

Chad A. Greene

- CONTACT chad@chadagreene.com
- RESEARCH Assessing the sensitivity of the Antarctic ice sheet, using satellite, airborne, and *in-situ* data.
- EDUCATION **Ph.D.** Geological Sciences, The University of Texas at Austin, 2017
Dissertation: Drivers of change in East 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 **C.A. Greene**, A.S. Gardner, and L.C. Andrews, 2020. Detecting seasonal ice dynamics in satellite
PUBLICATIONS images. *The Cryosphere*, in review.
- W. Wei, D.D. Blankenship, J.S. Greenbaum, N. Gourmelen, C.F. Dow, T.G. Richter, **C.A. Greene**,
D.A. Young, S.-H. Lee, T.-W. Kim, W.S. Lee, K.M. Assmann, 2020. Getz Ice Shelf melt enhanced
by freshwater discharge from beneath the West Antarctic Ice Sheet. *The Cryosphere*, 14, 1399–1408.
- C.A. Greene**, K. Thirumalai, K.A. Kearney, J.M. Delgado, W. Schwanghart, N.S. Wolfenbarger,
K.M. Thyng, D.E. Gwyther, A.S. Gardner, and D.D. Blankenship, 2019. The Climate Data Toolbox
for MATLAB. *Geochemistry, Geophysics, Geosystems*, 20.
- C.A. Greene** and K. Thirumalai, 2019. It's time to shift emphasis away from code sharing. *Eos*
100(5) 16–17.
- C.A. Greene**, D.A. Young, D.E. Gwyther, B.K. Galton-Fenzi, and D.D. Blankenship, 2018. Sea-
sonal dynamics of Totten Ice Shelf controlled by sea ice buttressing. *The Cryosphere*, 12, 2869–2882.
- C.F. Dow, W.S. Lee, J.S. Greenbaum, **C.A. Greene**, D.D. Blankenship, K. Poinar, A.L. Forrest,
D.A. Young, and C.J. Zappa, 2018. Basal channels drive active surface hydrology and transverse
ice-shelf fracture. *Science Advances*, 4(6) eaao7212.
- C.A. Greene** and D.D. Blankenship. A Method of Repeat Photoclinometry for Detecting Kilometer-
Scale Ice Sheet Surface Evolution, 2018. *IEEE Transactions on Geoscience and Remote Sensing*,
56(4), 2074–2082.
- C.A. Greene**, D.D. Blankenship, D.E. Gwyther, A. Silvano, and E. van Wijk, 2017. Wind causes
Totten Ice Shelf melt and acceleration. *Science Advances*, 3(11) e1701681.
- C.A. Greene**, D.E. Gwyther, and D.D. Blankenship. Antarctic Mapping Tools for MATLAB, 2017.
Computers and Geosciences 104 151–157.
- 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 measure-
ment 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.

NON-REFEREED
PUBLICATIONS

C.A. Greene. ICECAP airborne campaign Antarctic field season report. *Icy News*. Australian Antarctic Division, Feb. 2018. <https://bit.ly/2JCBhxm>

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. *Proc. Mtgs. Acoust.* 12, 045001 (2011); doi:10.1121/1.3609831

C.A. Greene and P.S. Wilson. Acoustic determination of methane hydrate dissociation pressures. *Proceedings of the 7th International Conference on Gas Hydrates*.

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, T.F. Argo, and P.S. Wilson. A Helmholtz resonator experiment for the Listen Up project. *Proc. Mtgs. Acoust.* 5, 025001 (2008); doi:10.1121/1.3112687

WORK
EXPERIENCE

Postdoctoral Research Fellow: NASA: Jet Propulsion Laboratory
February 2019–present

Scouring the satellite record for signs of ice sheet variability on subannual timescales.

Research Engineering/Scientist Associate III: University of Texas Institute for Geophysics
September 2015–February 2019

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 the 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

Worked as an engineer on currency processing machines; researched banknote analysis instrumentation; programmed graphical user interfaces for cost analysis; investigated vendor contract violations; wrote reports and presented at the Federal Reserve Bank Currency Technology Office.

