

Seth William Campbell

Office

ERDC-Cold Regions Research & Engineering Lab
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Education

2014	Ph.D. Earth and Climate Sciences	University of Maine, Orono
2010	M.S. Earth Sciences	University of Maine, Orono
2008	B.S. Earth Sciences	University of Maine, Orono
2005	M. Business Administration	University of Maine, Orono
2001	B.A. Environmental Science, Minor: Geology	University of Maine, Farmington

Employment

2016 – Present	University of Washington, Post-Doctoral Research Associate
2015 – Present	University of Maine, Research Assistant Professor
2014 – Present	Cold Regions Research & Engineering Lab, Research Geophysicist
2014 – 2015	University of California, Davis, Research Associate
2011 – 2014	University of Maine, Graduate Research Assistant
2009 – 2014	Cold Regions Research & Engineering Lab, Research Scientist Trainee
2010 – 2012	University of Washington, Temporary Professional Research Staff
2008 – 2009	University of Maine, Graduate Teaching Assistant
2000	E/Pro Engineering & Environmental Consulting, Survey Technician
1999 – 2000	Central Maine Power Company, Survey Technician
1999	Maine Dept. of Environmental Protection, Research Technician
1998	U.S. Environmental Protection Agency, Environmental Research Intern

Professional Grants and Awards (*8 Total Current Affiliated Grants: \$2,769,607; PI: \$183,857)

2016-2017: NSF Logistics Proposal: Reconnaissance of a new potential route to access McMurdo Ice Shelf from McMurdo Station. **S Campbell** (PI), N Lamie (Co-PI) (\$85,357)*

2015-2016: NSF Logistics: Geophysical Survey of McMurdo Ice Shelf to determine current infrastructure stability and for future planning; **S Campbell** (PI), S Shoop, Z Courville (Co-PIs) (\$98,500)*

2015-2016: BSEE: Quantitative Measurements of In-Situ burn efficiency and rate. P Panetta (PI), G Hewitt, **S Campbell**, L Zabilansky, A Rangwal (co-PIs) (\$136,885) (Transferred co-PI to N. Lamie)

2016-2019: NSF Arctic # 1503924: Collaborative Research: Influence of natural ice microstructure on rheology in general shear: In-situ studies in the Alaska Range; C Gerbi (PI), **S Campbell**, R Hawley, P Koons, K Kreutz (Co-PIs) (\$420,937)*

2016-2018: NSF P2C2 #1502783: Geophysical Reconnaissance to expand ice core hydro-climate reconstructions in the Northeast Pacific; K Kreutz (PI), **S Campbell** (Co-PI) (\$214,890)*

2014-2016: NSF Polar #1304905: What role do glaciers play in terrestrial sub-arctic hydrology? A Liljedahl (PI), R Hock, **S Campbell** (co-PIs) (\$844,653)*

2015-2016: NSF Antarctic Glaciology: Allan Hills Englacial Site ice core site selection; N Spaulding (PI), H Conway, A Kurbatov, P Mayewski (Co-PI's) **S Campbell** (Post-Doc) (\$188,845)*

2014 – 2016: NSF Antarctic Glaciology #1341658: Constraining Plio-Pleistocene West Antarctic ice sheet behavior from the Ohio Range and Scott Glacier; S Mukhopadhyay (PI), R Ackert, **S Campbell** (Research Associate) (\$582,113)*

2015-2016: NSF Logistics: Geotechnical Assessment for McMurdo Station Landscape and Infrastructure Improvements; R Affleck (PI), K Bjella, J Buska, **S Campbell**, J MacPherson (Co-PIs) (\$197,427)*

2015: NSF Logistics: Crevasse Snow Bridge Strength: Extending Current Crevasse Crossing Criteria to the Arctic; Z Courville (PI), **S Campbell**, J Lever (Co-PI's) (\$55,000)

2015: National Geographic Waitt Grant: Developing a Holocene climate record for the Southern Hemisphere Westerlies in Patagonia and South Georgia Island; K Kreutz (PI), **S Campbell** (co-PI) (\$11,952)

2014: BSEE Research Grant: Testing of Oil Skimmer Equipment Components for use in Arctic Environments; L Zabilansky (PI) **S Campbell** (co-PI) (\$300,000)

2012 – 2014: NSF P2C2 Research Grant #1204035: Reconstructing central Alaskan precipitation variability and atmospheric circulation during the past millennium; E Osterberg (PI), K Kreutz, S Birkel, C Wake (Co-PIs), **S Campbell** (PhD candidate) (\$891,846)

