Roger Cameron Creel
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RESEARCH INTERESTS

I am a Postdoctoral Scholar at Woods Hole Oceanographic Institution researching sea level, ice sheets, and arctic landscape evolution during the last half million years with focus on the Holocene and Last Interglacial periods, the 20th and 21st century, and future sea-level projections. My interests include sea level, paleoclimate, statistical modeling, permafrost, sedimentology, ocean dynamic sea level, coastal processes, and scalable open-source computing.

POSITIONS

2023—present **Postdoctoral Scholar, Physical Oceanography**
Woods Hole Oceanographic Institution

EDUCATION

2023 **Ph.D. Geophysics** (Advisor: Jacqueline Austermann)
Columbia University, New York, New York

2013 **B.A. Geology & English** (Advisor: David S. Jones)
Amherst, Massachusetts
Summa cum laude with distinction

FELLOWSHIPS AND AWARDS

West Antarctic Ice Sheet (WAIS) workshop prize for best oral presentation	2023
Woods Hole Oceanographic Institution Postdoctoral Scholarship	2023
Schmidt Science Fellow (Finalist)	2023
Outstanding Teaching Assistant award, Columbia University	2021
Diversity, Equity, and Inclusion pedagogy award, Columbia University ($1000)	2021
National Science Foundation Graduate Research Fellowship (Honorable Mention)	2020
John Mason Clark 1877 Fellowship in Geology, Amherst College ($21,500)	2018-2020
Columbia University Earth Institute travel grant ($750)	2019
Knight Hennessy Scholar (Finalist)	2018
Walter F. Pond Prize for Best Geology Thesis, Amherst College	2013
Dean of the Faculty Research Grant, Amherst College ($3000)	2012-2013
Lane Fellowship for Creative Artists, Amherst College	2012-2013
Richard M. Foose Award for geology research, Amherst College ($1000)	2012
Harry Hunter Jr. English Prize, Amherst College ($1000)	2011
Armstrong English Prize, Amherst College ($500)	2010

SUBMITTED PUBLICATIONS

Creel, R.C., Austermann, J.A., Delayed Laurentide Ice Sheet Melt during the Last Interglacial Causes Sea Level Oscillations (2023). In review, *Geology*.

Creel, R.C., Austermann, J.A., Kopp, R., Khan, N., Kingslake, J., Albrecht, T. Global Mean Sea Level Higher than Present during the Holocene (2023). In review, *Nature Communications*.

Creel, R.C., Miesner, F., Wilkenskjeld, S., Austermann, J., Overduin, P., Glacial Isostatic Adjustment speeds past and future Arctic subsea permafrost thaw (2023). In review, *Nature Communications*.

Balascio, N.L., D'Andrea, W.J., **Creel, R.C.,** Marshall, L., Dia, M., Wickler, S., Anderson, R.S., Austermann, J.A., Vasskog, K., Nielsen, P.R., Dahl, S.O. Refining Holocene sea-level dynamics for the Lofoten and Vesterålen archipelagos, northern Norway: Implications for prehistoric human-environment interactions (2023). In review, *Quaternary Science International*.

PEER-REVIEWED PUBLICATIONS (178 Citations, H-index 5)

10. Dumitru, O.A., Dyer, B., Austermann, J.A., Sandstrom, M.R., D'Andrea, W., Cashman, M., Goldstein, S.L., **Creel, R.C.,** Bolge, L., Raymo, M.E. Last interglacial global mean sea level from high-precision U-Th ages of Bahamian fossil coral reefs, *Quaternary Science Reviews* **318**, 108287 (2023).

9. Barnett, R.L., Austermann, J.A., Dyer, B., Telfer, M.W., **Creel, R.C.,** Carr, A.S., Boulton, S.J. Antarctic meltwater constrained by Last Interglacial sea-level observations in Northwest Europe, *Science Advances* **9**, (2023).

