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PROFESSIONAL PREPARATION

University of Colorado	Geography	Ph.D. 2010 (Advisors: Drs. Ted Scambos and Konrad Steffen)
Chiba University (Japan)	Earth Sciences	M.S. 2005 (Advisor: Dr. Fumihiko Nishio)
Chiba University (Japan)	Earth Sciences	B.S. 2003

APPOINTMENTS

Jul. 2024–present	Vice Chair, Dept. of Earth and Environmental Science, Temple University.
Jul. 2021–present	Associate Professor, Dept. of Earth and Environmental Science, Temple University.
Jul. 2015–June 2021	Assistant Professor, Dept. of Earth and Environmental Science, Temple University.
Jul. 2012–June 2015	Research Associate, Dept. of Geosciences and the Earth and Environmental Systems Institute, The Pennsylvania State University.
Jan. 2011–Jun. 2012	Postdoctoral Scholar, Dept. of Geosciences and the Earth and Environmental Systems Institute, The Pennsylvania State University. (Advisors: Drs. Sridhar Anandakrishnan and Richard Alley)
2005–2010	Graduate Research Assistant, National Snow and Ice Data Center/Cooperative Institute for Research in Environmental Sciences, University of Colorado.
2004–2005	Professional Research Assistant, National Institute of Polar Research, Japan (assistant driller for Deep Ice Coring Project at Dome Fuji II, Antarcticas).
2003–2005	Graduate Teaching Assistant, Graduate School of Science and Technology, Chiba University, Japan.

RESEARCH INTERESTS

Geophysics, Glaciology, Remote sensing, Glacial geomorphology, Climate change

REFEREED JOURNAL PUBLICATIONS (* denotes student authors)

1. Borthwick, L.*, **A. Muto**, S. Anandakrishnan, K. Tinto, R. Agnew, A. Brisbourne, R. Schlegel, S. Killingbeck, B. Kulessa, R. Alley, A. Willet, and S. Melton (2025). Rift-related sedimentary basin and deeper-seated mafic intrusions modeled beneath Thwaites Glacier, West Antarctica: Influence on glacier dynamics, *Journal of Geophysical Research: Solid Earth*, 130, e2025JB031716, doi: https://doi.org/10.1029/2025JB031716.

2. Banerjee, D., D.A. Lilien, M. Truffer, A. Luckman, C.T. Wild, E.C. Pettit, T.A. Scambos, **A. Muto**, and K.E. Alley (2025) Evolution of Shear-zone Fractures Presages the Disintegration of Thwaites Eastern Ice Shelf, *Journal of Geophysical Research: Earth Surface*, e2025JF008352, doi: https://doi.org/10.1029/2025JF008352.
3. Borthwick, L.*, **A. Muto**, and K. Tinto (2025). Gravity Modelling of Ice Thickness and Valley Geometry on Taku Glacier (T'aakú Kwáan Sít'i), Alaska, *Journal of Glaciology*, 71, e13, 1–15, doi: https://doi.org/10.1017/jog.2024.84.
4. Scambos, T.A., T. White, B. Walling, M. Truffer, G. Collao-Barrios, C Kratt, S. Tyler, E.C. Pettit, C.T. Wild, S. Arora, S. Edwards, R. Fotherby, C. Meha, J., Soltys, E. Tomlinson, R. Weatherby, R. Ross, A. Wåhlin, T.S. Toddo, K. Alley, and **A. Muto** (2025). AMIGOS-3 multi-sensor stations and theclimate, ice and ocean conditions at ThwaitesEastern Ice Shelf during 2020–22, *Journal of Glaciology*, 71, e60, doi: https://doi.org/10.1017/jog.2024.96.
5. Wild, C.T., S.B. Kachuck, A. Luckman, K.E. Alley, M.A. Sharp, H. Smith, S.W. Tyler, C. Kratt, T.S. Dotto, D. Price, K.W. Nicholls, S.L. Bevan, G. Gollao-Barrios, **A. Muto**, M. Truffer, T.A. Scambos, K.J. Heywood, E.C. Pettit and the TARSAN team (2024). Rift propagation signals the last act of the Thwaites Eastern Ice Shelf despite low basal melt rates, *Journal of Glaciology*, 1–18, doi: https://doi.org/10.1017/jog.2024.64.
6. Wåhlin, A., K.E. Alley, C. Begeman, Ø. Hegrenæs, X. Yuan, A.G.C. Graham, K. Hogan, P.E.D. Davis, T.S. Dotto, C. Eayrs, R.A. Hall, D.M. Holland, T.Wan. Kim, R.D. Larter, L. Ling, **A. Muto**, E.C. Pettit, B.E. Schmidt, T. Snow, F. Stedt, P.M. Washam, S. Wahlgren, C. Wild, J. Wellner, Y. Zheng, K.J. Heywood (2024). Swirls and scoops: Ice base melt revealed by multibeam imagery of an Antarctic ice shelf, *Science Advances*, **10**, doi: https://doi.org/10.1126/sciadv.adn9188.
7. Alley, K.E., R.B. Alley, A.D. Crawford, N. Ochwat, C.T. Wild, J. Marson, T. Snow, **A. Muto**, E.C. Pettit, S.F. Child, M. Truffer, G. Gollao-Barrios, and T.A. Scambos (2024). Evolution of sub-ice-shelf channels reveals changes in ocean-driven melt in West Antarctica, *Journal of Glaciology*, 1–15, doi: https://doi.org/10.1017/jog.2024.20.
8. Hoffman, A.O., N. Holschuh, M. Mueller, J. Paden, **A. Muto**, G. Ariho, C. Brigham, J.E. Christian, L. Davidge, E. Heitmann, B. Hills, A. Horlings, S. Morey, G. O'Connor, T.J. Fudge, E.J. Steig, K. Christianson (2023). Scars of tectonism promote ice-sheet nucleation from Hercules Dome into West Antarctica, *Nature Geoscience*, **16**, 1005–1013, doi: https://doi.org/10.1038/s41561-023-01265-5.
9. Alley, R.B., N. Holschuh, B.R. Parizek, L. Zoet, K. Riverman, **A. Muto**, K. Christianson, E. Clyne, S. Anandakrishnan, N. Stevens (2023). GHOSTly flute music: drumlins, moats and the bed of Thwaites Glacier, *Annals of Glaciology*, https://doi.org/10.1017/aog.2023.43.
10. Dotto, T.S., K.J. Heywood, R.A. Hall, T.A. Scambos, Y. Zheng, Y. Nakayama, S. Hyogo, T. Snow, A.K. Wåhlin, C. Wild, M. Truffer, **A. Muto**, K.E. Alley, L. Boehme, G.A. Bortolotto, S.W. Tyler, and E.C. Pettit (2022). Ocean variability beneath Thwaites Eastern Ice Shelf driven by the Pine Island Bay Gyre strength, *Nature Communications Earth and Environment*, **13**, 7840, https://doi.org/10.1038/s41467-022-35499-5.
11. Wild, C.T., K.E. Alley, **A. Muto**, M. Truffer, T.A. Scambos, and E.C. Pettit (2022). Weakening of the pinning point buttressing Thwaites Glacier, West Antarctica, *The Cryosphere*, **16**,

