Atsuhiro Muto July 2022

Department of Earth and Environmental Science
Temple University
1901 N. 13th Street, 317B Beury Hall,
Philadelphia, PA 19122, USA

Phone: (215) 204-3699
Fax: (215)-204-3496
E-mail: amuto@temple.edu
Website: sites.temple.edu/polar

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. 2021–	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).
2003–2005	Graduate Teaching Assistant, Graduate School of Science and Technology, Chiba University, Japan.

RESEARCH INTERESTS

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

CITATION METRICS

Google Scholar

Citations: 965
h-index: 19
i10-index: 23

Web of Science

Total times cited: 697
h-index: 17

REFEREED JOURNAL PUBLICATIONS

1. 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. [IF: 4.790]
2. 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. [IF: 4.790]
3. 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. [IF: 4.253]
4. 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. [IF: 4.790]
5. 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. [IF: 4.637]
6. 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. [IF: 4.79]
7. **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. [IF: 3.131]
8. 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. [IF: 3.131]
9. 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. [IF: 4.637]
10. 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. [IF: 4.253]
11. **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. [IF: 4.637]

12. 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. [IF: 3.681]

13. 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. [IF: 4.253]

14. 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. [IF: 4.578]

15. 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. [IF: 4.790]

16. 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. [IF: 4.578]

17. **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. [IF: 4.637]

18. 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. [IF: 9.235]

19. 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. [IF: 4.790]

20. 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. [IF: 4.637]

21. 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. [IF: 3.131]

22. **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. [IF: 3.585]

23. 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. [IF: 4.578]

24. 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. [IF: 5.406]

25. 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. [IF: 4.578]

26. **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. [IF: 3.131]

27. 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. [IF: 4.790]

28. **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. [IF: 4.578]

29. 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. [IF: 4.578]

30. 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. [IF: 3.131]

31. 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. [IF: 3.131]

In review

Dotto, T.S., K.J. Heywood, R.A. Hall, T.A. Scambos, Y. Zheng, Y. Nakayama, T. Snow, A.K. Wåhlin, C. Wild, M. Truffer, **A. Muto**, K.E. Alley, L. Boehme, G. Bortolotto, and E.C. Pettit (in review) Ocean variability beneath Thwaites Eastern Ice Shelf, West Antarctica. *Nature Communications*.

In preparation (*student advisee)

Muto, A., A. Roccaro*, K. Alley, C. Wild, M. Truffer, E. Pettit, T. Scambos, K. Heywood and Anna Wåhlin. Ocean floor depth beneath Thwaites and Dotson Ice Shelves from reflection-seismic surveys, in preparation for *Earth System Science Data*.

Muto, A., A. Roccaro*, K. Alley, C. Wild, M. Truffer, E. Pettit, T. Scambos, K. Heywood and Anna Wåhlin. Complex bathymetry beneath Thwaites and Dotson Ice Shelves revealed by active-source seismic surveys, in preparation for *The Cryosphere*.

Borthwick, L.*, **A. Muto**, S. Anandakrishnan, R.B. Alley, B.R. Parizek, K. Christianson, and N. Holschuh. Crustal control on subglacial morphology and bed character, and their influence on ice-flow dynamics of Thwaites Glacier, in preparation for *Geophysical Research Letters*.

Young, E.V.*, and **A. Muto**. Modeling gravity signal of summer-time mass balance on a mountain Glacier and implications for terrestrial gravity measurements, in preparation for *Journal of Applied Geophysics*.

SELECTED CONFERENCE PRESENTATIONS AND ABSTRACTS

1. 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.
2. 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.
3. 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.
4. 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.
5. 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.
6. 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.

7. 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.
8. **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.
9. Barrette, N.*, **A. Muto**, L. Zoet, and J.E. Rawling III (2019). Seismic investigation of the morphology of a tunnel channel of the Green Bay Lobe, Wisconsin, USA. International Symposium on Glacial Erosion and Sedimentation, Madison, WI, 15th May.
10. Pettit, E, K.J. Heywood, B. Y. Queste, R. Hall, L. Boehme, A. Wåhlin, T. Scambos, J. Lenaerts, M. Truffer, **A. Muto** (2019). Thwaites Glacier and the Amundson Sea Embayment: The TARSAN Project. EGU General Assembly, Geophysical Research Abstracts, 21, EGU2019-18673.
11. Young, E.*, and **A. Muto** (2018). Modeling of time-varying gravity signals on an alpine glacier: towards using ground-based time-lapse microgravity method to determine glacier mass balance. 2018 AGU Fall Meeting, Abstract NS43B-0844.
12. **Muto, A**. S. Anandakrishnan, R. Alley, B. Parizek, S. Koellner, K. Christianson, and N. Holschuh (2018). Seismic evidence of variable bed conditions beneath Thwaites Glacier, West Antarctica. The 25th Annual West Antarctic Ice Sheet Workshop, Stony Point, NY, 18th September.
13. **Muto, A.**, S. Anandakrishnan, R.B. Alley, H.J. Horgan, B.R. Parizek, S.J. Koellner, K. Christianson, and N. Holschuh (2018). Seismic evidence of variable bed conditions and their influence on the stability of Thwaites Glacier. International Symposium on Timescales, Processes and Ice Sheet Changes, Buffalo, NY, 7th June.
14. Zoet, L, **A. Muto**, J.E Rawling (2018). Geophysical investigation of tunnel channels. 52nd Annual Meeting, North-Central Section, Geological Society of America, Ames, IA, 16th April.
15. **Muto, A.**, and T.A. Scambos (2017), Firn-temperature records show recent surface warming of East Antarctic interior. 2017 AGU Fall Meeting, Abstract C11B-0915.
16. Koellner, S.J., B.R. Parizek, R.B. Alley, **A. Muto**, N Holschuh, and S. Nowicki (2017). Impact of Basal Conditions on Grounding-Line Retreat. 2017 AGU Fall Meeting, Abstract C41A-1172.
17. Anandakrishnan, S., R.B. Alley, K. Christianson, N. Holschuh, S.J. Koellner, **A. Muto**, B.R. Parizek, L.E. Peters, and D. Pollard (2017). Subglacial controls on the stability of Thwaites Glacier: 1. Geophysical data. The 24th Annual West Antarctic Ice Sheet Workshop, Camp Casey Conference Center, WA, 9 October.
18. Alley, R.B., S. Anandakrishnan, K. Christianson, N. Holschuh, S.J. Koellner, **A. Muto**, B.R. Parizek, L.E. Peters, and D. Pollard (2017). Subglacial controls on the stability of Thwaites Glacier: 2. Physical understanding and modeling. 24th Annual West Antarctic Ice Sheet Workshop. The 24th Annual West Antarctic Ice Sheet Workshop, Camp Casey Conference Center, WA, 9 October.
19. **Muto, A.**, Peters, L. E., Anandakrishnan, S., Alley, R. B., B. R. Parizek, Christainson, K., and N. Holschuh (2016). Upper-Crustal Structures in the Byrd Subglacial Basin revealed by ground-based and

