

KATHARINA BILLUPS

Curriculum Vitae

School of Marine Science and Policy
University of Delaware
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Lewes, DE 19958

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PROFESSIONAL PREPARATION

1998-2000	Postdoctoral Researcher, Harvard University
1998	Ph.D. Earth Sciences, University of California, Santa Cruz
1993	M. S. Geology, University of California, Davis
1991	B. S. Geology University of California, Davis

APPOINTMENTS

2021 - present	Deputy Dean, College of Earth, Ocean and Environment
2013 - present	Professor, University of Delaware
2009 - 2019	Associate Director of the Oceanography Program
2006 - 2013	Associate Professor, University of Delaware
2000 - 2006	Assistant Professor, University of Delaware

HONORS AND AWARDS

2006/07	JOI/USSAC Distinguished Lecturer
2004	AGU Editor's citation for excellence in refereeing
1998	NSF Earth Sciences postdoctoral research fellowship
1998	Dissertation Year Fellowship, Univ. of Calif. Santa Cruz
1996	JOI/USSAC Fellowship
1996	Elected to Sigma Xi
1991/1990	Edward Jackson Scholarship, Univ. of Calif., Davis

PROFESSIONAL MEMBERSHIPS

American Geophysical Union
Geological Society of America
Sigma Xi

INVITED EDITORIALS

Billups, K., Timing is everything during deglaciations, *Nature News and Views*, 522, 163-164, 2015.

Billups, K. Microfossils reveal the working of a water planet, *Geology*, 38, 863-864, 2010.
Billups, K., A Tale of Two Climates, *Nature Geosciences*, 1, 294-295, 2008.
Billups, K., A snow maker for the ice ages, *Nature News and Views*, 433, 809-810, 2005.
Billups, K., Low-down on a rhythmic high, *Nature*, 427, 686-687, 2004.

PUBLICATIONS

*denotes a graduate student in my group

** denotes an undergraduate student in my group

denotes high school student in my group

Manuscripts

2021

Billups, K., Patrícia Pinheiro Beck Eichler, André Rosch Rodrigues (2021). Investigating the Stable Isotopic Composition of *Globocassidulina bitor* as a potential tracer of (paleo)environmental conditions near the Antarctic Peninsula, *Marine Micropaleontology*, 106, doi.org/10.1016/j.marmicro.2021.102052

Kaiser, E. A*., Billups, K., & Bradtmiller, L. (2021). A 1 million year record of biogenic silica in the Indian Ocean sector of the Southern Ocean: Regional versus global forcing of primary productivity. *Paleoceanography and Paleoclimatology*, 36, e2020PA004033. <https://doi.org/10.1029/2020PA004033>.

2020

Billups, K., Vizcaíno, M.*, Chiarello, J.**, and Kaiser, E. A.*, Reconstructing western boundary current stability in the North Atlantic Ocean for the past 700 kyr from *Globorotalia truncatulinoides* coiling ratios. *Paleoceanography and Paleoclimatology*, 35, e2020PA003958, <https://doi.org/10.1029/2020PA003958>, 2020.

Billups, K., Eichler, P., and Vital, H. Sensitivity of benthic foraminifera in the western tropical Pacific Ocean to carbon flux and water mass, *Journal of Foraminiferal Research*, 50, 235–247, 2020.

2019

**Kaiser, E. *Caldwell A., and K. Billups, Subtropical gyre geometry during the mid-Pleistocene climate transition, *Paleoceanography and Paleoclimatology*, 34, <https://doi.org/10.1029/2018PA003502>.

2018

Diester-Haass, L., K. Billups, C. Lear, Investigating Productivity Changes across the mid Pleistocene climate transition, *Earth Science Reviews*, 179, 372-391, 2018.

Billups, K., K. York, L. Bradtmiller, Water column stratification during the mid-Pleistocene climate transition, *Paleoceanography and Paleoclimatology*, 33, <https://doi.org/10.1029/2018PA003327>.

2017

Venti, N*., K. Billups, and T. Herbert, Paleoproductivity in the North Pacific during the Pliocene-Pleistocene climate transition (3.0-1.8 Ma), *Paleoceanography*, 32, 92–103, doi:10.1002/2016PA002955, 2017.

2016

Lear, C. H., K. Billups, R. E.M. Rickaby, L. Diester-Haass, E. M. Mawbey, and S. M. Sosdian, Breathing more deeply: Deep ocean carbon storage during the mid-Pleistocene climate transition, *Geology*, doi:10.1130/G38636.1, 2016.