2012 – 2013: NSF/PolarTREC Grant: **S Campbell** (PI) K Williams (Co-PI) (\$28,500)

Pending Proposals (Total: \$1,041,989; *Total as PI: \$407,989)

NSF Arctic Collaborative Proposal: Estimating Controls on the stability of Taku Glacier, Alaska. **S Campbell** (PI), S. Roy, D Voigt, K Riverman (Co-PI's) (\$771,810) (*\$407,648 as PI)

NSF Antarctic Proposal: Collaborative research: Using geophysical methods to calculate ice viscosity in streaming flow. C Gerbi (PI), **S Campbell**, K Christianson (Co-PI's) (\$195,011)

NSF Antarctic Proposal: Collaborative Research: Site Survey for Subglacial Bedrock Drilling at the margin of the Wilkes Basin, Antarctica. G Balco (PI), **S Campbell**, C Todd (Co-PI's) (\$75,168)

Peer Reviewed Manuscripts (Published, Submitted, or in Revision)

Campbell S, S Arcone, C McNeil, K Kreutz, S Braddock, H Conway, P Koons, E Osterberg. 2015. Surface-based ground-penetrating radar profiles of the Juneau Icefield: Interpretation of the winter mass balance and previous year's snow horizon. *Geophysics*. In Revision.

Balco G, C Todd, K Huybers, **S Campbell**, M Vermeulen, M Hegland, B Goehring, T Hillebrand. 2015. Cosmogenic-nuclide exposure ages from the Pensacola Mountains adjacent to the Foundation Ice Stream, Antarctica. *American Bulletin of Science*. Accepted.

Douglas T, T Jorgenson, D Brown, **S Campbell**, C Hiemstra, S Saari, K Bjella, A Liljedhal. Degrading permafrost mapped with electrical resistivity tomography, airborne LiDAR, and seasonal thaw measurements. *Geophysics*. Accepted.

Briggs M, **S Campbell**, J Nolan, D Ntarlagiannis, F Day-Lewis, J Lane. Geophysical methods for characterizing the active layer and new permafrost formation. *Permafrost & Periglacial Processes*. Accepted.

Campbell S and S Arcone. 2014. Surficial and bedrock geology mapping with ground-penetrating radar in New England: general results and a case study from Mount Adams, New Hampshire. SEG Technical Program Expanded Abstract. pp 2145-2147.

Arcone S, **S Campbell**, T Pfeffer. 2014. GPR Profiles of Glacial Till, and its Transition to Bedrock: Interpretation of Water Content, Depth, and Signal Loss from Diffractions. *J. Environ. & Engineering Geophysics*, **19**(4), 207–228 Doi: 10.2113/JEEG19.4.207

Campbell S, G Balco, H Conway, C Todd, K Huybers, C Simmons, M Vermeulen. 2013. Radar-detected englacial stratigraphy in the Pensacola Mountains, Antarctica; implications for recent changes in ice flow and accumulation. *Ann. Glaciol.* **54**(63), 91-100.

Campbell S, S Roy, K Kreutz, S Arcone, PO Koons, E Osterberg. 2013. Strain Rate Estimates for Crevasse formation at an Alpine Ice Divide: Mount Hunter, Alaska. *Ann. Glaciol.* **54**(63), 200-208.

Spaulding N, A Kurbatov, M Bender, J Higgins, P Mayewski, S Arcone, **S Campbell**, N Dunbar, D Introne. 2013. Climate archives from 90 to 250 ka in horizontal and vertical ice cores from the Allan Hills Blue Ice Area, Antarctica. *Quaternary Res.* **80**, 562-574.

Campbell S, K Kreutz, C Wake, E Osterberg, S Arcone, D Introne, D Winski, K Volkening. 2012. Melt regimes, internal stratigraphy, flow dynamics, and glaciochemistry of three glaciers in the Alaska Range. *J. Glaciol.* **58**(207), 99-109. Doi: 10.3189/2012JoG10J238

Campbell S, K Kreutz, C Wake, E Osterberg, S Arcone, D Winski, K Volkening. 2012. Flow dynamics of an accumulation basin: A case study of the upper Kahiltna Glacier on Mount McKinley, Alaska. *J. Glaciol.* **58**(207), 185-195. Doi: 10.3189/2012JoG10J233