- C.A. Greene.** Insights from satellite velocity maps. *Oates Land Workshop.* (Hobart, AUS, Jan 2020).
- C.A. Greene** and A.S. Gardner. Satellite observations of Antarctic ice velocity variability. *Fall Meeting of the American Geophysical Union* (San Francisco, USA, Dec 2019).
- C.A. Greene,** A.S. Gardner, F.S. Paolo, and M.P. Schodlok. Satellite observations of Antarctic ice velocity variability. *Forum for Research into Ice Shelf Processes* (Oxford, UK, Sep. 2019).
- C.A. Greene** and D.D. Blankenship. Surface features of Totten Ice Shelf from satellite images and laser altimetry. *Forum for Research into Ice Shelf Processes* (Aussois, France, Sep. 2018).
- C.A. Greene,** D.A. Young, D.E. Gwyther, B.K. Galton-Fenzi, J.S. Greenbaum, and D.D. Blankenship. Seasonal Control on Totten Ice Shelf Dynamics by Sea Ice Buttressing. *POLAR2018 SCAR Meetings and Open Science Conference* (Davos, Switzerland, Jun. 2018).
- C.A. Greene,** D.E. Gwyther, and D.D. Blankenship. Upwelling drives melt and acceleration of Totten Ice Shelf. *Forum for Research into Ice Shelf Processes* (Bergen, Norway, Jun. 2017).
- C.A. Greene** Low-Quality Satellite Images Reveal Dynamic Ice Shelf Processes. *University of Texas Institute for Geophysics Seminar Series* (Austin, TX, Mar. 2017).
- 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. Spatiotemporal patterns of surface elevation change for Totten Glacier ice shelf. *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* (Austin, TX, Feb. 2016).
- C.A. Greene.** Antarctic Mapping Tools for MATLAB. *University of Texas Institute for Geophysics Seminar Series* (Austin, TX, 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* (San Francisco, CA, 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* (San Francisco, TX, 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* (Austin, TX, 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. *7th International Conference on Gas Hydrates* (Edinburgh, Scotland, 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. *The Journal of the Acoustical Society of America* 129, 2653 (Seattle, WA, May 2011); doi:10.1121/1.3588853 [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. *The Journal of the Acoustical Society of America* 127, 1763 (Baltimore, MD, April 2010); doi:10.1121/1.3383754. [invited]

C.A. Greene and P.S. Wilson. Toward passive acoustic remote sensing of ocean-bottom gas seeps. *The Journal of the Acoustical Society of America* 127, 1938 (Baltimore, MD, April 2010); doi:10.1121/1.3384877

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. *The Journal of the Acoustical Society of America* 126, 2177 (San Antonio, fall 2009); doi:10.1121/1.3248508. [invited]

C.A. Greene and P.S. Wilson. Measurements of sound speed in bubbly liquids under high-pressure conditions. *The Journal of the Acoustical Society of America* 126, 2194 (San Antonio, fall 2009); doi:10.1121/1.3248579.

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. *The Journal of the Acoustical Society of America* 125, 2625 (Portland, OR, May 2009); doi:10.1121/1.4784007

C.A. Greene, T.F. Argo IV, and P.S. Wilson. A Helmholtz resonator experiment for the Listen Up project. *The Journal of the Acoustical Society of America* 124, 2568 (Miami, FL, Nov. 2008); doi:10.1121/1.4783101

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

Casey Station Wilkes Land, Antarctica
December 2017–February 2018

Planned aerogeophysical surveys and collected data with the Investigating the Cryospheric Evolution of the Central Antarctic Plate (ICECAP) project.

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

Worked in an explosives testing facility to characterize the acoustic spectrum of a new combusive sound source.

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.

AWARDS &
ACCREDITATIONS

- NASA Postdoctoral Program Fellowship, 2019–present
- NSF Early Career Scientist Travel Award (\$1800), June 2018
- 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

PROFESSIONAL
MEMBERSHIPS

- Mathworks Community Advisory Board, 2016–present
- International Glaciological Society, 2016–present
- Society for Industrial and Applied Mathematics 2013–present
- American Geophysical Union, 2011–2014
- Acoustical Society of America, 2007–2011