Billups, K., H. Kunz**, I. Rew**, and C. Hudson#, Exploring *Globorotalia truncatulinoides* coiling ratios as a proxy for subtropical gyre dynamics in the northwestern Atlantic Ocean during late Pleistocene Ice Ages, *Paleoceanography*, 31, doi:10.1002/2016PA002927.

2014

Poirier, R. K.*, and K. Billups, The intensification of northern component deepwater formation during the mid-Pleistocene climate transition, *Paleoceanography*, 10.1002/2014PA0026661.

Eichler, P., K. Billups, H. Vital, Tracing thermohaline properties and productivity of shelf water masses with the stable isotopic composition of benthic foraminifera, *Journal of Foraminiferal Research*, 44, 352-364, 2014.

Billups, K., A. Scheinwald*, Origin of millennial-scale climate signals in the subtropical North Atlantic, *Paleoceanography*, 29, 612-627, 2014.

2013

Venti, N*., K. Billups, and T. Herbert, Increased sensitivity of the Plio/Pleistocene northwest Pacific to obliquity forcing, *EPSL*, 384, 121-131, DOI: 10.1016/j.epsl.2013.10.007, 2013.

Diester-Haass, L., Billups, K., Jacquemin, I., Emeis, K. C., Lefebvre, V., and François, L., Paleoproductivity during the middle Miocene carbon isotope events: A data-model approach, *Paleoceanography*, 28, 334-346, 2013.

Venti N.* and K. Billups, Surface Water Hydrography of the Kuroshio Extension during the Plio/Pleistocene climate transition, *Marine Micropaleontology*, 101, 106-114. *Featured article in SedDB: <http://www.earthchem.org/seddb>*

Billups, K., Aufdenkampe, A., R. Hays, Late Miocene through early Pleistocene nutrient utilization and export production in the Antarctic Zone of the Southern Ocean, *Global and Planetary Change*, <http://dx.doi.org/10.1016/j.gloplacha.2012.11.014>.

Kaufman, D., K. Cooper, R. Behl, K. Billups, J. Bright, K. Gardner, P. Hearty, M. Jakobsson, I. Mendes, M. O'Leary, L. Polyak, T. Rasmussen, F. Rosa, M. Schmidt, Amino acid racemization in mono-specific foraminifera from Quaternary in 2 deep-sea sediments, *Quaternary Geochronology*, <http://dx.doi.org/10.1016/j.quageo.2012.07.006>.

2012

Venti, N.*, and Billups K. Stable-isotope stratigraphy of the Pliocene-Pleistocene climate transition in the northwestern subtropical Pacific, *Palaeoecology, Palaeogeography, Palaeoclimatology*, doi: 10.1016/j.palaeo.2012.02.001.

2011

Billups, K., N. Rabideaux**, and J. Stoffel**, Suborbital-Scale Surface and Deep Water Records in the Subtropical North Atlantic: Implications on Thermohaline Overturn, *Quaternary Science Reviews*, 30, 2976-2987, 2011.

Diester-Haass, L., K. Billups, and K. C. Emeis. Enhanced paleoproductivity across the Oligocene/Miocene boundary as evidenced by benthic foraminiferal accumulation rates, *Palaeoecology, Palaeogeography, Palaeoclimatology*, 302, 464-473, 2011.

2010

Voelker, A. H. L. , T. Rodrigues. R. Stein, J. Hefter, K. Billups, D. Oppo, J. McManus, and J. O. Grimalt. Variations in mid-latitude North Atlantic surface water properties during the mid-Brunhes (MIS 9–14) and their implications for the thermohaline circulation, *Climate of the Past*, 6, 531-552, 2010.

Eichler, P., K. Billups, and C. C. Velez Cardona, Investigating Faunal and geochemical methods for tracing salinity in an Atlantic coastal lagoon, Delaware, USA, *Journal of Foraminiferal Research*, 40, 14-33, 2010.

2009

Billups, K., and K. Scheiderich*, A synthesis of Late Oligocene through Miocene deep sea temperatures as inferred from foraminiferal Mg/Ca ratios, *Int. Assoc. Sedimentol Spec. Publ.* 42, 1-16, 2009.

Diester-Haass, L., K. Billups, D. R. Gröcke, L. François, V. Lefebvre, and K. C. Emeis (2009), Mid-Miocene paleoproductivity in the Atlantic Ocean and implications for the global carbon cycle, *Paleoceanography*, 24, PA1209, doi:10.1029/2008PA001605.

