

Shannon Angelina Klotsko

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Education

- Ph.D. 2017 Earth Sciences, **Scripps Institution of Oceanography**, University of California, San Diego
Geophysical and geological studies of margin evolution: impacts of sea level fluctuations, tectonic deformation, and climate
Advisor: Neal W. Driscoll
- M.S. 2013 Earth Sciences, **Scripps Institution of Oceanography**, University of California, San Diego
- B.S. 2011 Marine Science, *magna cum laude*, **Coastal Carolina University**
Minors: Coastal Geology, Math

Awards and Fellowships

- 2018 Selected for the CCST California Science Translators Showcase
- 2017-pr. Delta Science Fellowship (Postdoctoral)
- 2013-2016 National Science Foundation Graduate Research Fellowship
- 2013 U.S. Coast Guard Arctic Service Medal
- 2009-2011 Environmental Protection Agency Undergraduate Research Fellowship
- 2007-2011 Coastal Carolina University Provost Scholarship
- 2008 Thanks USA Scholarship
- 2007 Quantico Officers Club Scholarship
- 2007 Greater Washington Area Army Officers' Wives Club

Scientific Interests

Continental margin processes, marine geomorphology, sediment geology, tectonic geomorphology, coastal/estuarine evolution, seismic reflection/geophysical imaging techniques, multibeam sonars and other high-resolution bathymetric data

Research Experience

Postdoctoral Researcher

San Diego State University
San Diego, CA

2017-Present
Advisor: Jillian Maloney

- Chief scientist for a cruise on the Sacramento-San Joaquin Delta to collect CHIRP and sidescan data

- Processed and interpreted these datasets to examine fault location, geometry, and recurrence intervals
- Collected CHIRP and sidescan data during two cruises on the Oregon shelf to study paleoenvironments and implications for archeological resources
 - Processed and interpreted these datasets for use in an offshore model

Graduate Student Researcher

*Scripps Institution of Oceanography
La Jolla, CA*

*2011-2017
Advisor: Neal Driscoll*

- Collected CHIRP, sidescan, multibeam, 3D P-cable, and sediment cores on multiple cruises
- Worked with LiDAR data from the California High-speed Rail project
San Onofre, CA:
- Processed and interpreted CHIRP data to examine the controls on transgressive deposits since the last glacial maximum and recency of faulting in the region
- Used Kingdom Suite to interpret CHIRP and multichannel seismic data
- Generated isopach maps using Generic Mapping Tools to look at layer thicknesses and distribution
Block Island Sound, RI:
- Processed CHIRP data using SIOSEIS and Seismic Unix to understand glacial lake drainage in the region and influences on seafloor morphology
- Converted paper 3.5 kHz seismic paper records to digital seg-y format for interpretation
- Used Fledermaus, ArcMap, and GMT to work with a multitude of multibeam and other bathymetry datasets
Beaufort Margin, Arctic Ocean
- Processed towed CHIRP and hull-mounted knudsen CHIRP data to examine differential deposition along the Beaufort margin slope
- Processed multibeam data with Qimera and Caris
- Analyzed jumbo piston cores for geology and stratigraphy
- Sub-sampled sediment cores and performed grain size analysis using a Laser Diffraction Particle Size Analyzer to look at glacial lake flood events and ice rafted debris events in the study region
 - Correlated these data with magnetic susceptibility, radiocarbon, oxygen isotopic data, and XRF data
- Utilized ArcGIS and Fledermaus to generate maps and 3D visualization representations of the data

Undergraduate Student Researcher

*Coastal Carolina University
Conway, SC*

*2009-2011
Advisor: Jenna Hill*

- Processed sidescan sonar data using xsonar from sediment borrow sites used for Myrtle Beach, SC's beach renourishment

- Processed sidescan sonar data from repeatedly mapped sites used in a physical oceanographic study looking at sediment migration
- Processed and interpreted sidescan sonar, and interpreted CHIRP data from Gray's Reef National Marine Sanctuary to understand sediment dynamics around the reef
- Helped develop a Holocene sea level curve for coastal South Carolina by deploying tide gauges and collecting vibracores from salt marshes
 - Analyzed core stratigraphy and sampled for organic material (roots, foraminifera) to be ¹⁴C-dated