airborne geophysical data. 2016 AGU Fall Meeting, Abstract C22C-07.

20. Young, E.V.*, **A. Muto**, and E. Babcock (2016). Summer-time Mass Balance of Wolverine Glacier, Alaska, Derived from Ground-based Time-lapse Microgravity Measurements. 2016 AGU Fall Meeting, Abstract C41C-0690.
21. Riverman, K., R. Alley, S. Anandakrishnan, K. Christianson, B Medley, N. Holschuh, **A. Muto,** and L. Peters (2016). Hydrology-driven forcing of margin location of the NE Greenland Ice Stream. 2016 AGU Fall Meeting, Abstract C42A-06.
22. **Muto, A.**, Peters, L. E., Anandakrishnan, S., Alley, R. B., B. R. Parizek, Christainson, K., and N. Holschuh (2016). Upper-Crustal Structures Beneath Thwaites Glacier revealed by active-source seismic and aerogravity data. The 23rd Annual West Antarctic Ice Sheet Workshop, Algonkian Conference Center, VA, 4-6 October.
23. **Muto, A.**, Peters, L. E., Anandakrishnan, S., Christainson, K., Alley, R. B., and B R. Parizek (2015). Upper-Crustal Structures Beneath Thwaites Glacier, West Antarctica and their Influence on Ice Dynamics. 2015 AGU Fall Meeting, Abstract C11A-736.
24. Christianson, K., M. Bushunk, D. Holland, P. Dutrieux, I. Joughin, B. Parizek, R. Alley, S. Anandakrishnan, K. Haywood, A. Jenkins, K. Nicholls, B. Webber, **A. Muto**, and T. Stanton (2015). External forcing modulates Pine Island Glacier flow. 2015 AGU Fall Meeting, Abstract C11D-05.
25. Parizek, B., R. Alley, S. Anandakrishnan, P. Applegate, K. Christianson, T. Dixon, D. Holland, N. Holschuh, K. Keller, S. Koellner, D. Lampkin, **A. Muto**, R. Nicholas, N. Stevens, D. Voytenko, and R. Walker (2015), Greenland Flow Dynamics: (De)coding Process Understanding. 2015 AGU Fall Meeting, Abstract C42A-01.
26. Riverman, K., R. Alley, S. Anandakrishnan, K. Christianson, L. Peters, and **A. Muto** (2015), Flow Dynamics and Stability of the NE Greenland Ice Stream from Active Seismics and Radar. 2015 AGU Fall Meeting, Abstract NS21A-1915.
27. **Muto, A.**, L.E. Peters, K. Gohl, I. Sasgen, R.B. Alley, S. Anandakrishnan and K.L. Riverman (2015), Improved subglacial bathymetry and sediment distribution beneath Pine Island Glacier ice shelf modeled using aerogravity and in situ geophysical data. International Glaciological Society Symposium on Contemporary ice-sheet dynamics: ocean interaction, meltwater, & non-linear effects, Cambridge, U.K., 15-21 August.

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

2020-2023 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).

2020-2023 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: Kirsteen Tinto, Columbia University; Total Award: $831,682).

2018-2023 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).

2018-2023 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).

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

Spring 2017-2022 Remote Sensing and GIS (EES3011/5011, 4 credits), instructor.

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

Fall 2016 Glaciology (EES5502, 3 credits), instructor.

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

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-present)

Kayleigh Wallick (M.S. Geology, 2021-present)

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
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).

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), Australian Antarctic Program, Netherlands Organization for Scientific Research
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
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	College of Science and Technology Dean's Advisory Committee.

Department level

2021-2022	EES Faculty search committee (chair).
2017-present	EES Graduate-student recruiting committee (chair).
2020-present	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 7^{th} and 8^{th} 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.