2008

Weirauch, D.*, Billups, K. and P. Martin, Evolution of Millennial-Scale Climate Variability During the Mid Pleistocene, *Paleoceanography*, 23, PA3216, doi:10.1029/2007PA001584.

Billups, K., Kelly, C., Pierce, E.**, The Late Miocene to Early Pliocene Climate Transition in the Southern Ocean, *Palaeoecology, Palaeogeography, Palaeoclimatology*, 267, 31-40, 2008.

Lazarus, D., Bitniok, B., Diester-Haass, L., Billups, K., Ogaway, Y., Takahashi, K., Meyers, P., Radiolarian and sedimentologic paleoproductivity proxies in late Pleistocene sediments of the Benguela Upwelling System, ODP Site 1084, *Marine Micropaleontology*, 68, 223-235, 2008.

Waite, A.*, L. Diester-Haass, S. Gibbs, R. Rickaby, and K. Billups, A Top-down and Bottom-up Comparison of paleoproductivity proxies: Calcareous Nannofossil Sr/Ca Ratios and Benthic Foraminiferal Accumulation Rates, *G-Cubed*, 9, doi: 10/1029/2007GC001812, 2008.

2007

Ravelo, A.C., K. Billups, PS. Dekens, T.D. Herbert, and K.T. Lawrence. Onto the Ice Ages: Proxy Evidence for the onset of Northern Hemisphere Glaciation, in *Deep-time perspectives on climate change: marrying the signal from computer models and biological proxies*, M. Williams, A. M. Haywood, J. Gregory and D. Schmidt (eds), The Geological Society of London & The Micropalaeontological Society, (2007).

2006

Diester-Haass, L., K. Billups, and K. C. Emeis, The late Miocene carbon isotope shift and marine biological productivity in the Indo-Pacific Ocean (ODP Sites 721, 1172, 1146, and 846): a (dusty) link? *Paleoceanography*, 21, doi.:10.1029/2006PA001267, 2006.

Billups, K., C. Lindley*, J. Fislér**, and P. Martin, Mid Pleistocene climate instability in the subtropical northwestern Atlantic, *Global Planetary Change*, 54, 251-262, 2006.

Lazarus, D., Bitniöck, B., Meyers, P., Diester-Haass, L., and K. Billups, Comparison of radiolarian and sedimentologic Paleoproductivity proxies in the latest Miocene-Recent Benguela Upwelling System, *Marine Micropaleontology*, 60, 269-294, 2006.

2005

Diester-Haass, L., K. Billups, and K. C. Emeis, In search of the late Miocene-early Pliocene „Biogenic Bloom“ in the Atlantic Ocean, (ODP Sites 982, 925, 1088) *Paleoceanography*, 20, 10.1029/2005PA001139.

Niemitz, M. D.**, and K. Billups, Millennial-scale variability in western tropical Atlantic surface ocean hydrography during the early Pliocene, *Marine Micropaleontol.*, 54, 155-166, 2005.

2004

Billups, K., R. Rickaby, and D. P. Schrag, Cenozoic pelagic Sr/Ca records: Exploring a link to paleoproductivity, *Paleoceanography*, 19, doi.:10.1029/2004PA001011, 2004.

Billups, K., W. Chaisson, M. Worsnopp**, and R. Thunell, Millennial-Scale Fluctuations in Subtropical Northwestern Atlantic Surface Ocean Thermal Stratification, *Paleoceanography*, 19, doi: 10.1029/2003PA000990, 2004.

Billups, K., H. Paelike, J. Channell, J. Zachos, N. Shackleton, Astronomic Calibration of the Late Oligocene Through Early Miocene Geomagnetic Polarity Time Scale, *EPSL*, 224, 33-44, 2004.

Rosenthal, Y., S. Perron-Cashman, C. H. Lear, E. Bard, S. Barker, K. Billups, M. Bryan, M. L. Delaney, P. B. deMenocal, G. S. Dwyer, H. Elderfield, C. R. German, M. Greaves, D. W. Lea, T. M. Machiotto, D. K. Pak, A. C. Ravelo, G. L. Paradis, A. D. Russell, R. R. Schneider, K. Scheiderich, L. Stott, K. Tachikawa, E. Tapa, R. Thunell, M. Wara, S. Weldeab, P. A. Wilson, Inter-laboratory comparison study of Mg/Ca and Sr/Ca, measurements in planktonic foraminifera for paleoceanographic research, *Geochemistry, Geophysics, Geosystems*, 5 (4), 10.1029/2003GC000650, 2004.