Summer Intern

*Environmental Protection Agency: Gulf Ecology Division
Gulf Breeze, FL*

*Summer 2010
Advisor: Blake Schaeffer*

- Preparation, operation, and post-processing of Hyperspectral Surface Acquisition System, a Hyperspectral Profiler, an AC-s, a CTD, a YSI meter, and a Water Quality mooring used in multiple Florida bays to compare conventional water quality methods to satellite data
- Operated and managed a spectrofluorometer used on collected water samples

Oceanographic Research Cruises

- 10/2017 Pontoon Boat, Sacramento-San Joaquin Delta, CHIRP and sidescan survey, **Chief Scientist**
- 09/2017 R/V Pacific Storm, Oregon continental shelf, CHIRP and sidescan survey
- 05/2017 R/V Pacific Storm, Oregon continental shelf, CHIRP and sidescan survey
- 07/2016 R/V Point Loma, northern Channel Islands, CHIRP and multibeam survey
- 05/2016 R/V Shearwater, northern Channel Islands, CHIRP and sidescan survey
- 01/2016 R/V Thomas Thompson, Inner California Borderlands, coring cruise, **Co-Chief Scientist**
- 2013-14 R/V Point Loma, Point Loma, CA, multibeam surveys
- 09-10/13 R/V New Horizon, San Onofre, CA, 3D p-cable seismic reflection survey
- 08-09/13 USCGC Healy, Beaufort Sea and Amundsen Gulf, seismic reflection, multibeam survey, and coring
- 07/2013 R/V Point Loma, San Onofre, CA, CHIRP survey
- 02-07/13 R/V Point Loma, CHIRP surveys
- 10/2012 R/V Sproul, San Diego, CA, seismic instrument testing
- 08/2012 R/V Point Loma, Oceanside, CA, multibeam survey
- 11/2011 R/V Point Loma, multibeam survey
- 06/2011 R/V Privateer, CHIRP and multibeam survey
- 05-07/10 EPA Small Boat, water quality data collection in Pensacola Bay, Choctawhatchee Bay, St. Joe's Bay, and St. Andrew's Bay, Florida

Employment, Teaching, and Leadership Experience

2018	Instructor, GEOL 336 Sedimentology and Lithostratigraphy, SDSU
2018	Instructor, GEOL 305 Water and the Environment, SDSU
2017-Present	Postdoctoral Fellow, Geological Sciences Department, San Diego State University
2016	Guest Lecturer, Seismic Interpretation, San Diego State University
2016	Guest Lecturer, Sedimentary Stratigraphy, Scripps Institution of Oceanography
2016	Co-chief scientist for a two week coring cruise on the R/V Thomas Thompson
2015	Mentor for intern in the summer Scripps Undergraduate Research Fellowship (SURF) program
2014-2015	Mentor in the Scripps mentor program for incoming first year students
2014	Guest Lecturer, Sedimentary Stratigraphy, Scripps Institution of Oceanography
2013	Teaching Assistant, Sedimentary Stratigraphy, Scripps Institution of Oceanography
2012	Teaching Assistant, Water, Scripps Institution of Oceanography
2012-2017	Laboratory Safety Officer, Driscoll Lab, Scripps Institution of Oceanography
2011-2017	Graduate Student Researcher, Geosciences Research Division Scripps Institution of Oceanography, University of California, San Diego
2010	Intern at Environmental Protection Agency Gulf Ecology Division: Focus on ecology, optics, and satellite remote sensing
2009-2011	Student Researcher, Burroughs and Chapin Center for Marine and Wetland Studies, Coastal Carolina University
2008-2011	Grading Assistant, Department of Mathematics and Statistics, Coastal Carolina University
2009	Freshman Orientation Leader, Coastal Carolina University
2007-2010	Substitute Teacher at Graham Park Middle School and Potomac Senior High School,
2008	Dumfries, VA Interpreter / Camp Counselor, Leesylvania State Park, Woodbridge, VA

Publications

Klotsko, S., Driscoll, N., Kent, G. and Brothers, D., 2015. Continental shelf morphology and stratigraphy offshore San Onofre, California: The interplay between rates of eustatic change and sediment supply. *Marine Geology*, 369, pp.116-126.

C.A. McCoy, J.C. Hill, P.T. Gayes, J.A. Marshall, S. Okano, B.J. Johnson, M.T. Howe, and **S. Klotsko**. 2010. 2007-2010 Grand Strand Beach Nourishment Study Final Report. Submitted to: United States Army Corps of Engineers, Charleston, SC District. 309 pp.