https://doi.org/10.5194/tc-16-397-2022.

12. Alley, K.E., C.T. Wild, A. Luckman, T.A. Scambos, M. Truffer, E.C. Pettit, **A. Muto**, B. Wallin, M. Klinger, T. Sutterley, S.F. Child, C. Hulen, J.T.M. Lenaerts, M. Maclennan, E. Keenan, and Devon Dunmire (2021). Two decades of dynamic change and progressive destabilization on the Thwaites Eastern Ice Shelf, *The Cryosphere*, **15**, 5187–5203, https://doi.org/10.5194/tc-15-5187-2021.
13. Alley, R.B., N. Holschuh, D.R. MacAyeal, B.R. Parizek, L. Zoet, K. Riverman, **A. Muto**, K. Christianson, E. Clyne, S. Anandakrishnan, N. Stevens, and GHOST Collaboration (2021). Bedforms of Thwaites Glacier, West Antarctica: Character and Origin, *Journal of Geophysical Research: Earth Surface*, **126**, e2021JF006339. https://doi.org/10.1029/2021JF006339.
14. Horgan, H. J., L. van Haastrecht, R.B. Alley, S. Anandakrishnan, K. Christianson, and **A. Muto** (2021). Grounding zone subglacial properties from calibrated active source seismic methods. *The Cryosphere*, doi: 10.5194/tc-15-1863-2021.
15. Clyne, L.R., S. Anandakrishnan, **A. Muto**, R.B. Alley, and D.E. Voigt (2020). Interpretation of Topography and Bed Properties beneath Thwaites Glacier, West Antarctica using Seismic Reflection Methods. *Earth and Planetary Science Letters*, **550**, 116543, doi:10.1016/j.epsl.2020.116543.
16. Jordan, T. A., D. Porter, K. Tinto, R. Millan, **A. Muto**, K. Hogan, R.D. Larter, A.G.C. Graham, and J.D. Paden (2020). New gravity-derived bathymetry for the Thwaites, Crosson and Dotson ice shelves revealing two ice shelf populations, *The Cryosphere*, doi: 10.5194/tc-14-2869-2020.
17. **Muto, A.**, R.B. Alley, B.R. Parizek, and S. Anandakrishnan (2019b). Bed-type variability and till (dis)continuity beneath Thwaites Glacier, West Antarctica. *Annals of Glaciology*, **60(80)**, 82-90, doi:10.1017/aog.2019.32.
18. Riverman, K.L., S. Anandakrishnan, N.D. Holschuh, C.F. Dow, **A. Muto**, B.R. Parizek, K. Christianson and L.E. Peters (2019b). Wet subglacial bedforms of the NE Greenland Ice Stream shear margins and interior. *Annals of Glaciology*, **60(80)**, 91-99, doi:10.1017/aog.2019.43.
19. Koellner, S., B.R. Parizek, R.B. Alley, **A. Muto**, and N. Holschuh (2019). The impact of spatially-variable basal properties on outlet glacier flow. *Earth and Planetary Science Letters*, **515**, 200–208, doi: 10.1016/j.epsl.2019.03.026.
20. Riverman, K. L., R. B. Alley, S. Anandakrishnan, K. Christianson, N. D. Holschuh, B. Medley, **A. Muto**, and L. E. Peters (2019a). Enhanced firn densification in high-accumulation shear margins of the NE Greenland Ice Stream. *Journal of Geophysical Research: Earth Surface*, **124**, 365–382, doi:10.1029/2017JF004604.
21. **Muto, A.**, S. Anandakrishnan, R.B. Alley, H.J. Horgan, B.R. Parizek, S. Koellner, K. Christianson, and N. Holschuh (2019a). Relating bed character and subglacial morphology using seismic data from Thwaites Glacier, West Antarctica. *Earth and Planetary Science Letters*, **507**, 199–206, doi:10.1016/j.epsl.2018.12.008.
22. Zoet, L.K., **A. Muto**, J.E. Rawling III, and J.W. Attig (2019). The effects of tunnel channel formation on the Green Bay Lobe, Wisconsin, USA. *Geomorphology*, **324**, 36–47, doi:10.1016/j.geomorph.2018.09.021.