2003

Billups, K., and D. P. Schrag, Application of benthic foraminiferal Mg/Ca ratios to questions of early Cenozoic climate change, *Earth and Planetary Science Letters*, 209, 181-195, 2003.

Channell, J.E.T., S. Galeotti, E.E. Martin, K. Billups, H. Scher, and J.S. Stoner, Eocene to Miocene magnetic, bio- and chemostratigraphy at ODP Site 1090 (subantarctic South Atlantic), *Geological Society of America Bulletin*, 115, 607-623, 2003.

2002

Billups, K., Late Miocene through early Pliocene deep water circulation and climate change viewed from the subantarctic Southern Ocean, *Palaeoecology, Palaeogeography, Palaeoclimatology*, 185, 287-307, 2002.

Billups, K., J. Channell, and J. Zachos, Late Oligocene to Early Miocene Geochronology and Paleooceanography From the Subantarctic South Atlantic, *Paleoceanography*, 17 (1), 10.1029/2000PA000568, 2002.

Billups, K., and D. P. Schrag, Paleotemperatures and Ice-Volume of the Past 27 myr Revisited with Paired Mg/Ca and Stable Isotope Measurements on Benthic Foraminifera, *Paleoceanography*, 17 (1), 10.1029/2000PA000567, 2002.

2001

Zachos, J., M. Pagani, L. Sloan, E. Thomas, and K. Billups, Trends, rhythms, and aberrations in global climate 65 Ma to present, *Science*, 292, 686-693, 2001.

2000

Billups, K., and D. P. Schrag, 2000, Surface Ocean Density Gradients during the Last Glacial Maximum, *Paleoceanography*, 15, 110-123.

1999

Billups, K., A. C. Ravelo and J. C. Zachos, and D. Norris, 1999, Link between oceanic heat transport, thermohaline circulation and the Intertropical Convergence Zone in the early Pliocene Atlantic, *Geology*, 27, 319-322.

1998

Billups, K., A. C. Ravelo and J. C. Zachos, 1998b, Early Pliocene Climate: A Perspective From the Western Equatorial Atlantic Warm Pool, *Paleoceanography*, 13, 459-470.

Billups, K., A. C. Ravelo and J. C. Zachos, 1998a, Early Pliocene Deep Water Circulation in the Western Equatorial Atlantic: Implications for High Latitude Climate Change, *Paleoceanography*, 13, 84-95.

1997

Billups, K., A. C. Ravelo and J. C. Zachos, 1997, Early Pliocene Deep-Water Circulation: Stable Isotope Evidence for Enhanced Northern Component Deep-Water Formation. *Proc. ODP, Sci. Results*, 154, 319-330.

1996

Billups, K. and H. J. Spero, 1996, Reconstructing the Stable Isotope Geochemistry and Paleotemperatures of the Equatorial Atlantic During the Last 150,000 years: Results from Individual Foraminifera. *Paleoceanography*, 11, 217-238.

1995

Billups K. and H. J. Spero, 1995, Relationship Between Shell Size, Thickness and Stable Isotopes in Individual Planktonic Foraminifera from Two Equatorial Atlantic Cores. *Journal of Foraminiferal Research*, 25 (1): 24-37.

1991

Hofmeister, A. M. and K. Billups, 1991, Comparison of Infrared Reflectance Spectra of KXF₃ Perovskites. *Spectrochimica Acta* 47a, 1607-1617.

Invited Presentations at Conferences and Workshops

2018

K. Billups, E. A. Kaiser, and A. Caldwell, (2018). North Atlantic upper ocean hydrography during the mid-Pleistocene Transition Katharina Billups, PP23F-1552, Washington, DC 9-14 Dec. (INVITED)

2016

K. Billups, C. H. Lear, R. E.M. Rickaby, L. Diester-Haass, E. M. Mawbey, and S. M. Sosdian, Evidence for increased deep ocean carbon storage during the mid-Pleistocene climate transition, Fall AGU 2016. (INVITED)

2009

Billups, K., and Venti, N. L., (2009). Cenozoic climate change: geochemical proxy records from deep sea sediments, EGU general Assembly, Vienna, EGU2009-5134 (INVITED).

