. Mochizuki, G. Moore, G. Fujie, A. Nakanishi, Y. Yamamoto, 2022. Crustal structure of the Hikurangi margin from SHIRE seismic data and the relationship between forearc structure and shallow megathrust slip behaviour, *Geophysical Research Letters*, 49, <https://doi.org/10.1029/2021GL096960>.
4. **Gase, A. C.**, H. J. A. Van Avendonk, N. L. Bangs, D. Bassett, S. A. Henrys, D. H. N. Barker, S. Kodaira, K. Jacobs, T. Luckie, D. Okaya, G. Fujie, Y. Yamamoto, A. F. Arnulf, and R. Arai, 2021. Crustal structure of the northern Hikurangi margin, New Zealand: Variable accretion and overthrusting plate strength influenced by rough subduction, *Journal of Geophysical Research: Solid Earth*, 126 (5), <https://doi.org/10.1029/2020JB021176>.
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, and 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/10.1029/2019GL085269>.
2. **Gase, A. C.**, J. H. Bradford, and 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>.

Submitted:

1. **Gase, A. C.**, Bangs, N., Van Avendonk, H., Bassett, D., Henrys, S. Lateral contrast in megathrust slip behavior influenced by subducting sediment uniformity. *In prep for resubmit*.

In Preparation:

1. **Gase, A. C.**, Bangs, N., Van Avendonk, H., Kodaira, S., Fujie, G., Bassett, D., Henrys, S. Protracted intra-plate volcanism on the Hikurangi Plateau: Implications for crustal structure and seamount subduction. *In prep.*

AWARDS AND HONORS

- [2021] UTIG Outstanding Graduate Student Award
- [2019] GeoPRISMS AGU Student Prize, Honorable Mention for Poster Presentation
- [2019] Early Grad. Best Poster, Student Research Symposium, University of Texas at Austin
- [2018] GeoPRISMS AGU Student Prize, Honorable Mention for Oral Presentation
- [2017-2021] Graduate School Fellowship, University of Texas at Austin
- [2015] National Science Foundation Graduate Research Fellowship, Honorable Mention
- [2015] Exxon Mobil Global Recruiting Award
- [2015] Geological Society of America Student Research Award
- [2014] Outstanding Undergraduate Research Award, Georgia Institute of Technology
- [2014] President's Undergraduate Research Award, Georgia Institute of Technology
- [2014] Rutt S. Bridges Undergraduate Research Initiative Award, Georgia Institute of Technology

SERVICE

Peer reviewer: *Geomorphology, Geophysics, Geoscience Frontiers, Journal of Geophysical Research: Solid Earth, Journal of South American Earth Sciences*

- [2021] UT Geoscience Student Executive Committee, Faculty liaison
- [2020-2021] UTIG DEAI Committee, Graduate student representative and Code of Conduct author
- [2020-2021] Jackson School Subcommittee on Family/Parental Accommodations, Graduate student representative
- [2020] AGU session convener, "From trench to back-arc: Dynamics of the Hikurangi subduction zone"
- [2020-2021] University of Texas Graduate Student Assembly, Geosciences representative
- [2020-2021] Jackson School of Geosciences graduate student peer mentor
- [2019] Break-out discussion facilitator, "Linking geophysical imaging to active composition/state/properties", GeoPRISMS AGU Mini-Workshop: Strategies for Synthesis, Integration, & Future Opportunities
- [2019] AGU oral session co-chair, "Interplay between structure, fluids, and deformation processes at subduction zones"
- [2017-2018] GeoFORCE graduate student mentor
- [2015] AGU fall meeting student volunteer
- [2015] Activity leader, GeoGirls, STEM summer camp at Mount St Helens for middle schoolers

TEACHING EXPERIENCE

- [2016] Field methods in volcanology TA, Boise State University, 1 semester
- [2016] Geoscience communication TA, Boise State University, 1 semester
- [2015] Introduction to geophysics TA, Boise State University, 1 semester
- [2014-2015] Fundamentals of geoscience TA, Boise State University, 2 semesters

FIELD AND SEA EXPERIENCE

- [2022] 4CastGofar, CERBERUS, R/V Thompson, AUV Sentry, Chief Scientist: R. Evans, 51 days

- [2019] AACSE, OBS recovery, R/V Sikuliaq, ROV Jason, Chief Scientist: S. Webb, 23 days
 [2019] SHIRE, seismic explosion survey, Lead Scientists: K. Jacobs, S. Henrys, D. Okaya, 14 days
 [2018] SHIRE, seismometer recovery, Lead Scientists: K. Jacobs, S. Henrys, D. Okaya, 14 days
 [2017] SHIRE, marine seismic imaging, R/V Langseth, Chief Scientist, N. Bangs, 36 days
 [2014-2016] Mount St. Helens pumice plain geophysics and stratigraphy, 3 field seasons, 30 days
 [2014-2016] Surveying granite weathering in mountainous watersheds, Idaho, 12 days