23. Alley, R.B., D. Pollard, B.R. Parizek, S. Anandakrishnan, M. Pourpoint, N.T. Stevens, J.A. MacGregor K. Christianson, **A. Muto**, and N. Holschuh (2019). Possible Role for Tectonics in the Evolving Stability of the Greenland Ice Sheet. *Journal of Geophysical Research: Earth Surface*, **124**, 97–115, doi: 10.1029/2018JF004714.

24. Scambos, T.A., G.G. Campbell, A. Pope, T. Haran, **A. Muto**, M. Lazzara, C.H. Reijmer, and M.R. van den Broeke (2018). Ultralow surface temperatures in East Antarctica from satellite thermal infrared mapping: The coldest places on Earth. *Geophysical Research Letters*, **45**, 6124–6133, doi:10.1029/2018GL078133.

25. Fegyveresi, J.M., R.B. Alley, **A. Muto**, A.J. Orsi, and M.K. Spencer (2018). Surface formation, preservation, and history of low-porosity crusts at the WAIS Divide site, West Antarctica. *The Crysopshere*, **12**, 325-341, doi: 10.5194/tc-12-325-2018.

26. Christie, F.D.W., R.G. Bingham, N. Gourmelen, S.F.B. Tett, and **A. Muto** (2016). Four-decade record of pervasive grounding line retreat along the Bellingshausen margin of West Antarctica. *Geophysical Research Letters*, **43**, doi:10.1002/2016GL068972.

27. **Muto, A.,** L.E. Peters, K. Gohl, I. Sasgen, R.B. Alley S. Anandakrishnan, and K.L. Riverman (2016). Bathymetry and sediment distribution beneath Pine Island Glacier ice shelf modeled using aerogravity and in situ geophysical data: New results. *Earth and Planetary Science Letters,* **433**, 63-75, doi:10.1016/j.epsl.2015.10.037.

28. Alley, R.B., S. Anandakrishnan, K. Christianson, H.J. Horgan, **A. Muto**, B.R. Parizek, D. Pollard, and R.T. Walker (2015). Oceanic Forcing of ice-sheet retreat: West Antarctica and more. *Annual Review of Earth and Planetary Sciences*, **43**, doi: 10.1146/annurev-earth-060614-105344.

29. Vallelonga, P., K. Christianson, R.B. Alley, S. Anandakrishnan, J.E.M. Christian, D. Dahl-Jensen, V. Gkinis, C. Holme, R.W. Jacobel, N.B. Karlsson, B.A. Keisling, S. Kipfstuhl, H.A. Kjær1, M.E.L. Kristensen, **A. Muto**, L.E. Peters, T. Popp, K.L. Riverman, A.M. Svensson, C. Tibulea1, B.M. Vinther, Y. Weng, and M. Winstrup (2014). Initial results from geophysical surveys and shallow coring of the Northeast Greenland Ice Stream (NEGIS). *The Cryosphere*, **8**, 1275–1287, doi: 10.5194/tc-8-1275-2014.