Winski D, K Kreutz, E Osterberg, **S Campbell**, C Wake. 2012. High Frequency Observations of Melt Effects on Snowpack Stratigraphy, Kahiltna Glacier, Central Alaska Range. *Hydro. Processes*. **26**(17), 2573–2582, Doi: 10.1002/hyp.9348

In-House Reports

Campbell S, K Haskins, B Winn, J Stanley, L Zabilansky. 2014. Testing of oil skimmer equipment components for use in Arctic Environments. 2014 Report to Dept. of the Interior Bureau of Safety and

Environmental Enforcement, 200 pp. <http://www.bsee.gov/Technology-and-Research/Oil-Spill-Response-Research/Projects/Project1026/>

Campbell S. 2014. Determining basin geometry, stability, and flow dynamics of valley glaciers with ground-penetrating radar. Ph.D. Dissertation, University of Maine, 168 pp.

Campbell S. 2011. Learning about climate change from ice cores. Publication for the National Park Service U.S. Department of the Interior, Denali National Park and Preserve
<http://www.nps.gov/dena/naturescience/factsheets.htm>

Campbell S. 2010. Melt regimes, internal stratigraphy, flow dynamics, and glaciochemistry of three glaciers in the Alaska Range. M.S. Thesis, University of Maine, 91 pp.

Lawson D, D Finnegan, M Klaar, **S Campbell**. 2010. Climate monitoring in Glacier Bay National Park and Preserve: capturing climate change indicators. 2010 Report to Glacier Bay National Park and Preserve, Alaska.

Astley B, **S Campbell**, R North, B Smith, B Minsley. 2011. Geophysical permafrost characterization techniques and application to military lands in Alaska. April, USACE Research and Development Conference, Environmental and Engineering Geosciences.

Osterberg E, K Kreutz, C Wake, **S Campbell**. 2011. Drill site reconnaissance and snow chemistry survey in Denali National Park: 2010 report to Denali National Park and Preserve, Alaska.

Field Experience

Over 40 geophysical, glaciological, or geological exploration/research trips to Alaska, Greenland, Antarctica, Canada, South America, and the Continuous US

- **2015-2016:** McMurdo Ice Shelf, Ohio Range, and Allan Hills, Antarctica (3 seasons)
- **2010, 2015:** Greenland (2 seasons)
- **2015:** Tierra Del Fuego, Argentina (1 season)
- **2012, 2015, 2016:** Jarvis Glacier, Alaska (4 seasons)
- **2014:** Dry Valleys, Antarctica (1 season)
- **2008, 2009, 2010, 2011, 2012 (2), 2013, 2014:** Denali National Park, Alaska (8 seasons)
- **2009-2013:** Over 1000 km of ground collected radio-glaciology data and ~300 km of surficial and bedrock geology geophysical data for research applications
- **2011, 2013:** Mount Rainier, Washington (2 seasons)
- **2010-2011; 2011-2012:** Pensacola Mountains, Antarctica (2 seasons)
- **2007, 2011, 2012, 2015:** Juneau Icefield, Alaska (4 seasons)
- **2009-2015:** 15+ permafrost and near-surface geology field research efforts in Alaska
- **2010:** Banff, Canada (1 season)
- **2008:** St. Elias Erosion and Tectonics Project Seismic Survey; Gulf of Alaska (1 season)

Collaborations and Other Projects

Collaborators (past 48 months): Karl Kreutz, Peter Koons, Roger Hooke, Gordon Hamilton, Andrei Kurbatov, Nicole Spaulding, Chris Gerbi, Samuel Roy (Maine) Steven Arcone, Beth Astley, Tom Douglas, Anna Wagner, Matthew Sturm, David Finnegan, Donald Albert, Kevin Bjella, Dan Lawson, Leonard Zabilansky, Zoe Courville, Sally Shoop, Rosa Affleck (CRREL), Erich Osterberg, Robert Hawley (Dartmouth), Howard Conway (Washington), Greg Balco (Berkeley Geochronology Center), Claire Todd (Pacific Lutheran), Cameron Wake, Joe Licciardi (New Hampshire) Fred Day-Lewis, Michelle Walvoord, Martin Briggs (USGS); Sujoy Mukhopadhyay (UC Davis), Robert Ackert (Harvard), Anna Liljedahl, Regine Hock, Mark Fahnstock (Alaska); Donald Voigt, Kiya Riverman (Penn State)

2010-Present: Geophysical investigation of surficial and bedrock geology using GPR and Resistivity in New Hampshire and Vermont. Co-PIs: S Arcone, **S Campbell**

2014: Testing of Oil Skimmer Equipment Components for use in Arctic Environments: PI: **S Campbell**

2011-2015: Climate change impacts on US Army Alaska determined through geophysical field work and modeling (geophysical permafrost/surficial/bedrock geology mapping in Ft Wainwright/Yukon, Alaska)
PIs: T Douglas, FD Lewis, M Walvoord

2010-2014: Volume scattering and EM wave propagation in complex terrain, New Hampshire. PI: S Arcone.