MEETING ABSTRACTS

18. Ebinger, C., Aber, S., Chambers, E., Steiner, A., Reiss, M., Oliva, S., **Gase, A.**, Illsley-Kemp, F. Crustal growth in continental rifts and flood volcanic provinces. AGU Fall Meeting, New Orleans, Louisiana, December 2021.
17. Bland, C., Tisato, N., Van Avendonk, H., Bangs, N., **Gase, A.** Elastic properties and permeabilities of Hikurangi margin rocks as a function of stress, saturation, and the presence of fractures. AGU Fall Meeting, New Orleans, Louisiana, December 2021.
16. **Gase, A.**, Bangs, N., Van Avendonk, H., Kodaira, S., Fujie G., Bassett, D., Henrys, S. Diverse seamounts structures on the Hikurangi Plateau due to protracted intra-plate volcanism. AGU Fall Meeting, New Orleans, Louisiana, December 2021.
15. **Gase, A.**, Bangs, N., Van Avendonk, H., Bassett, D., Henrys, S. Hikurangi offshore slip segmentation controlled by distribution of subducting sediment. AGU Fall Meeting, New Orleans, Louisiana, December 2021.
14. Bassett, D., Arnulf, A., Kodaira, S., Henrys, S., Van Avendonk, H., Barker, D., Nakanishi, A., Harding, A., Arai, R., Bangs, N., Okaya, D., Jacobs, K., Fujie, G., **Gase, A.**, Yamamoto, Y., Luckie, T., Obana, K. Upper-plater controls on megathrust slip behaviour: Comparing the Hikurangi and Nankai subduction Zones. AGU Fall Meeting, Virtual, December 2020.
13. Aber, S., S. Sabir, C. Ebinger, M. Savage, J. Eccles, **A. Gase**. The 2019 Whakaari (White Island) volcano-tectonic event as seen from time-space earthquake patterns. AGU Fall Meeting, Virtual, December 2020.
12. Luckie, T., **A. Gase**, K. Jacobs, M. White, S. A. Henrys, D. A. Okaya, H. J. Van Avendonk, N. L. Bangs et al. P-wave velocity structure of the northern Hikurangi margin from travel time tomography. AGU Fall Meeting, Virtual, December 2020.
11. Luckie, T., **A. 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. AGU Fall Meeting, San Francisco, California, December 2019.
10. **Gase, A.**, 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. AGU Fall Meeting, San Francisco, California, December 2019.
9. **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. AGU Fall Meeting, Washington, D.C., December 2018.
8. 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. AGU Fall Meeting, Washington, D.C., December 2018.
7. Brand, B. D., N. M. Pollock, **A. 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.
6. **Gase, A.**, 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). AGU

- Fall Meeting, San Francisco, California, December 2016.
5. Brand, B. D., N. M. Pollock, **A. 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.
 4. **Gase, A.**, J. H. Bradford, B. D. Brand, Ground penetrating radar and active seismic investigation of stratigraphically verified pyroclastic deposits. AGU Fall Meeting, San Francisco, California, December 2015.
 3. **Gase, A.**, 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.
 2. **Gase, A.**, 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.
 1. Mendez-Harper, J., **A. Gase**, J. Dufek, and J. McAdams, The formation of bomb-sags during phreatic eruptions. 5th International Maar Conference, Queretaro, Mexico, November 2014.

INVITED PRESENTATIONS

- [2021] *Geology: A record of the Earth and Climate*, Guest lecture for Introduction to Environmental Studies, Elon University, North Carolina, virtual.
- [2020] *Crustal structure of the northern Hikurangi margin*, HOMESTAYSS, Hikurangi subduction webinar.
- [2019] *Early results of the SHIRE project: Intra-arc rifting and forearc crustal structure*, GNS-Science, New Zealand.

WORKSHOPS AND SHORT COURSES

- [2021] Advanced Sequence Stratigraphy, IMAGE 2021: SEG & AAPG annual meeting, Denver, CO.
- [2021] Near-Surface Imaging with Full-Waveform Inversion: Theory and Applications, AGU/SEG.
- [2021] Marine Seismology Symposium, virtual.
- [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 online short course, Houston Geophysical Society
- [2015] Melts, glasses, and magmas short course, LMU, Munich, Germany