30. Christianson, K., L.E. Peters, R.B. Alley, S. Anandakrishnan, R.W. Jacobel, K.L. Riverman, **A. Muto**, and B.A. Keisling (2014). Dilatant till facilitates ice-stream flow in northeast Greenland, *Earth and Planetary Science Letters*, **401**, 57–69, doi: 10.1016/j.epsl.2014.05.060.

31. Keisling, B.A., K. Christianson, R.B. Alley, L.E. Peters, J.E.M. Christian, S. Anandakrishnan, K.L. Riverman, **A. Muto**, and R.W. Jacobel (2014). Basal conditions and ice dynamics inferred from radar-derived internal stratigraphy of the northeast Greenland ice stream. *Annals of Glaciology*, **55(67)**, 127–137, doi: 10.3189/2014AoG67A090.

32. **Muto, A.**, K. Christianson, H.J. Horgan, S. Anandakrishnan, and R.B. Alley (2013). Bathymetry and geological structures beneath the Ross Ice Shelf at the mouth of Whillans Ice Stream, West Antarctica,

modeled from ground-based gravity measurements. *Journal of Geophysical Research: Solid Earth,* **118**, 4535–4546, doi: 10.1002/jgrb.50315.

33. Christianson, K., B.R. Parizek, R.B. Alley, H.J. Horgan, R.W. Jacobel, S. Anandakrishnan, B.J. Keisling, B.D. Craig, and **A. Muto** (2013). Ice sheet grounding zone stabilization due to till compaction. *Geophysical Research Letters*, **40**, doi:10.1002/2013GL057447.

34. Horgan, H.J., R.B. Alley, K. Christianson, R.W. Jacobel, S. Anandakrishnan, **A. Muto**, L.H. Beem, and M.R. Siegfried (2013). Estuaries beneath ice sheets. *Geology*, **41**, 1159–1162, doi: 10.1130/G34654.1.

35. McGrath, D., W. Colgan, N. Bayou, **A. Muto**, and K Steffen (2013). Recent warming at Summit, Greenland: Global context and implications. *Geophysical Research Letters*, **40**, doi:10.1002/grl.50456.

36. **Muto, A**., S. Anandakrishnan, and R.B. Alley (2013). Subglacial bathymetry beneath the Pine Island Glacier ice shelf from airborne gravity, constrained by autonomous underwater vehicle data. *Annals of Glaciology*, **54(64)**, 27–32, doi: 10.3189/2013AoG64A110.

37. Zagorodnov, V., O. Nagornov, T.A. Scambos, **A. Muto**, E. Mosley-Thompson, E.C. Pettit, and S. Tyuflin (2012). Borehole temperatures reveal details of 20th century warming at Bruce Plateau, Antarctic Peninsula. *The Cryosphere*, **6**, 675–686, doi:10.5194/tc-6-675-2012.

38. **Muto, A.**, T.A. Scambos, K. Steffen, A.G. Slater, and G.D. Clow (2011). Recent surface temperature trends in the interior of East Antarctica from firn thermal profiles. *Geophysical Research Letters*, **38**, L15502, doi:10.1029/2011GL048086.

39. Langley, K., J. Kohler, K. Matsuoka, A. Sinisalo, T. Scambos, T. Nuemann, **A. Muto**, J.-G. Winther, and M. Albert (2011). Recovery Lakes, East Antarctica: radar assessment of sub-glacial water extent. *Geophysical Research Letters*, **38**, L05501, doi:10.1029/2010GL046094.

40. Massom, R.A., A. Worby, V. Lytle, T. Markus, I. Allison, T. Scambos, H. Enomoto, K. Tateyama, T. Haran, J.C. Comiso, A. Pfaffling, T. Tamura, **A. Muto**, P. Kanagaratnam, B. Giles, N. Young, G. Hyland, and E. Key (2006). ARISE (Antarctic Remote Ice Sensing Experiment) in the East 2003: validation of satellite-derived sea-ice data products. *Annals of Glaciology*, **44**, 288–296.

41. Tamura, T., K.I. Ohshima, H. Enomoto, K. Tateyama, **A. Muto**, S. Ushio, and R.A. Massom (2006). Estimation of thin sea-ice thickness from NOAA AVHRR data in a polynya off the Wilkes Land coast, East Antarctica. *Annals of Glaciology*, **44**, 269–274.

Publications in review

Field, M.J., E.J. MacKie, L. Wang, **A. Muto**, and N. Shao. Improved Bathymetry Estimates Beneath Amundsen Sea Ice Shelves using a Markov Chain Monte Carlo Gravity Inversion (GravMCMC, version 1), *Geoscientific Model Development*.

