

Justin L. Penn

Department of Geosciences,
Princeton University
Guyot Hall
Princeton, NJ 08544

Email: jpenn@princeton.edu
Tel: (310) 871-3051

Education

2020

Ph.D., Oceanography

University of Washington, Seattle

Advisor: Curtis Deutsch

Dissertation title: "Biosphere Impacts of Ocean Hypoxia in Warming Climate"

2016

M.S., Oceanography

University of Washington, Seattle

2012

B.S., Environmental Science

Conservation Biology Minor

University of California, Los Angeles

Magna Cum Laude

Research Description

Interests: Mass extinctions, climate change, global biodiversity, paleoclimatology, paleobiology, ocean biogeochemistry, oxygen and nitrogen cycles, biogeography, ecophysiology, metabolic theory, food web dynamics.

Approach: Development and analysis of ecological and physiological models, simulations of the Earth System with an emphasis on ocean modeling, synthesis with laboratory and field data.

Peer-Reviewed Publications

Penn J. L., Deutsch C., Avoiding ocean mass extinction from climate warming. *Science* (in press).

C. Deutsch, **Penn J. L.**, Seibel B., Metabolic trait diversity shapes marine biogeography. *Nature*. 585 (2020), doi:10.1038/s41586-020-2721-y.

E. M. Howard, **Penn J. L.**, Frenzel H., Seibel B. A., Bianchi D., Renault L., Kessouri F., Sutula M. A., McWilliams J. C., Deutsch C., Climate-driven aerobic habitat loss in the California Current System, *Sci. Adv.* 6 (2020), doi: 10.1126/sciadv.aay3188

Penn J. L., Chang, B. X., Weber T., Deutsch C., Microbial ecosystem dynamics drive fluctuating nitrogen loss in marine anoxic zones. *PNAS*. 16 (2019), <https://doi.org/10.1073/pnas.1818014116>

Penn J. L., Deutsch C., Payne. J. L., Sperling E.A., Temperature-dependent hypoxia explains biogeography and severity of end-Permian marine mass extinction. *Science*. 362 (2018), <https://doi.org/10.1126/science.aat1327>

Penn J. L., Weber T., Deutsch C., Microbial functional diversity alters the structure and function of oxygen deficient zones. *Geophys. Res. Lett.* 43 (2016), doi:10.1002/2016GL070438.

Other Publications

Penn J. L., Global warming blamed for Earth's largest mass extinction. *The Science Breaker*. (2019). <https://doi.org/10.25250/thescbr.brk277>

Professional Experience

July 2021-Present

Postdoctoral Research Associate
Department of Geosciences
Princeton University

February - July 2021

Postdoctoral Scholar
School of Oceanography
University of Washington, Seattle

2014 - 2020

Graduate Research Assistant
School of Oceanography
University of Washington, Seattle

Professional Experience

- 2015 - 2017** *Teaching Assistant*
Ocean 215: Methods of Oceanographic Data Analysis (S. Riser),
School of Oceanography
University of Washington, Seattle,
- 2013 - 2014** *Research Scientist & Engineer*
School of Oceanography
University of Washington, Seattle
- 2012 - 2013** *Research Assistant*
Department of Atmospheric and Oceanic Science
University of California, Los Angeles
- 2012** *Research Intern*
Institute of the Environment and Sustainability,
Institute of Geophysics & Planetary Physics
University of California, Los Angeles

Highlights, Fellowships, Honors, and Awards

- 2019** Ocean Carbon and Biogeochemistry Science Highlights: Microbial ecosystem dynamics drive fluctuating nitrogen loss in marine anoxic zones
- 2018** Science Perspective by Lee Kump on Temperature-dependent hypoxia explains biogeography and severity of end-Permian marine mass extinction
- 2018** Program on Climate Change Graduate Student Fellowship, UW
- 2016** Modeling a Living Planet Travel Scholarship, Princeton University

Highlights, Fellowships, Honors, and Awards - Cont.

2015-2019	National Center for Atmospheric Research (NCAR) Computing Allocation
2013	Phi Beta Kappa, UCLA
2012	California Sea Grant Isaacs Scholarship
2012	Departmental Academic Achievement Award, Institute of the Environment and Sustainability, UCLA
2012	Departmental Highest Honors, Institute of the Environment and Sustainability, UCLA

Talks, Presentations and Conferences

Feb, 2022 (upcoming)	GENIE Symposium: Applications of the cGENIE (muffin) Earth System Model. University of California, Riverside (Participant)
2020	PhD Defense: University of Washington, Seattle. Marine extinction risk from climate warming: past to future (Lecture)
2020	Program on Climate Change Winter Welcome: University of Washington, Seattle. Marine Extinction Risk from Climate Warming. (Oral presentation)
2020	AAAS Annual Meeting, Seattle. Marine Extinction Risk from Climate Warming. (Oral presentation)

Talks, Presentations and Conferences - Cont.