2011-2013: Ice depth, ice volume, and snow accumulation radar survey. Mount Rainier National Park, WA. PI: C Todd; Co-PI: **S Campbell**

2012: Snow accumulation radar survey, Juneau Icefield, AK. PI: **S Campbell**

2010-2012: Geophysical survey of the Pensacola Mountains, Antarctica. Co-PIs: G Balco, H Conway, C Todd

2009-2011: Geophysical 3D permafrost and geology mapping for groundwater flow modeling at a contaminated site. Fairbanks, Alaska. PI: B Astley

2010: Geophysical survey of the Wapta Icefield/Peyto Glacier, Canada. PI: R Hawley

2010: Permafrost and hydrological geophysical survey; Thule, Greenland. PI: K Bjella

2010: Search and recovery geophysical survey of Coast Guard Grumman WWII airplane in Greenland. PI: US Coast Guard

2010: EM and acoustic wave propagation in urban environments. PI: D Albert

2010: Climate monitoring project of Glacier Bay National Park and Preserve, AK. PI: D Lawson

2009-2010: Unexploded ordinance geophysical mapping, Fairbanks, Alaska. PI: B Astley

2009-2010: Permafrost tunnel geophysical site selection. Fox, Alaska. PI: M Sturm

2008: St. Elias Erosion and Tectonics project. Gulf of Alaska. Co-PIs: P Koons, S Gulick

Academic Teaching Experience

- University of Maine School of Earth and Climate Sciences credit courses:
 - **2010:** Teaching Assistant (unpaid) for *Tectonics*
 - **2008-2009:** Teaching Assistant for *Introduction to Geology*
 - **2008:** Teaching Assistant for *Introduction to Geophysics*
- University of Maine Outdoor Education/Kinesiology Department courses offered for college credit:
 - **2004-2006:** Lead Instructor for *Wilderness First Responder*
 - **2002-2004:** Lead Instructor for *Introduction to Rock Climbing*
 - **2002-2004:** Lead Instructor for *Artificial Climbing Wall Management*
 - **2002-2004:** Lead Instructor for *Top Rope Rock Climbing*
- Dartmouth College Outdoor Education program courses offered for college credit:
 - **2010:** Instructor for *Wilderness First Responder*

Other Teaching and Mentoring Experience

2015: GPR Theory and Application Workshop: Co-instructor at the North East Geological Society of America Workshop (18 students)

2014: Permafrost Geophysics Course: Co-Instructor, U.S. Geological Survey and Department of Defense Sponsored Training Program (17 students) <http://water.usgs.gov/ogw/bgas/courses/GW1829/>

2004-Present: SOLO Wilderness Medicine: Lead Instructor ; Instructed >1500 hours of wilderness emergency medicine courses (Wilderness First Aid, Wilderness First Responder, and Wilderness EMT) for certifications through SOLO Wilderness Medicine including courses taught at the following institutions:

- Maine EMS
- University of Maine
- University of New England
- Trinity College
- University of Alaska
- Colby College
- Skidmore College
- Dartmouth College

2013: Oak Ridge National Laboratory (ORISE): Student mentor (1 student)

2012-2013: Dartmouth College Women in Science Program (WISP): Student mentor (2 students)

2011-2015: Juneau Icefield Research Program: Geophysics Field Instructor; Alaska (82 students)

2007-2008: University of Maine Ambulance Service: Assistant Chief of Service (60+ students)

2003-2008: Atlantic Climbing School: Rock Climbing Guide; Bar Harbor, ME

2003-2008: CLC Ambulance Service: Emergency rescue service EMT-Intermediate; Damariscotta, ME

2002-2006: University of Maine, Maine Bound; Outdoor Program Supervisor (40+ student staff)