Wild, C.T., K.E. Alley, R. Drews, G.L. Sauret, S. Tyler, T. A. Scambos, **A. Muto**, M. Truffer, K.W. Nicholls, E.C. Pettit, and the TARSAN team. Plume disruption halts basal channel evolution beneath Thwaites Eastern Ice Shelf, *Journal of Glaciology*.

Publications in preparation

Borthwick, L*, **A. Muto**, S. Anandakrishnan, and K. Tinto. Variability in tectonic influence on crustal structures along flow on Thwaites Glacier, West Antarctica. In preparation for submission to *Geophysical Journal International*.

REFEREED CONFERENCE PROCEEDINGS

1. Ahmad, F., A. Bulik, and **A. Muto** (2024). Dual-frequency GPR Imaging for Mapping of the Permafrost Table. Proceedings of SPIE 13048, Radar Sensor Technology XXVII, doi: https://doi.org/10.1117/12.3017833.
2. Alidoust, P., S. Mahvelati, J.T. Coe, **A. Muto**, S. McInnes, M. Painter, and K, Kubiak (2023). HVSR Measurements to Investigate Sinkholes and Treatment Efforts along a Roadway. *Geo-Congress 2023*, doi: https://doi.org/10.1061/9780784484678.010.

SELECTED CONFERENCE PRESENTATIONS AND ABSTRACTS

1. **A. Muto**, D. Hansen and L. Zoet (2025). Inversion of subglacial effective stress from acoustic-impedance measurements using viscous grain shearing theory: application to Thwaites Glacier, West Antarctica. 2025 Fall Meeting, AGU, 15-19 December, 2025, Abstract C13C-0818.
2. Hansen, D., L. Zoet, **A. Muto**, N. Morgan-Witts, J. Zak, Z. Schlossnagl, and K. Riverman (2025). Steady-State and Transient Variability in Seismic Reflections Driven by Effective Stress and Porosity at the Ice–Till Interface, 2025 Fall Meeting, AGU, 15-19 December, 2025, Abstract C13C-0817.
3. Tinto, K., **A. Muto**, L. Borthwick*, C. Locke, M. Tankersley, R. Matai, D. Porter, and R. Bell (2025). Geological Bedclasses to Improve Ice Sheet Models in the Amundsen Sea Embayment, 2025 Fall Meeting, AGU, 15-19 December, 2025, Abstract C13C-810.
4. Wild, C.T., K.E. Alley, R. Drews, G.L. Sauret, S. Tyler, T. A. Scambos, **A. Muto**, M. Truffer, K.W. Nicholls, and E.C. Pettit (2025). Plume Disruption Halts Basal Channel Evolution Beneath Thwaites Eastern Ice Shelf, 2025 Fall Meeting, AGU, 15-19 December, 2025, Abstract C33E-1007.
5. **A. Muto**, S. Athar, N. Butler, J. Garwood, C. Gibson, G. Hollinger, P. Lundrigan, J. Montierth, N. Rypkema, B. Schiel, E. Schmidt, Y. She and X Yu (2024). Meshed Observations of THE Remote Subsurface with Heterogeneous Intelligent Platforms (MOTHERSHIP): development of mothership-and-passenger sampling system for ice-sheet grounding-zone observations: Early results. 2024 Fall Meeting, AGU, 9-13 December, Abstract C33D-0466.
6. C. Wild, K. Zhao, K.E. Alley, T. Dotto, G.C. Collao-Barrios, **A. Muto**, D. Price, R. Hall, K.W. Nicholls, L. Padman, M. Truffer, T.A. Scambos, K.J. Heywood, E.C. Pettit (2023). Unveiling the Hidden Depths: Insights into Basal Melting Beneath Dotson Ice Shelf, West Antarctica. 2023 Fall Meeting, AGU, 11-15 December, Abstract C11A-07.
7. K.E. Alley, A. Wahlin, C. Branecky Begeman, Ø. Hegrenæs, X. Yuan, A.G.C. Graham, K. Hogan, P.E.D. Davis, T. Dotto, C. Eayrs, R. Hall, R.D. Larter, **A. Muto**, L. Ling, E.C. Pettit, B. Schmidt, T. Snow, F. Stedt, P. Washam, C. Wild, S. Wahlgren, J. Wellner and K.J. Heywood (2023). Ice-Melt Mechanisms

Revealed by Ice-Shelf Basal Topography. 2023 Fall Meeting, AGU, 11-15 December, Abstract C13C-1125.