2008

Billups, K. (2008), A Synthesis of Late Miocene Through Pliocene Evolution of Glaciation as Inferred From Deep Sea Geochemical Records, *Eos Trans. AGU*, 89(53), Fall Meet. Suppl., Abstract C34B-01 (INVITED).

2005

Billups, K., and K. Scheiderich (2005), Paired Mg/Ca and $\delta^{18}\text{O}$ records reveal mid Miocene paleoceanography, Goldschmidt Conference, *Geochimica et Cosmochimica Acta*, 69 (INVITED).

Billups, K., (2005), Late Oligocene through Miocene paleotemperatures, Miocene workshop, Potsdam, Germany (INVITED).

2003

Billups, K., and K. Scheiderich (2003), Cenozoic Ice Volume History Revisited With Paired Mg/Ca And Oxygen Isotope Measurements, *Geophys. Res. Abstracts*, 5, 04425 (INVITED).

2002

Billups, K. and D. P. Schrag (2002), Evaluating the utility of benthic foraminiferal Mg/Ca ratios to questions of early Cenozoic climate change, *Eos Trans. AGU*, 83(47), Spring Meet. Suppl., Abstract GS31A-06 (INVITED).

2001

Billups K. (2001), Glacial Evolution of Antarctica: Evidence from the deep sea record, *Quaderni di geofisica*, 16, 21 (INVITED).

Droxler, A. W., A. V. Belopolsky, K. Billups, E. Vincent (2001), Miocene Carbonate Sequence Stratigraphy Pattern in the Maldives Reconciled with Foraminiferal Oxygen Isotope Records Used as Proxies for Ice Volume Variations, *AAPG Meeting*, Houston, TX, INVITED.

2000

Billups, K., J. Channell, J. Zachos, J. Stoner (2000). Late Oligocene to early Miocene Paleooceanography from the subantarctic Southern Ocean (ODP Leg 177 Site 1090), *EOS*, 81, 743 (INVITED).

Contributed Presentations at Conferences and Workshops (past 5 years)

2021

Kaiser, E. A., Billups, K., Bradtmiller L. I. (2021), Regional Versus Global Forcing on Paleoproductivity in the Indian Sector of the Southern Ocean over the Past 1 Million Years, G1 presented at the 2021 US Antarctic Science Meeting, Virtual, 12-15 July.

2019

Kaiser, E., L. Bradtmiller, K. Billups, (2019). Southern Ocean Water Column Hydrography during the mid-Brunhes Event, AGU Fall Meeting, San Francisco, PP53C-1464.

Eichler, P, K. Billups, H. Vital, (2019). Sensitivity of benthic foraminiferal species in intermediate and deep waters of the tropical western Pacific Ocean to water mass changes, AGU Fall Meeting, San Francisco, PP51C-1394.

Billups, K., P. Eichler, H. Vital, A.C. Ravelo, (2019), Benthic Foraminifera as Indicative of Austral Summer Monsoon Precipitation and Winter Monsoon Wind-Driven Upwelling, AGU Fall Meeting, San Francisco, PP51C-1389.

2018

Watson, E., K. Billups, D. Kaufman, (2018). Amino Acid Racemization of Planktonic Foraminifera: Testing the Effects of Bleaching Pretreatment, Washington, DC, 9-14 Dec. PP13F-1395

Vizcaíno, M., J. Chiarello, A. Caldwell, and K. Billups, (2018), Reconstructing Upper Ocean Water Column Structure on the Millennial-Scale in the North Atlantic Subtropical Gyre by Using Foraminiferal (*Globorotalia truncatulinoides*) Coiling Directions PP13F-1400, Washington, DC, 9-14 Dec.

Kaiser, W. A. and K. Billups, (2018). Precessional forcing in the Western Equatorial Atlantic during the mid-Pleistocene Transition, PP-23F-1551, Washington, DC, 9-14 Dec.

Kaiser, E., Caldwell, A., Billups, K. (2018), Using Coiling Ratios of Planktonic Foraminifera to Trace Past North Atlantic Surface Currents During the Mid Pleistocene Transition, PC24B-0580 presented at 2018 Ocean Sciences Meeting, Portland, OR, 12-16 Feb.

Kaiser, E., Caldwell, A., Billups, K. (2018), Using coiling ratios of planktonic foraminifera to trace past North Atlantic Surface currents during the Mid Pleistocene Transition, ED21A-06 presented at 2018 Ocean Sciences Meeting, Portland, OR, 12-16 Feb.