Klotsko, Shannon, and Driscoll, Neal. Geomorphological and stratigraphic evidence for rapid glacial lake draining in Block Island Sound, RI. *Quaternary Research*, Provisionally accepted.

L.D. Keigwin, **S. Klotsko**, N. Zhao, B. Reily, L. Giosan, and N. W. Driscoll. Deglacial Floods in the Beaufort Sea. *Nature Geoscience*, In review.

Klotsko, S., Driscoll, N., and Keigwin, L. Geologic and geophysical constraints on deglacial sediment dispersal along the Beaufort Margin, Arctic Ocean. In prep.

Published Abstracts and Presentations

Shannon Klotsko, Jillian M. Maloney, Loren Davis, Alexander Nyers, Amy E. Gusick, Todd J. Braje, David Ball, 2017. Variation in paleodrainage during the Last Glacial Maximum on the Oregon continental shelf, *Eos Trans. AGU*, Fall Meet. Suppl., Abstract.

Jillian M. Maloney, **Shannon Klotsko**, Amy E. Gusick, Todd J. Braje, David Ball, Loren Davis, Alexander Nyers, 2017. Paleodrainage morphology during glacial-interglacial cycles in the northern Channel Islands, California, *Eos Trans. AGU*, Fall Meet. Suppl., Abstract.

Loren G. Davis, Alexander J. Nyers, Jillian M. Maloney, Neal W. Driscoll, and **Shannon Klotsko**, 2017. Searching Oregon's Outer Continental Shelf for Submerged First Americans Sites: Theory, Methods, and Recent Discoveries, SAA Abstract.

Shannon Klotsko, Neal Driscoll, Lloyd Keigwin, and Xiomara Rosenblatt, 2016. A Sedimentary and Stratigraphic Record of the Deglaciation of the Beaufort Margin, Arctic Ocean, *Eos Trans. AGU*, Fall Meet. Suppl., Abstract C53C-0744.

Brittany Stockmaster, Jenna Hill, **Shannon Klotsko**, Neal Driscoll, 2016. Paleodrainage insights into the fluvial and glacial history of the western Chukchi margin, Arctic Alaska, *Eos Trans. AGU*, Fall Meet. Suppl., Abstract C53C-0745.

Shannon Klotsko, Neal Driscoll, Lloyd Keigwin, and Brendon Mendenhall, 2015. New sedimentological evidence supporting a catastrophic meltwater discharge event along the Beaufort margin, Arctic Ocean, *Eos Trans. AGU*, Fall Meet. Suppl., Abstract PP43D-2309.

Jayne Bormann, Graham Kent, Neal Driscoll, Alistair Harding, Valerie Sahakian, James Holmes, **Shannon Klotsko**, Annie Kell, and Steven Wesnousky, 2015. Strike-slip faulting in the Inner California Borderlands, offshore Southern California, *Eos Trans. AGU*, Fall Meet. Suppl., Abstract T51H-06.

Klotsko, S., Driscoll, N., Kent, G. and Brothers, D., 2015. Continental shelf morphology and stratigraphy offshore San Onofre, California: The interplay between rates of eustatic change and sediment supply. *Southern California Earthquake Center*, Annual Meeting. Poster 99.

Shannon Klotsko, Neal Driscoll, and Lloyd Keigwin, 2015. Sedimentological and stratigraphic evidence for multiple floods along the Beaufort margin, Arctic Ocean. *7th International Conference on Arctic Margins*, talk.

V. Sahakian, J. Bormann, **S. Klotsko**, J. Holmes, N. Driscoll, A. Harding, G. Kent, S. Wesnousky, 2015. Imaging the Newport-Inglewood/Rose Canyon Fault Zone; Implications with Current Fault Models, *Seismological Society of America*, Annual Meeting, Abstract.

Jayne Bormann, Graham Kent, Neal Driscoll, Annie Kell, Valerie Sahakian, Alistair Harding, James Holmes, **Shannon Klotsko**, and Steve Wesnousky, 2015. New constraints on

active fault architecture in the Inner California Borderlands, offshore Southern California, *Seismological Society of America*, Annual Meeting, Abstract.

Shannon Klotsko, Neal Driscoll, and Lloyd Keigwin, 2014. Sedimentological and Stratigraphic Evidence for a Catastrophic Flood Along the Beaufort Margin, Arctic Ocean, *Eos Trans. AGU*, Fall Meet. Suppl., Abstract PP13B-1416.