8. M.A. Sharp, C. Wild, H. Smith, E.C. Pettit, K.E. Alley, **A. Muto**, M. Truffer, T.A. Scambos and TARSAN Team (2023). Drivers and Mechanisms of Rift Propagation: Initial Observations on the Thwaites Eastern Ice Shelf, West Antarctica. 2023 Fall Meeting, AGU, 11-15 December, Abstract C21D-1261.
9. E.C. Pettit, C. Wild, K.E. Alley3, M. Truffer, T.A. Scambos, K.J. Heywood, **A. Muto**, R. Hall, M.A. Sharp, H. Smith, G. Carroll, L. Wanzer, A. Wahlin, G.C. Collao-Barrios, M. Maclennan, N. Ochwat, T.S. Dotto, A.J. Luckman, S. B. Kachuck and TARSAN Team (2023). The Evolution of the Thwaites Eastern Ice Shelf: Ongoing Destabilization and Implications for Future Glacier Change. 2023 Fall Meeting, AGU, 11-15 December, Abstract C31A-01.
10. D. Hansen, L. Zoet, **A. Muto** (2023). Can we estimate subglacial effective pressure with active-source seismic data? 2023 Fall Meeting, AGU, 11-15 December, Abstract C33A-03.
11. L. Borthwick*, **A. Muto**, S. Anandakrishnan, N. Stevens, R. Pearce, and A. Willet (2023). Investigating Subglacial Geology Near West Antarctic Ice Sheet Divide, WAIS Workshop 2023, Cloquet, MI.
12. Porter, D.F., A. Muto, L. Borthwick, and K.J. Tinto (2022). Connecting the subglacial environment of the Amundsen Sea Embayment glaciers to ice sheet models using a combination of aerogeophysical data and statistical methods, 2022 Fall Meeting, AGU, 12-16 December, Abstract C12C-0583.
13. Borthwick, L.*, **A. Muto**, K.J. Tinto, S. Anandakrishnan, R.E. Bell, D.F. Porter, and C.D. Locke (2021). Tectonic Influence on Bed-Character Variability under Thwaites Glacier, West Antarctica, 2021 Fall Meeting, AGU, 13-17 December, Abstract C53A-03.
14. Pettit, E.C., C. Wild, K. Alley, A. Muto, M. Truffer, S.L. Bevan, J.N. Bassis, A. Crawford, T.A. Scambos, D. Benn (2021). Collapse of Thwaites Eastern Ice Shelf by intersecting fractures, 2021 Fall Meeting, AGU, 13-17 December, Abstract C34A-07.
15. Porter, D.F., K.J. Tinto, **A. Muto**, L. Borthwick*, R.E. Bell (2021). Building geologically-informed Bed Classes for the Amundsen Sea embayment: linking ice dynamics to the rock below, 2020 Fall Meeting, AGU, 13-17 December, Abstract NS15A-0371.
16. Borthwick, L.*, **A. Muto**, and S. Anandakrishnan (2021). Tectonic Influence on Bed-Character Variability under Thwaites Glacier, West Antarctica, EGU General Assembly 2021, online, 19–30 Apr 2021, EGU21-2645, https://doi.org/10.5194/egusphere-egu21-2645.
17. Muto, A., A. Roccaro*, K. Alley, E. Pettit, C. Wild, T. Scambos, B. Wallin, M. Truffer, D. Pomraning, A. Wåhlin, K.J. Heywood and the ITGC TARSAN Team (2020). Complex bathymetry beneath Thwaites and Dotson Ice Shelves revealed by active-source seismic surveys. 2020 Fall Meeting, AGU, 1-17 December, Abstract C053-1.
18. Muto, A., A. Roccaro*, K. Alley, E. Pettit, C. Wild, T. Scambos, B. Wallin, M. Truffer, D. Pomraning, A. Wåhlin, K.J. Heywood and the ITGC TARSAN Team (2020). Complex bathymetry beneath Thwaites and Dotson Ice Shelves revealed by active-source seismic surveys. ITGC Science Meeting, Online, 17 June.
19. Pettit, E.C., A. Wåhlin, K.J. Heywood, B.Y. Queste, R. Hall, L. Boehme, T.A. Scambos, J. Lenaerts, M. Truffer, **A. Muto** and C.T. Wild (2020). Vulnerability of Eastern Thwaites Ice Shelf, West Antarctica to

Warm Ocean Water: Insights from First AUV Exploration of Sub-Ice-Shelf Environment. AGU Ocean Sciences Meeting, San Diego, CA, 18 February, Abstract HE21B-01.

20. **Muto, A.**, R.B. Alley, B.R. Parizek and S. Anandakrishnan (2019). Basal-condition variability and till continuity beneath Thwaites Glacier, West Antarctica. International Symposium on Glacial Erosion and Sedimentation, Madison, WI, 16th May.

INVITED PRESENTATIONS

1. **Muto, A.**, L. Peters, S. Anandakrishnan, K. Christianson, R. Alley, B. Parizek, K, Riverman, I. Sasgen, and K. Gohl (2015), Upper crustal structures and their influence on ice dynamics in the Amundsen Sea Embayment. 22nd Annual West Antarctic Ice Sheet Workshop, Loveland, CO, 17-19 September.
2. **Muto, A.**, T. Scambos, and K. Steffen (2010), Multi-decadal surface temperature trends in the East Antarctica using borehole firn temperature measurements and geophysical inverse methods. 17th Annual West Antarctic Ice Sheet Workshop, Raystown, PA, 22-25 September.