2017

Eichler, Patricia, Katharina Billups, Helene Vital, Moab Praxedes Gomes, Exp363 WPWP Scientists, 2017 Foraminiferal tolerance to physical pressure in recent and past sediments of the WPWP (IODP Exp 363), 17^o Congresso Latino-Americano de Ciências do Mar – COLACMAR, 2017.

TEACHING

Graduate Advisees

- 2021 Bastian Muench, MS, current
Early Pleistocene silica accumulation in the Southern Ocean
- 2020 Emily Kaiser, MS
Orbital-Scale Controls on Biogenic Silica Accumulation in the Indian Sector of the Southern Ocean Over the Past 600,000 Years
- 2019 Emily Watson, MS
Amino acid racemization of planktic foraminifera: Pretreatment effects and temperature reconstructions
- Maoli Vizcaíno, MS
Reconstructing upper ocean water column structure on the millennial-scale in the North Atlantic subtropical gyre using foraminiferal (*Globorotalia truncatulinoides*) coiling ratios
- 2018 Andrew Caldwell, MS
Coiling Direction of the planktic foraminifer *Globorotalia truncatulinoides* as a proxy for reconstructing upper ocean hydrography in the North Atlantic during the mid-Pleistocene climate transition
- 2013 Andre Scheinwald, MS
Millennial-Scale variations in the subtropical Atlantic during MIS 7
- 2013 Robert Poirier, MS
Tracing North Atlantic Deep Water (NADW) influence in the deep subtropical North Atlantic, at orbital and millennial timescales, within the Mid-Pleistocene climate transition
- 2011 Nicholas Venti, PhD
The Role of the Kuroshio Current Extension in the Pliocene/Pleistocene Climate transition
- 2007 Daniel Weirauch, MS
A high resolution record of climate instability spanning ~1.0 million years across the mid-Pleistocene transition.
- 2005 Amanda Waite, MS
Top down and bottom up: A comparison of nannofossil Sr/Ca and benthic foraminiferal accumulation rates as paleoproductivity indicators

- 2004 Kathleen Scheiderich, MS
Multiple uses for paired Mg/Ca and oxygen isotope measurements of foraminiferal calcite: paleoclimatic, paleoceanographic, and tectonic applications
- 2004 Carolyn Lindley, MS
Millennial-scale variability during the Pleistocene: An investigation of climate stability during Marine Isotope Stages 12-16

Undergraduate Honors/Senior Theses

- 2021 Erin Leathrum (University of Delaware), current
Paleoceanographic Reconstruction of North Atlantic Ocean Circulation
- 2017 Emily Kaiser (Eckerd College) Using coiling ratios of *G. Truncatulinoides* to trace changes in North Atlantic upper ocean hydrography across the mid Pleistocene Transition
- 2015 Brian Simmons (Marshall College)
Deep Water Circulation during the Late Pliocene in the Atlantic Basin: Interchange of Antarctic Bottom Water and North Atlantic Deep Water
- 2005 Marianne Dietz
Investigating Sub-Milankovitch Climate Fluctuations in the Mid-Pleistocene (University of Delaware)
- 2004 Janine Fisler
Mid-Pleistocene Sea Surface Temperatures in the Northwestern Subtropical Atlantic (Penn State)
- 2002 Matthew Niemitz
Millennial-Scale Changes of Thermocline Depth in the Early Pliocene: Evidence From the Western Equatorial Atlantic Ocean (College of William and Mary)

Undergraduate Research Advising (Summer Interns)

- 2019 Alexis Bolger, *NSF REU*, University of Florida, Gainesville, FL
- 2018 Josephine Chiarello, *NSF REU*, SUNY Genesco, NY
- 2017 Emily Kaiser, *NSF REU*, Eckard College
- 2016 Catherine Prunella, *NSF REU*, City College, New York
- 2015 Isabelle Rew, *NSF REU*, Oberlin College, Illinois
- 2014 Brian Simmons, *NSF REU*, Marshall College, West Virginia
- 2010 Jared Stoffel, *NSF REU*, University of Dayton, OH
- 2009 Nathan Rabideaux, *NSF REU*, Fort Lewis College, Colorado

