Chad A. Greene

CONTACT INFORMATION

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RESEARCH

I use airborne and satellite data to understand how Antarctic ice shelves respond to climate change.

EDUCATION

Ph.D. Geological Sciences, The University of Texas at Austin, expected 2017
Thesis: Ice/ocean interactions and surface elevation changes of Antarctic ice shelves.

M.S. Mechanical Engineering, The University of Texas at Austin, 2010
Thesis: Low frequency acoustic classification of methane hydrates.

B.S. Mechanical Engineering, Virginia Commonwealth University, with honors, 2007
Minor: Mathematics

PEER-REVIEWED PUBLICATIONS

C.F. Dow, W.S. Lee, J.S. Greenbaum, D.D. Blankenship, **C.A. Greene**, K. Poinar, A.L. Forrest, D.A. Young, and C.J. Zappa. Basal channels drive active ice-shelf hydrology and fracture. In prep. for *Nature*.

C.A. Greene and D.D. Blankenship. Detecting small-scale ice sheet surface evolution by repeat photoclinometry. Submitted to *Remote Sensing of Environment*.

C.A. Greene, D.E. Gwyther, and D.D. Blankenship. Antarctic Mapping Tools for MATLAB, 2016. *Computers and Geosciences*.

K.M. Thyng, **C.A. Greene**, R.D. Hetland, H.M. Zimmerle, and S.F. DiMarco, 2016. True colors of oceanography: Guidelines for effective and accurate colormap selection. *Oceanography*, 29(3) 9–13.

C.J. Wilson, P.S. Wilson, **C.A. Greene**, K.H. Dunton, 2013. Seagrass meadows provide an acoustic refuge for estuarine fish. *Marine Ecology Progress Series* 472 117–127.

C.A. Greene and P.S. Wilson. Laboratory investigation of a passive acoustic method for measurement of underwater gas seep ebullition, 2011. *Journal of the Acoustical Society of America* 131(1) EL61–EL66.

C.J. Wilson, P.S. Wilson, **C.A. Greene**, and K.H. Dunton. Seagrass leaves in 3-D: Using computed tomography and low-frequency acoustics to investigate the material properties of seagrass tissue, 2010. *Journal of Experimental Marine Biology and Ecology* 395(1) 128–134.

WORK EXPERIENCE

Research Engineering/Scientist Associate III: University of Texas Institute for Geophysics
September 2015–present
I analyze airborne and satellite remote sensing data, write flight planning software, and serve as a MATLAB programming consultant for UTIG staff and students.

Teaching Assistant: Jackson School of Geosciences
August 2013–May 2014
Lead lectures and laboratory exercises, composed and graded assignments, held office hours.

Graduate Research Assistant: Jackson School of Geosciences
August 2011–August 2015
Obtained gravity measurements over Edwards Aquifer (Central Texas) for water level monitoring. Conducted field work in Marie Byrd Land, Antarctica. Developed MATLAB software for remote sensing data processing and Antarctic geospatial data analysis.

Graduate Research Assistant: Applied Research Laboratories
June 2007–August 2011
Performed laboratory measurements on bubbly liquids, sediments, and methane hydrates. Designed and built acoustic resonators and impedance tubes for use in a pressure vessel. Conducted field tests (see below). Developed finite-element simulations of acoustical scattering in rough-surfaced waveguides. Derived new mathematical models to describe acoustic behavior of bubbly liquids containing non-ideal gases.

Teaching Assistant: Virginia Commonwealth University
January 2007–March 2007
Taught students mechanics of deformable materials, graded homework and exams, and held office hours.

Currency Systems Engineer Intern: Federal Reserve Bank of Richmond
May 2006–August 2006
Optimized project procedures, worked as an engineer on currency processing machines; researched banknote analysis instrumentation; programmed graphical user interfaces to assist in cost-benefit analysis; investigated vendor contract violations; wrote reports and presented at the Federal Reserve Bank Currency Technology Office.