INVITED SEMINARS AND LECTURES

Univ. of Pennsylvania (PA), SUNY Brockport (NY), Dickinson College (PA), University of Toledo (OH), Binghamton University (NY), Rowan University (NJ), Rutgers University, Newark (NJ), Millersville University (PA), Kutztown University (PA), West Chester University (PA).

GRANTS

2026-2027	Subglacial effective stress from legacy data: Archiving and reinterpreting West Antarctic active-source seismic surveys, Arête Glacier Initiative, $85,572, Lead PI ($49,553 as a subaward to Washington University in St. Louise).
2023-2026	Collaborative Research: Ideas Lab: ETAUS Meshed Observations of THE Remote Subsurface with Heterogeneous Intelligent Platforms (MOTHERSHIP), NSF OPP 2322059, $35,307, Institutional PI (Lead PI: Jessica Garwood, Oregon State Univ.; Total Award: $1.48M).
2020-2026	Collaborative Research: Estimating Subglacial Effective Pressure with Active-source Seismic Data, NSF OPP Antarctic Glaciology 2048324, $233,040, Institutional PI (Lead PI: Lucas Zoet, Univ. of Wisconsin, Madison; Total Award: $556,780).
2018-2026	NSFPLR-NERC: Collaborative Research: Thwaites-Amundsen Regional Survey and Network (TARSAN) Integrating Atmosphere-Ice-Ocean Processes affecting the Sub-Ice-Shelf, NSF PLR Antarctic Glaciology 1738992, $285,322, Co-PI (Lead PI: Erin Pettit, Oregon State Univ.; Total Award: $2.50M).
2020-2025	Collaborative Research: Building Geologically Informed Bed Classes to Improve Projections of Ice Sheet Change, NSF OPP Antarctic Glaciology 2001714, $174,216, Institutional PI (Lead PI: Kirsty Tinto, Columbia University; Total Award: $831,682).
2018-2025	NSFPLR-NERC: Collaborative Research: Ground Geophysical Survey of Thwaites Glacier, NSF PLR Antarctic Glaciology 1738934, $244,148, Co-PI (Lead PI: Sridhar Anandakrishnan, Penn State; Total award: $2.31M).

2022-2024 Multi-sensor, Multi-temporal, High-Spatial-Resolution Modeling of Terrain Evolution by Autonomous Sensor Deployment Systems, US Army Corps of Engineers (Subaward from Northeastern University), $345,263, institutional co-PI (institutional PI: Micheal Klein; total award to Temple: $1.075M).

2015-2017 The Importance of Basal Characterization beneath Thwaites Glacier, West Antarctica, NASA NNX15AH84G. $11,499, Co-PI (PI: Byron Parizek, Penn State; Total award: $71,498).

2012-2017 Revealing Late Holocene Climate Variability in Antarctica from Borehole Paleothermometry, NSF PLR Antarctic Glaciology 1142085, $185,149, PI ($53,186 transferred from Penn State to Temple University).

TEACHING

Fall 2022-2024 Ice and Global Climate (EES 4502/5502, 4 credits)

Spring 2026 Drone Short Course (EES 3015/5015, 1 credit)

Spring 2017-2026 Remote Sensing and GIS (EES3011/5011, 4 credits)

Fall 2021-2023 Introduction to Geophysics, (EES 5454, 4 credits)

Fall 2018, 2020 Introduction to Data Visualization and Analysis for Earth and Environmental Science (EES2051, 3 credits)

Fall 2016 Glaciology (EES5502, 3 credits)

Fall 2015, 2017 Physical Geology (EES2001, 3 credits)

Fall 2013-14 Physical processes in Geology (GEOSC 203), Penn State, guest lecturer (lectures and field project on gravity method and glacial processes).

Summer 2008, 09 Environmental Systems 1 (GEOG 1000). Univ. of Colorado, guest lecturer (two lectures on the impact of global climate change on ice sheets).

STUDENT ADVISING

Graduate students

Louise Borthwick (Ph.D. Geosciences, 2019-2025)
Bertie Miller (M.S. Geology, 2023-2025)
Kiki Wallick (M.S. Geology, 2021-2023)
Nolan Barrette (M.S. Geology, 2018-2020)
Alex Roccaro (M.S. Geology, 2018-2020)
Emma Young, (M.S. Geology, 2017)

Undergraduate students, independent research projects

Moulishka Sawant (2025-)
Xavier Noguiera (2018-2019)
Kelly Devlin (2017-2018)

M.S. Thesis / Ph.D. Dissertation Committee

James Berglund (Ph.D. 2019, Temple University), Morgan Sawyer (M.S. 2019-2022, Temple University), Matthew Raabe (M.S. 2020-2022, Temple University), Pourya Alidoust (Ph.D 2023, Civil Engineering, Temple University), Hussain Otudi (Ph.D., Computer and Information Science, 2025), James Milward (Ph.D., 2023-present, Temple University), Kirstin Petzer (Ph.D., 2024-present, Temple University), James Milward (Ph.D., 2024-present, Temple University), Angelo Tarzona (Ph.D., 2022-present, Georgia Tech.).