2008 Jessica Mastermann, *NSF REU*, University of Wisconsin,
2007 Gabrielle Munn, *NSF REU*, College of Charleston
2006 Thomas Bauska, *NSF REU*, University of Chicago
2005 Elizabeth Pierce, *NSF REU*, Williams College
2004 Erin King, *NSF REU*, Minnesota State University
2004 Marianne Dietz, *Science and Engineering Scholar*, UDEL
2003 Janine Fisler, *NSF REU*, Pennsylvania State University
2003 Andrea Kalb, *Science and Engineering Scholar*, UDEL
2002 Madeline Worsnopp, *NSF REU*, University of Rochester
2001 Matthew Niemitz, *NSF REU*, College of William and Mary

High School Student Mentoring

2014 Mason Jones (Fall)
2015 Ryan Carey (Spring), Corbin Hudson (Fall)
2016 Corbin Hudson (Spring and Summer)
2019/20 Robert Rickenbach

Postdoctoral Researchers

2010 Dr. Rebecca Hays

Courses Taught in the Classroom (F= Fall semester, S= Spring semester)

<u>Semester</u>	<u>Title</u>	<u>Enrollment (4xx/6xx)</u>
F 2021	-MAST 382 <i>Intro to Ocean Sciences</i> (co-taught with Muenchow)	35
F 2021	-GEOG/GEOL/MAST 458/658 <i>Paleoclimatology</i> (co-taught with D. Veron)	28/6
S 2021	-MAST 637 <i>Geological Oceanography</i> (co-taught with Schwartz)	9 Grad/5 Undergrad
F 2020	-MAST 382 <i>Intro to Ocean Sciences</i> (co-taught with Muenchow)	27
S 2020	-MAST 637 <i>Geological Oceanography</i>	5 Grad/7 Undergrad
F 2019	-GEOG/GEOL/MAST 458/658 <i>Paleoclimatology</i> (co-taught with Veron)	26/6
S 2019	-MAST 315 <i>It's in the Past</i>	9
S 2019	-MAST 382 <i>Intro to Ocean Sciences</i> (co-taught with Wozniak)	40
F 2018	-Sabbatical	
S 2018	-MAST 382 <i>Intro to Ocean Sciences</i> (co-taught with Wozniak)	35
S 2018	-MAST 315 <i>It's in the Past</i>	8
F 2017	-GEOG/GEOL/MAST 458/658 <i>Paleoclimatology</i> (co-taught with O'Neal and Veron)	10/6
	-MAST 853 <i>Oceanography Seminar</i>	16
S 2017	-MAST 315 <i>It's in the Past</i>	10
F 2016	-GEOG 101 <i>Physical Geography</i>	70
	-GEOG 111 <i>Climate Processes Laboratory</i> (led by TAs)	44
S 2016	-MAST 367 <i>Seminar (It's in the Past)</i>	16
	-MAST 852 <i>Isotope Geochemistry</i> (co-taught with Ullman, Sturcio)	7
S 2015	-MAST 367 <i>Seminar (It's in the Past)</i>	14
S 2015	-MAST 637 <i>Geological Oceanography</i> (co-taught with Sommerfield)	10
F 2014	-GEOG/GEOL/MAST 458/658 <i>Paleoclimatology</i> (co-taught with Veron)	11/7
S 2014	-MAST 437/637 <i>Geological Oceanography</i> (co-taught with Sommerfield)	20/11
F 2013	-MAST 482 <i>Introduction to Ocean Sciences</i> (co-taught with Hanson)	26
S 2013	-MAST 437/637 <i>Geological Oceanography</i> (co-taught with Sommerfield)	14/12
F 2012	-MAST 482 <i>Introduction to Ocean Sciences</i> (co-taught with Hanson)	29
	-GEOG/GEOL/MAST 458/658 <i>Paleoclimatology</i> (co-taught with O'Neal and Veron)	11/7
S 2012	-MAST 852 <i>Isotope Geochemistry</i> (co-taught with Ullman)	7
	-MAST 437/637 <i>Geological Oceanography</i> (co-taught with Sommerfield)	8/9
F 2011	-Sabbatical	
S 2011	-MAST 437/637 <i>Geological Oceanography</i>	5/11
F 2010	-MAST 482 <i>Introduction to Ocean Sciences</i> (co-taught with Ullman)	19
	-GEOG 458/658 <i>Paleoclimatology</i> (co taught with O'Neal and Veron)	6/8