1998-2001: University of Maine, Farmington; Geology Teaching Assistant/Tutor (15 students)

Students Mentored (* Field Mentor)

- Steve Bernsen (PhD Student, University of Maine; Co-advisor)
- Niki Kamp (PhD Student, University of Graz; Co-advisor)
 - Josh Plourde (University of Maine)*
 - Lyndsey Monroe (University of Maine)*
 - Curtis Marston (University of Maine)*
 - Scott Braddock (University of Maine)*
 - Kevin Volkening (Montana State University)*
 - Loren Rausch (Montana State University)*
 - Hazel Shapiro (Dartmouth)*
 - Theo Fehsenfeld (Bates College)*
 - Lindsey Slavin (Wake Forest University)*
 - Blaire Slavin (The Benjamin School)*
 - Joel Wilner (Middlebury College)*
 - Joseph Wolf (Minnesota State University)*
 - Tadhg Moore (Univ. College Cork, Ireland)*
 - Jill Horing (Dartmouth)
 - Nancy Wu (Dartmouth)
 - Jon Thompson (Dartmouth)*
 - Alex Lee (Dartmouth College)*
 - Dave Silverstone (University of Alaska)*
 - Chris McNeil (University of Alaska)*
 - Harry Sandler (University of Vermont)*
 - Annie Boucher (Carleton College)*
 - Adam Toolanen (Lund University)*
 - Abi Bradford (University of Maine)*
 - Jacob Hollander (University of Georgia)*
 - Betsy Smith (Sonoma State University)*
 - Kimberley Miner (University of Maine)*

Geophysical Instruments and Geological Field Methods

- GSSI SIR-3000, SIR-4000, SIR-20, and SIR-30 GPR Control Units (15-2600 MHz antennas)
- GSSI EM-400 Profiler
- S&S. Pulse Ekko Pro and Noggin GPR (50-800 MHz antennas)
- Geometrics Ohm Mapper Resistivity Meter
- Advanced Geosciences Super Sting R8 IP Resistivity Meter
- ABEM Resistivity Terrameter and ABEM WalkTEM Time Domain EM System
- GF Instruments CMD-4 Electromagnetic Conductivity Meter
- Geometrics 856 Proton Precession Magnetometer and Geonics EM31-MK2 Magnetometer
- Worden and Lacoste-Romberg Gravimeters
- Bison 9024 24 Channel Seismograph
- GPS rapid static, RTK surveys, and various GPS hardware
- Geologic, gravity, magnetic, air photo/satellite image geologic mapping and interpretation, sediment analysis, soil mapping and sediment/ice coring, hydrologic, and hydro-geological field and modeling studies, and topographic, boundary, construction, land/water surveys

Technical Software

- Res2DInv and Res3DInv
- COMSOL Multiphysics (Intermediate user)
- GSSI Radan and S&S Ekko View Deluxe
- Matlab (Intermediate user)
- ESRI ArcGIS
- ENVI
- Trimble Business Center/Geomatics
- Golden Software Surfer, Voxler, Grapher

Conference Oral Presentations (Past 48 months)

Conference Session Co-Chair:

2015: American Geophysical Union; Applications of Near Surface Geophysics in Periglacial Regions

2014: American Geophysical Union; Applications of Near Surface Geophysics in Cold Regions

2013: North East GSA; Ground-Penetrating Radar Investigations for Geologic Formations

Campbell S, Kreutz K, Arcone S, Braddock S, Osterberg E, Koons P. Determining winter mass balance and the previous year snowline position on the Juneau Icefield, Alaska, using ground-penetrating radar. Northeast Geological Society of America Meeting; Bretton Woods, NH. March, 2015.

Campbell S. Influences of terrain and vegetation on permafrost distribution: case studies from Tanana Flats and 12-Mile Lake, Alaska. Northeast Geological Society of America Meeting; Bretton Woods, NH. March, 2015.

Campbell S, K Williams, L Marston, K Kreutz, C Wake, E Osterberg. Linking ice core climate research to the K-12 and broader community in Denali National Park, Alaska. AGU Conference; San Francisco, CA. December, 2013.

Campbell S and S Arcone. Applications of Ground-Penetrating Radar Profiles to Surficial and Bedrock Geology Mapping in New Hampshire. Geological Society of America Meeting; Denver, CO. October, 2013.