SERVICE

Professional

Proposal review Panel	National Science Foundation, Arctic and Antarctic Glaciology; Antarctic Glaciology
Proposal referee	National Science Foundation (Antarctic Glaciology, Antarctic Integrated System Sciences, Arctic Natural Sciences, Geomorphology and Land Use Dynamics, EAR Postdoctoral Fellowships), NASA (Postdoctoral Fellowship Program, PSTAR), Australian Antarctic Program, Netherlands Organization for Scientific Research, Alfred Wegener Institute-German Antarctic Program, Natural Environmental Research Council.
Journal referee	Geophysical Research Letters, Journal of Geophysical Research, Earth and Planetary Science Letters, Journal of Glaciology, The Cryosphere, Annals of Glaciology, Remote Sensing Letters, Polar Science, Nature Communications Earth and Environment.
Session convener	Geophysical Advances in Cryospheric Processes, Structure, and Environmental Change, AGU Fall Meeting 2018, 2019, 2020, 2021
Organizer, referee	AGU Fall Meeting Outstanding Student Paper Award, Cryosphere Section, 2017-2018

College level

2017-2019, 2023	College of Science and Technology Dean's Advisory Committee.

Department level

2024-present	EES Department Vice Chair
2022-present	EES Tenure mentoring committee for Becki Beadling (chair)
2022-present	EES Website renewal committee (chair), webmaster
2021-2022	EES Faculty search committee (chair).
2017-present	EES Graduate-student recruiting committee (chair).
2020-2021	EES Peer Program committee.
2016-2021	Faculty advisor to the Geological Society of Temple University.
2016-2021	Faculty advisor to Theta Rho chapter of Sigma Gamma Epsilon, the National Honor Society for Earth Sciences.

HONORS AND AWARDS

2011	Antarctica Service Medal of the Unites States of America.
2005	CIRES Graduate Student Research Fellowship, Univ. of Colorado.

OUTREACH

May 2020	Temple University College of Science and Technology Alumni Weekend Event, "Zoom Into Science"
May 2019	Temple University College of Science and Technology Alumni Weekend Event, "CST Extremes"
Dec. 2018	Antarctica Week, video-conference lectures on Antarctic research to ~100 students between grades 2 and 12 at schools in PA and NY.
Nov. 2018	Invited speaker, Philadelphia Science on Tap, public lecture to ~100 people, talk title: Blowing Up Glaciers (Just A Bit!): Geophysical investigations of the Antarctic Ice Sheet Stability.
2018, 2014	Guest lecturer in science classes at Palisades Middle School, Kintnersville, PA (forty-minute lectures to several 7th and 8th grade science classes as part of the water and atmosphere module).
2018, 2014	Presenter at the Career Day, Palisades Middle School, Kintnersville, PA.
May, 2017	Guest lecturer in science classes at Northeast High School, Philadelphia, PA.
Feb. & May, 2016	Guest lecturer at Kensington Health Sciences Academy, Philadelphia, PA, as part of the "Scientists in the Classroom" program, run by the National Center for Science Education.
May 2014	Penn State Dept. of Geosciences outreach event "Shake Rattle and Rock" (one-hour presentations to several 5th-grade classes from the local school district, exploring polar research and Antarctic climate change).
June 2013	STEM role model on *JASON Learning* (interactive live web-cast event and a featured scientist on JASON Learning publication "Climate: Seas of Change"; http://www.jason.org/live/stem-career-qa-atsuhiro-muto-glaciologist).
Nov. 2012	Guest lecturer in science classes at Palisades Middle School, Kintnersville, PA.
Nov. 2010	Guest lecturer in science classes at Palisades Middle School, Kintnersville, PA.
2008	Invited "Traveler" in *Polar-Palooza* (NSF and NASA funded IPY outreach activity) at 4 cities in mid-west U.S. in Apr.-Nov., 2008 (gave presentations on the Norwegian-U.S. IPY Scientific Traverse of East Antarctica and polar research in general to K-12 and general public, participated in K-12 teacher workshops; http://passporttoknowledge.com/polar-palooza/pp03.php).

PROFESSIONAL AFFILIATIONS

American Geophysical Union, International Glaciological Society, Society of Exploration Geophysicists.