Valerie Sahakian, Jayne Bormann, **Shannon Klotsko**, James Holmes, Neal Driscoll, Alistair Harding, Graham Kent, and Steven Wesnousky, 2014. Structure of the Newport-Inglewood/Rose Canyon and Palos Verdes Fault Zones and Implications for Current Fault Models, *Eos Trans. AGU*, Fall Meet. Suppl., Abstract OS33A-1036.

Jayne Bormann, Valerie Sahakian, James Holmes, **Shannon Klotsko**, Graham Kent, Neal Driscoll, Alistair Harding, and Steven Wesnousky, 2014. Active faulting in the Inner California Borderlands: new constraints from high-resolution multichannel seismic and multibeam bathymetric data, *Eos Trans. AGU*, Fall Meet. Suppl., Abstract OS33A-1034.

Shannon A. Klotsko, Neal W. Driscoll, Graham M. Kent, and Daniel S. Brothers, 2014. Continental shelf morphology and stratigraphy offshore San Onofre, CA: the interplay between eustasy and sediment supply, *Scripps Student Symposium*, Inaugural meeting, Poster 18.

Shannon A. Klotsko, Neal W. Driscoll, Graham M. Kent, and Daniel S. Brothers, 2014. Continental shelf morphology and stratigraphy offshore San Onofre, CA: the interplay between eustasy and sediment supply, *Southern California Earthquake Center*, Annual Meeting. Poster 204.

Neal Driscoll, Valerie Sahakian, Jayne Bormann, **Shannon Klotsko**, James Holmes, Alistair Harding, Graham Kent, and Steven Wesnousky, 2014. New Geophysical constraints on the Rose Canyon/Newport-Inglewood and Palos Verdes Fault Zones, *Southern California Earthquake Center*, Annual Meeting. Poster 249.

Klotsko, S.A. and Driscoll, N.W., 2013. Effects of catastrophic draining of Wisconsinian glacial lakes on the continental shelf; an example from Block Island Sound, RI, *Eos Trans. AGU*, Fall Meet. Suppl., Abstract OS11D-1675

Klotsko, S.A., Hill, J.C., Gayes, P.T., Viso, R.F., Alexander, C.R., McFall, G., 2010. The influence of geologic framework on habitat and sediment distribution in Gray's Reef National Marine Sanctuary, *Eos Trans. AGU*, 91 (26), Ocean Sci. Meet. Suppl. Abstract GO45A-05

Klotsko, S.A., 2010. Geologic Interpretation of Gray's Reef National Marine Sanctuary, *Celebration of Inquiry Undergraduate Research Competition*, Coastal Carolina University

Service and Outreach

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| 2017 | Presentations to Westview High School Marine Science Classes , spoke to classes about a marine science career, methods I use, and my Arctic research |
| 2016 | Summer science tours/demonstrations , various programs for teachers and high school students |
| 2014-2015 | SIO peer mentors program , mentor to a first year student in the geology curricular group at SIO |
| 2011-2016 | SCOPE (SIO service club) member , run information beach walks for visiting groups (ex. Local Girl Scout Troops) |

- 2012-2014 **SIO Prospective Student Open House - Geology Representative**, point person for visiting students, organize poster session, run beach tours
- Nov. 2012 **Presentation to Potomac Senior High School Oceanography Classes**, spoke to all class sections about an oceanography career track and research at my former high school (a minority dominated school)
- April 2011 **Presentation at a High School Career Day**, spoke about a career in marine science at an event run by historically black sororities and fraternities

Memberships in Professional Societies

American Geophysical Union
 Southern California Earthquake Consortium
 Association of Women Geoscientists

Workshops and Trainings

- Nov. 2017 **Military Ally Training**, San Diego State University, San Diego, CA
- Oct. 2017 **Teledyne Marine Technology Workshop**, Catamaran Resort, San Diego, CA
- April 2017 **Delta Science Fellowship: Early Career Leadership Workshop**, Sacramento, CA
- February 2015 **National Association of Geoscience Teachers Workshop**, Scripps Ins. Oceanography, La Jolla, CA
- August 2014 **LiDAR one week Short Course (Professor Michael Olsen)**, Oregon State University, Corvallis, OR
- May 2014 **CARIS HIPS and SIPS Training Workshop**, San Diego State University, San Diego, CA
- January 2014 **64th UNB-OMG/UNH-CCOM Multibeam Sonar Training Course**, Westin New Orleans Canal Place, New Orleans, LA