Campbell S, C McNeil, S Arcone, K Kreutz, P Koons, G Hamilton, H Conway. Determining winter mass balance and the previous year snowline position of the Juneau Icefield, Alaska, using high-frequency ground-penetrating radar. International Glaciological Society Radioglaciology Conference; Lawrence, KS, September, 2013.

Campbell S and S Arcone. Applications of Ground-Penetrating Radar Profiles to Surficial and Bedrock Geology Mapping in New Hampshire. Northeast Geological Society of America Meeting; Bretton Woods, NH. March, 2013.

Campbell S, S Arcone, K Kreutz, G Hamilton, H Conway, C McNeil, S Braddock. Preliminary winter accumulation rates for mass balance estimates of the Juneau Icefield, Alaska using 400 MHz ground-penetrating radar. Invited speaker, AGU-SEG Cryosphere Workshop; Boise, ID. January, 2013.

Campbell S, S Saari, T Douglas, F Day-Lewis, M Walvoord, J Nolan, M Briggs. Shallow Geology and Permafrost Characterization using Ground-Penetrating Radar to infer Hydrological Controls and Landscape Evolution of Interior Alaska. AGU Conference; San Francisco, CA. December, 2012.

Arcone S, **S Campbell**. Multi-Bandwidth GPR Profiles of Granite in New Hampshire: Attributes of Fracture Horizons and Wavelets. AGU Conference; San Francisco, CA. December, 2012.

Campbell S, K Kreutz, S Arcone, E Osterberg. Strain Rate Estimates on Mount Hunter, Alaska: What Causes Crevassing at an Ice Divide? Arctic Workshop; Winter Park, CO. March, 2012.

Campbell S. GPR investigation of glacier structure and dynamics near exposure-dating sites in the Pensacola Mountains, Antarctica. Workshop on geological constraints for Antarctic ice sheet models; Lamont-Doherty Earth Observatory Workshop, NY. April, 2011.

Conference Poster Abstracts (Past 48 months) (Student Presentation*)

Campbell S, Balco G, Conway H, Huybers K. A GPR approach to searching for pre-WAIS collapse glacier ice. West Antarctic Ice Sheet Annual Science Workshop, Loveland, CO. September, 2015.

Kreutz K, **Campbell S**, Osterberg E, Wake C, Winski D, Roy S, Koons P. Geophysical approaches to improve Holocene ice core based hydro-climate reconstructions in the Northeast Pacific. Northeast Geological Society of America Meeting; Bretton Woods, NH. March, 2015.

Winski D, Osterberg E, Kreutz K, Baum M, Wake C, **Campbell S**. Abrupt summer warming in the Alaska Range from melt layers in the Mount Hunter Ice Core. Northeast Geological Society of America Meeting; Bretton Woods, NH. March, 2015.

Campbell S, K Kreutz, S Arcone. Ground-penetrating radar vertical resolution, signal attenuation, and penetration in temperate and polar glaciers: case studies from North America and Antarctica. AGU Conference; San Francisco, CA. December, 2013.

*Wu N, **S Campbell**, T Douglas. Developing an Ice Volume Estimate of the Jarvis Glacier, Alaska, using Ground-Penetrating Radar and High Resolution Satellite Imagery. AGU Conference; San Francisco, CA. December, 2013.

Douglas T, K Bjella, **S Campbell**. What's down below? Current and potential future applications of geophysical techniques to identify subsurface permafrost conditions. AGU Conference; San Francisco, CA. December, 2013.

*Burzynski A, E Osterberg, K Kreutz, C Wake, **S Campbell**, K Volkening, D Winski. Relationships between atmospheric aerosols and snow chemistry at Denali, Alaska. AGU Conference; San Francisco, CA. December, 2013.

*Horing J, **S Campbell**, T Douglas, S Saari. Thickness and Extent of Permafrost Determined by Resistivity Profiles Compared to Vegetation Type in Tanana Flats, Alaska. Geological Society of America Conference; Denver, CO. October, 2013.

*Braddock S, H Sandler, A Boucher, C McNeil, **S Campbell**, K Kreutz. Accumulation Rate Variability and Winter Mass Balance Estimates using High Frequency Ground-Penetrating Radar and Snow Pit Stratigraphy on the Juneau Icefield, Alaska. AGU Conference; San Francisco, CA. December, 2012.

*H Shapiro, E Osterberg, K Kreutz, C Wake, **S Campbell**. Using temperature and precipitation at an alpine weather station (Denali, AK) to represent regional climate patterns. AGU Conference; San Francisco, CA. December, 2012.