S 2010	-MAST 437/637 <i>Geological Oceanography</i> (co-taught with Sommerfield)	5/15
	-MAST 853 <i>Oceanography Seminar</i>	7
F 2009	-MAST 667/857 <i>Paleoceanography</i>	1/3
S 2009	-MAST 637 <i>Geological Oceanography</i> (co-taught with Sommerfield)	14
	-MAST 866 <i>Special Problem Time Series Analysis</i>	1
S 2008	-MAST 637 <i>Geological Oceanography</i> (co-taught with Sommerfield)	8
F 2007	-MAST 866 <i>Special Problem Isotope Mass Spectrometry</i>	1
S 2007	-MAST 853 <i>Oceanography Seminar</i>	17
	-MAST 637 <i>Geological Oceanography</i> (co-taught with Sommerfield)	7
F 2006	-MAST 666 <i>Special Problem Mass Spectrometry</i>	1
S 2006	-MAST 637 <i>Geological Oceanography</i> (co-taught with Sommerfield)	8
	-MAST 852 <i>Isotope Geochemistry</i> (co-taught with Ullman and Church)	9
F 2005	-MAST 866 <i>Special Problem Paleoceanography</i>	5
S 2005	-MAST/GEOL 637 <i>Geological Oceanography</i> (co-taught with Sommerfield)	6
F 2004	-MAST 866-007 <i>Special Problem in Mass Spectrometry</i>	1
S 2004	-MAST/GEOL 637 <i>Geological Oceanography</i> (co-taught with Sommerfield)	10
F 2003	-MAST 866-007 <i>Special Problem in Geochemical Analyses</i>	1
	-MAST/GEOL 857 <i>Paleoceanography</i>	6
S 2003	-MAST 866-007 <i>Special Problem in Geochemical Analyses</i>	1
	-MAST/GEOL 637 <i>Geological Oceanography</i> (co-taught with Sommerfield)	7
S 2002	-MAST/GEOL 637 <i>Geological Oceanography</i> (co-taught with Sommerfield)	7
F 2001	-MAST/GEOL 857 <i>Paleoceanography</i>	7
S 2001	-GEOL/MAST 631 <i>Marine Geology</i> , (co-taught with Sommerfield)	7

SERVICE

To the School, College, and University

2021	-SMSP P&T committee, chair
2021	-SMSP Coastal Geologist Search Committee
2021	-Undergraduate Committee
2020	-SMSP P&T committee
2019	-Chair, Graduate Curriculum Committee
	-Member of the Academic Review Committee
	-NSF REU selection committee
2018	-Associate Director of the Oceanography Program
	-P&T committee
	-NSF REU selection committee
2017	-Associate Director of the Oceanography Program
	-SMSP P&T committee
	-SMSP search committee for Marine Organic Geochemist
	-NSF REU selection committee
2016	-Associate Director of the Oceanography Program

- 2015
 - SMSP search committee for Marine Organic Geochemist
 - Associate Director of the Oceanography Program
- 2014
 - SMSP search committee for four positions in coastal/estuarine systems
 - Associate Director of the Oceanography Program
- 2013
 - SMSP search committee for four positions in coastal/estuarine systems
 - Associate Director of the Oceanography Program
- 2012
 - Search committee for a Geochemist in the Dept. of Geol. Sciences
 - Associate Director of the Oceanography Program
 - Search committee for a Geochemist in the Dept. of Geol. Sciences
- 2011
 - Associate Director of the Oceanography Program
- 2010
 - Search committee for the new Director of School of Marine Science and Policy
- 2009
 - Associate Director of the Oceanography Program
 - Faculty Senate (through March)
 - Lewes Invitations Seminar Co-Coordinator
 - NSF REU intern selection committee
- 2008
 - Faculty Senate
 - Lewes Invitations Seminar Co-Coordinator
 - Student awards committee
 - NSF REU intern selection committee
- 2007
 - Faculty Senate
 - Search committee for a Phytoplankton Oceanographer
 - Student awards committee
 - NSF REU intern selection committee
- 2006
 - CMES Website Committee
 - Search committee for a Hydrogeologist
 - Search committee for a Phytoplankton Oceanographer
 - Student awards committee
 - NSF REU intern selection committee
- 2005
 - CMS Futures Committee 2
 - NSF REU intern selection committee
 - Search committee for an administrative position
- 2004
 - Coast Day participant with hands on display of microfossils
 - Coordinator of the Lewes invitational seminar series
- 2003
 - Coordinator of the Lewes invitational seminar series
 - CMS Futures Committee
 - Summer Intern Presentation
- 2002
 - Public Lectures: Ocean Current Seminar, Wilmington, DE
- 2001
 - Public Lectures: Ocean Current Seminar, Lewes, DE