- 2019 Oceanography graduate and post-doc symposium: University of Washington, Seattle. Temperature-dependent hypoxia explains end-Permian extinction in the oceans. (**Poster presentation**)
- 2019 Chemical Oceanography seminar: University of Washington, Seattle. Temperature-dependent hypoxia explains end-Permian extinction in the oceans. (**Lecture**)
- 2018 Paleobiology seminar: University of Washington, Seattle. Temperature-dependent hypoxia explains end-Permian extinction in the oceans. (**Invited**)
- 2018 Gordon Research Conference: Global Change Biology, NH: Temperature-dependent hypoxia explains end-Permian extinction in the oceans. (**Poster presentation**)
- 2018 Gordon Research Seminar: Global Change Biology, NH: Temperature-dependent hypoxia explains end-Permian extinction in the oceans. (**Oral presentation**)
- 2017 Geological Society of America, Seattle, WA: Temperature-dependent hypoxia explains end-Permian extinction in the oceans. (**Oral presentation**)
- 2017 Ocean Science Meeting, Portland, OR: Temperature-dependent hypoxia explains end-Permian extinction in the oceans. (**Oral presentation**).
- 2016 American Geophysical Union Fall Meeting, San Francisco, CA: Aerobic marine habitat loss during the Late Permian extinction. (**Poster presentation**)

Talks, Presentations and Conferences - Cont.

- 2016 Modeling a Living Planet: Princeton University, NJ: Microbial ecosystem dynamics in marine. (*Poster presentation*)
- 2016 Program on Climate Change Summer Institute: The Climate of Antarctica and the Southern Ocean, Friday Harbor, WA. (*Attendee*).
- 2014 American Geophysical Union Fall Meeting, San Francisco, CA: Microbial competition for Nintermediates drives oscillating N loss from marine oxygen deficient zones. (*Oral presentation*)
- 2014 Gordon Research Conference: Marine Microbes, Boston, MA: Modeling microbial ecosystem dynamics in marine anoxic zones. (*Poster presentation*)

Outreach and Service Activities

Communicating research to broad public audiences is a key part of increasing science accessibility and spreading awareness about climate change. For my work on extinction, I had the opportunity to convey my results to the general public by speaking with reporters leading to coverage in major news outlets, including the *New York Times*, *The Atlantic*, *The Guardian*, *The Independent*, *Business Insider*, *Forbes*, *Seattle Times*, *Smithsonian Magazine*, *Newsweek*, *Washington Post*, *GeekWire*, *Science News*, *The Scientist*, *Grist*, *The Stranger*, *My Northwest*, *Futurity*, *Seattle Met*, *Fox News*, *The Sun*, *New York Post*.

- 2018 *Climate consultant* for Governor Jay Inslee, Washington State Capitol, Olympia, WA
- 2018 *Radio Guest*
- “The Record” with Bill Radke, KUOW (NPR), Seattle, WA
- BBC Radio 5 Live “Up All Night”
- The “Texas Standard”, KUT (NPR)

Outreach and Service Activities - Cont.

- 2018 *Video Interview* with Andrew Buncombe for The Independent
- 2018 *Interview* for the Paper Boys Podcast, UW, Seattle
- 2017 *Guest Lecturer*, Seattle University, Seattle, WA, ATM S 220: Mass Extinctions (D. Faust)
- 2017 - 2018 *Research mentor* for Abigail Ames, Andrew Mondovi, University of Washington, Seattle, WA
- 2010 - 2012 *Volunteer Excavator and Docent*, Project 23, La Brea Tar Pits Page Museum, Los Angeles, CA
- Reviewer* of journal articles in: Geophysical Research Letters, Marine Chemistry, Environmental Research Letters
- December 2016-
January 2017 *Fieldwork*, R/V Sikuliaq, Eastern Tropical North Pacific, ARGO float deployment, zooplankton and nutrient sampling, algorithm development for CTD O2 sensor
- Summer 2012 *Fieldwork*, R/V Yellowfin, San Pedro Ocean Time-series (SPOT), Phytoplankton and nutrient sampling
- Summer 2012 *Fieldwork*, California Sea Grant Vessel, Santa Monica Bay Observatory (SMBO), Phytoplankton and nutrient sampling
- Spring 2011 *Fieldwork*, Tropical Ecology and Conservation Program, Monteverde Research Station, Costa Rica, Nutrient sampling of forest canopy throughflow rainwater