Kreutz N, J Plourde, **S Campbell**, K Kreutz, A Wanamaker. Developing K-5 and public outreach products for Alaskan glaciology and sea level using the iPad App platform. Arctic Workshop; Winter Park, CO. March, 2012.

Astley B, T Douglas, **S Campbell**, C Snyder, E Goggin, S Saari. Response of permafrost to anthropogenic land surface disturbance near Fairbanks, Alaska. AGU Conference; San Francisco, CA. December, 2011.

Osterberg E, J Thompson, J Landis, M Albert, **S Campbell**, R Hawley, R Virginia. Tracking radioactive fallout from the Fukushima Dai-ichi Accident in Arctic Snow. AGU Conference; San Francisco, CA. December, 2011.

Astley B, C Snyder, **S Campbell**, S Arcone, B Smith. An integrated geophysical program to map permafrost extent, Fort Wainwright, Alaska. Symposium on the Application of Geophysics to Engineering and Environmental Problems; Charleston, SC. April, 2011.

Campbell S, K Kreutz, C Wake, E Osterberg, S Arcone, D Winski, K Volkening. Application of Ground Penetrating Radar to the selection of an ice core drill site on the Kahiltna Glacier of Mount McKinley, Alaska. Symposium on the Application of Geophysics to Engineering and Environmental Problems; Charleston, SC. April, 2011.

Community Outreach Presentations (Past 48 months)

Campbell S. Using geophysics to study global climate change: case studies in Antarctica and Alaska. Invited speaker, Middlebury College, Middlebury VT, Oct, 2015.

Campbell S and K Williams. Linking Maine to Alaska: K-12 education outreach about climate change research on the highest point in North America. Invited Speaker, Maine Rotary Club. Damariscotta, Maine, July, 2014.

Campbell S and K Williams. Linking Maine to Alaska: K-12 education outreach about climate change research on the highest point in North America. Invited Speaker at Skidompha Library “Chats with Champions” Speaker Series. Damariscotta, Maine. January, 2014.
<https://www.youtube.com/watch?v=Owc5sxy1tDs>

Campbell S and K Williams. Climate Change Research in Denali National Park, Alaska. Invited speaker, University of New Hampshire Sustainability Program; Durham, NH. September, 2013.

Campbell S. Climate Change and the Cryosphere: Case studies from Antarctica and Alaska. Invited speaker, Colby Sawyer College; New London, NH September, 2013.

Campbell S. Operating safe and successful field research campaigns in Polar Regions. Invited speaker, webinar series, Association of early career polar scientists. November, 2012. <http://vimeo.com/53487539>

Campbell S. Radio Waves Over Rough Terrain: "Can You Hear Me Now?" Invited speaker, Mount Washington Observatory, Science in the Mountains Series; North Conway, NH. August, 2012.

Campbell S, K Kreutz, E Osterberg, C Wake. Glacier Ice Volume and Ice Core Research in Denali National Park and Preserve. Invited speaker, Denali National Park and Preserve Park Headquarters; Alaska. May, 2012.

Campbell S. Changing Climate and Changing Mountains. Invited speaker, American Alpine Club and Mount Washington Observatory; North Conway, NH. March, 2012.

Campbell S. GPR and GPS applications to modeling flow dynamics of the Kahiltna Glacier, Mount

McKinley, Alaska; Invited speaker, University of Maine at Farmington; Farmington, ME. April, 2010.

K-12 Outreach Visits (Past 48 months)

2015: Great Salt Bay Middle School; Damariscotta, ME
2014: Hanover Middle School; Hanover, NH
2009-2014: Nobleboro Central School; Nobleboro, ME (6 visits)
2013: Bristol Consolidated School and South Bristol School; Bristol, ME
2013: Mount View High School; Thorndike, ME
2013: Mount View Middle School; Thorndike, ME
2013: Mount View Grade School; Thorndike, ME
2012: Greely High School; ME
2011: Asa Adams Middle School; Orono, ME