Presentations & Posters

D.A. Young, J.L. Roberts, C. Ritz, M. Frezzoti, E. Quartini, B.T. Gooch, **C.A. Greene**, T. van Ommen, and D.D. Blankenship. High-resolution subglacial hydrology of a potential old ice target near Dome C, Antarctica. XXXIV SCAR Meetings and Open Science Conference. (Aug. 2016)

C.A. Greene, D.A. Young, and D.D. Blankenship. Totten Glacier surface elevation from laser altimetry. *International Symposium on Interactions of Ice Sheets and Glaciers with the Ocean* 74A2049 (Jul. 2016).

G.R. Muldoon, **C.A. Greene**, and K. Thirumalai. Data visualization tips and tricks. *University of Texas Institute for Geophysics Seminar Series* (Feb. 2016).

C.A. Greene. Antarctic Mapping tools for MATLAB. *University of Texas Institute for Geophysics Seminar Series* (Sept. 2014).

C.A. Greene, A.K. Bliss, and D.D. Blankenship. A Bedmap2 Toolbox for MATLAB. *Fall Meeting of the American Geophysical Union* C51A-0517 (Dec. 2013).

C.S. Jackson, J.A. Goff, S. Waibel, **C.A. Greene**, J.J. Johnson, D.A. Young, and D.D. Blankenship. Representation of Thwaites Glacier Bed Uncertainty for Modeling Experiments. *Fall Meeting of the American Geophysical Union* C51A-0516 (Dec. 2013).

D.A. Young, D.D. Blankenship, S.D. Kempf, **C.A. Greene**. How well can we determine ice thickness? Examples from Thwaites Glacier. *International Symposium on Radioglaciology: A Meeting of the International Glaciological Society* 67A074 (Sept. 2013).

C.A. Greene. Bubbles and acoustics: An introduction to physical concepts in underwater sound. *University of Texas Institute for Geophysics Seminar Series* (Mar. 2013).

C.S. Jackson, **C.A. Greene**, J.A. Goff, S.D. Kempf, D.A. Young, E. Powell, and D.D. Blankenship. Ice bed geometry: Estimates of known unknowns. *Proceedings of the Society for Industrial and Applied Mathematics Conference on Uncertainty Quantification* 120 (2012).

C.A. Greene, P.S. Wilson, and R.B. Coffin. Acoustic determination of methane hydrate dissociation pressures. *Proceedings of the 7^{th} International Conference on Gas Hydrates* (2011).

C.A. Greene, P.S. Wilson, and R.B. Coffin. Laboratory measurements on gas hydrates and bubbly liquids using active and passive low-frequency acoustic techniques. *Proceedings on Meetings of*

Acoustics 129 (2011). [invited]

C.A. Greene. Low-frequency acoustic techniques for detection of gas hydrates, gassy sediments, and methane seeps. Leibniz Institute of Marine Sciences at the University of Kiel (IFM-GEOMAR), Kiel, Germany, June 2010. [invited]

C.A. Greene. The didgeridoo—an ancient acoustic resonator. *Journal of the Acoustical Society of America* 127 1763(A) (2010). [invited]

C.A. Greene and P.S. Wilson. Toward passive acoustic remote sensing of ocean-bottom gas seeps. *Journal of the Acoustical Society of America* 127 1938(A) (2010).

C.A. Greene. Low-Frequency Acoustics of Methane Hydrates. The University of Texas at Austin, Department of Mechanical Engineering. Seminars in Acoustics, Austin, TX, Apr. 2010. [invited]

C.A. Greene, P.S. Wilson, and R.B. Coffin. Measurements of the Acoustic Properties of Methane Hydrates. Methane in the Arctic Shelf: American Geophysical Union Post-Cruise Workshop, San Francisco, CA, Dec. 2009. [invited]

P.S. Wilson, T.F. Argo IV, and **C.A. Greene**. A demonstration of acoustic damping using bubbly liquid for Project Listen Up. *Journal of the Acoustical Society of America* 126 2177(A) (2009). [invited]

P.S. Wilson and **C.A. Greene**. MITAS 2009: A climate change and energy research expedition to the Beaufort Sea. *Waveguide*, fall 2009, Applied Research Laboratories internal publication.

C.A. Greene and P.S. Wilson. Measurements of sound speed in bubbly liquids under high-pressure conditions. *Journal of the Acoustical Society of America* 126 2194(A) (2009).