Community Involvement

2015: PolarTREC Application Selection Committee (Invited)
2015: “School of Ice” IDPO/NICL/INSTAAR Sponsored Workshop Presentation (Invited)
2015: AGU Sponsored Congressional Science-Policy Washington D.C. Visit (Invited)
2014-Present: Academic Council Member, Juneau Icefield Research Program (Invited)
2015-Present: Review Editor, *Cryospheric Sciences* (Invited)
2014-Present: CRREL HAZMAT and Ammonia Response Team
2010-Present: AGU Near-surface Geophysics Group Executive Committee Representative
2010-Present: Peer Journal Reviewer: *J. Glaciology*; *A. Glaciology*; *Arctic, Antarctic, and Alpine Res.*; *Hydro. Processes*; *Remote Sensing*; *Geografiska Annaler: Series A, Physical Geography*; *Sensors*; *Geophysics*; *Journal of Geophysical Research*
2012-2014: PolarTREC Teacher-Research Outreach program
2012-2013: Chair, Research Advisory Committee, Juneau Icefield Research Program (Invited)
2002-2010: University Volunteer Ambulance Corps (UVAC); University of Maine
2006-2010: EMS Instructor, Maine Emergency Medical Services and UVAC
2007-2008: University of Maine Geological Society, President
2007-2008: University of Maine Student Advisory Committee

Special Trainings and Certifications

2011-2015: Approved Field Mountaineer, US Antarctic Program
2014: 40 Hour HAZWOPER Certification, U.S. Occupational Safety and Health Administration
2014: Contracting Officer Representative Course, U.S. Dept. of Defense
2014: Hazardous Waste Coordinator Course, New Hampshire Dept. of Environmental Services
2014: AMGA Ice Instructor Course, New Hampshire
2011: Secret Security Clearance. U.S. Dept. of Defense (valid through 2020)
2007: Juneau Ice Field Research Program, Alaska
2005: EMT-Intermediate Course, Maine
2004: NOLS Mountain Instructor Course, Wyoming
2003: Alpine Guide Course, Colorado
2003: AMGA Rock Instructor Course, Colorado

2003: NREMT (#E3065310) and Wilderness EMT-Basic, New Hampshire
2002: SOLO Wilderness First Responder, New Hampshire
2002: AAIRE Avalanche Level I and II Certification, New Hampshire

Memberships

American Geophysical Union (Near Surface Focus Group and Cryosphere Affiliations)
Geological Society of America
Society of Exploration Geophysicists (Near Surface Geophysics Section Affiliation)
International Glaciological Society
Association of Polar Early Career Scientists (APECS)
American Mountain Guides Association
National Registry of EMT's

Prior Academic Awards (Total: \$30,693)

2014: University of Maine Climate Change Institute Service Award
2012: Explorers Club Research Grant: **S Campbell** (PI) (\$2,500)
2008 – 2012: Churchill Research Grant: **S Campbell** (PI and co-PI, Multiple proposals) (\$14,433)
2011: Denali National Park Science & Learning Center Research Fellowship: **S Campbell** (PI) (\$4,500)
2011: American Alpine Club Nikwax Alpine Bellwether Research Grant: **S Campbell** (PI) (\$1,500)
2011 – 2012: American Alpine Club Research Grant: **S Campbell** (PI) (\$2,000)
2011: Geometrics Geophysics Scholarship (\$1,000)
2010-2011: University of Maine GSG Grant: **S Campbell** (PI) (\$1,500)
2008: Trefethen Field Research Scholarship (\$1,000)
2008: Nancy Morse Dysart Travel Scholarship (\$250)
2008: Presidential Achievement Award and Deans List
2007: NASA Space Grant Scholarship (\$2,000)

Recent Publicity

R Jacobson. 2014. Just how much ice is left underneath Alaska's glaciers? Scientists dig to find out. 2014.
<http://www.pbs.org/newshour/updates/scientists-drilling-cold-hard-truth-alaskas-glaciers/>

M. O'Brien, K Tobin. 2014. Alaska mountain glaciers retreating due to climate change
http://www.nsf.gov/news/special_reports/science_nation/denaliglaciers.jsp

PolarTREC. 2013. Reconstructing the past climate of Central Alaska.
<http://www.polartrec.com/expeditions/reconstructing-the-past-climate-of-central-alaska>

APECS. 2013. Operating Safe and Successful Field Research Campaigns in the Polar Regions. Invited Webinar. <https://vimeo.com/53487539>

APECS. 2015. Basics of Field Safety. Invited Webinar. <http://www.apecs.is/research/member-research-areas/member-research-areas/field-safety/1095-basics-of-field-safety-webinar.html?highlight=WyJzZXRoIiwY2FtcGJlbGwiLCJjYW1wYmVsbCdzIiwic2V0aCBjYW1wYmVsbCJd>