C.A. Greene. An Introduction to Sediment Acoustics. Methane in the Arctic Shelf Expedition Scientists' Meeting, USCG Polar Sea, Beaufort Sea, Sept. 2009. [invited]

T.F. Argo IV, **C.A. Greene**, and P.S. Wilson. A simple experiment for understanding resonant air columns. *Journal of the Acoustical Society of America* 125 2625(A) (2009). [invited]

C.A. Greene, T.F. Argo IV, and P.S. Wilson. A Helmholtz resonator experiment for the Listen Up project. *Journal of the Acoustical Society of America* 124 2568(A) (2008). Updated for *Proceedings on Meetings of Acoustics* 5 025001 (2009). [invited]

M.J. Isakson, **C.A. Greene**, R.A. Yarbrough, and P.S. Wilson. Finite element modeling of range-dependent acoustic propagation in shallow water. Office of Naval Research Reverberation Modeling Workshop II, Austin, TX, May 2008.

Field Work & Remote Lab Work

Byrd Field Camp Marie Byrd Land, Antarctica
December 2012–February 2013
Collected aerogeophysical data with the Geophysical Investigations of Marie Byrd Land Evolution (GIMBLE) Project. Served on the Experiment Design & Science group, Base Operations group, and Logistics & Information Management group.

Edwards Aquifer Recharge Zone Austin, Texas
May 2011–May 2012
Conducted a series of gravity measurements using a portable gravimeter throughout the aquifer recharge zone.

Hi-Test Laboratories Arvonia, Virginia
May 2011
Developed and tested a combustive sound source in an explosives testing facility.

University of Texas Marine Science Institute Port Aransas, Texas
June 2009, April 2010, October 2010, February 2011
Collected samples in the Gulf of Mexico, conducted experiments on acoustic environments of dolphin habitats.

Lake Travis Testing Station Travis, Texas
August 2009, August 2010
Analyzed acoustic attenuation provided by curtains of tethered and freely-rising bubbles.

IFM-GEOMAR: RC Littorina and RB Polarfuchs Eckernförde Bay & Kiel, Germany
June–July 2010
Measured sound speed and gas volume fractions of sediment samples. Collected sediment samples from multi-cores and piston cores, passively recorded acoustic radiation from gas seeps in the seafloor.

Stennis Space Center Hancock, Mississippi
June 2008, May 2010
Investigated acoustic properties of natural and man-made gas-bearing sediments and sands.

USCG Polar Sea Beaufort Sea, Arctic Ocean
September–October 2009
Collected and analyzed samples of methane- and gas-hydrate-laden sediments.

Computing Proficiency

MATLAB, LabVIEW, LaTeX, Linux/UNIX, Microsoft Office Suite, Visual Basic for Applications (VBA), SolidWorks, COSMOSWorks, COMSOL GUI, COMSOL Script, PSpice, ANSYS, Illustrator, Inkscape, Photoshop, GIMP, HTML, CSS, AutoCAD, ArcGIS.

Awards & Accreditations

- NASA Young Investigator Travel Award ($1000), July 2016
- UTIG Outstanding Graduate Student Award ($700), May 2016
- Mathworks (MATLAB) Award for Outstanding Contributions, 2015
- Mathworks File Exchange *Pick-of-the-Week*, July 2012, July 2013, & July 2014
- United States Congressional Antarctica Service Medal, 2013
- University of Texas College of Engineering Fellowship: 2007, 2008
- NCEES Fundamentals of Engineering Exam, passed 2007
- Wright Merit Scholarship, 2002–2007
- Golden Key International Honor Society, inducted 2007
- Virginia Commonwealth University Dean's List, 2003–2005
- Virginia Commonwealth University Honors Program, 2002–2005
- Bicycled self-supported over 4200 miles from Oregon to North Carolina, 2005
- Phi Eta Sigma Honors Society, inducted 2004
- Eagle Scout, 2002
- Emergency Medical Technician, certified 2002
- Mensa, inducted 2001

Professional Memberships

- Mathworks Community Advisory Board Member, 2016–present
- International Glaciological Society, Student Member, 2016–present
- American Geophysical Union, Student Member, 2011–2014
- Acoustical Society of America, Student Member, 2007–2011