8. Austermann, J.A., Wickert, A., Pico, T., Kingslake, J., Callaghan, K., **Creel, R.C.** Glacial Isostatic Adjustment Shapes Proglacial Lakes Over Glacial Cycles. *Geophysical Research Letters* **49**, (2022).

7. **Creel R.C.**, Austermann J.A., Khan N.S., D'Andrea W.J., Balascio, N., Dyer, B. Postglacial relative sea level change in Norway. *Quaternary Science Reviews* **282**, 107422. (2022)

6. Menke, W. & **Creel, R.C.**. Why Differential Data Work. *Bulletin of the Seismological Society of America* (2021) doi:10.1785/0120210014.

5. Menke, W. & **Creel, R.C.** Gaussian Process Regression Reviewed in the Context of Inverse Theory. *Surv Geophys* **42**, 473–503 (2021).

4. Dyer, B., Austermann, J., D'Andrea, W.J., **Creel, R.C.** Sandstrom, M.R., Cashman, M., Rovere, A., Raymo, M.E., Sea level trends across the Bahamas constrain peak Last Interglacial ice melt (2020), (in review).

3. Bergmann, K.D., Finnegan, S., **Creel, R.C.,** Eiler, J.M., Hughes, N.C., Popov, L.E., Fischer, W.W., A paired apatite and calcite clumped isotope thermometry approach to estimating Cambro-Ordovician seawater temperatures and isotopic composition. *Geochim. et Cosmochim. Acta* (2018) doi:10.1016/j.gca.2017.11.015

2. Jones, D.S., **Creel, R.C.,** Rios, B., 2016. Carbon isotope stratigraphy and correlation of depositional sequences in the Upper Ordovician Ely Springs Dolostone, eastern Great Basin, USA. *Palaeogeography, Palaeoclimatology, Palaeoecology.* http://dx.doi.org/10.1016/j.palaeo.2016.01.036

1. Jones, D.S., **Creel, R.C.,** Rios, B., and Santiago, D., 2015. Chemostratigraphy of an Ordovician-Silurian carbonate platform: $\delta^{13}C$ records below glacioeustatic exposure surfaces. *Geology* 43, 59-62. doi:10.1130/G36236.1

CONFERENCE ABSTRACTS

Creel, R.C., Austermann, J.A. Delayed Laurentide Ice Sheet melt during the Last Interglacial causes Sea level oscillation due to glacial isostatic adjustment. AGU 2023.

Lloyd, A., Crawford, O., Al-Attar, D., Austermann, J., Hoggard, M., Richards, F., **Creel, R.,** Khan, N., GIA imaging of 3D mantle viscosity based on paleo sea-level observations: inversion proof of concept. AGU 2023.

Chester, S., Austermann, J.A., Lloyd, A., D'Andrea, W., **Creel, R**. Mid-Holocene sea level data record the lateral migration of the peripheral bulge first towards then away from former ice sheets. AGU 2023

Creel, R.C., Austerman, J.A., Kopp, R., Khan, N., Kingslake, J., Albrecht, T. Global Mean Sea Level higher during the Holocene than the preindustrial. WAIS workshop 2023.

Creel, R.C., Austerman, J.A., Kopp, R., Khan, N., Kingslake, J., Albrecht, T. Sea level evidence for West Antarctic Ice Sheet retreat and readvance. SCAR/INSTANT Conference 2023.

Creel, R.C., Miesner, F., Overduin, P.P., Austermann, J.A., Glacial Isostatic Adjustment Speeds Past and Future Arctic Subsea Permafrost thaw. AGU Annual meeting 2022.

Austerman, J.A., Barnett, R., Dyer, B., Telfer, M., Barlow, N., Carr, A., Boulton, S., **Creel, R.** Antarctic Contribution to Last Interglacial sea level from observations in Northwest Europe. AGU Annual meeting 2022.

Dumitru, O.A., Dyer, B., Austermann, J.A., Sandstrom, M.R., D'Andrea, W., Cashman, M., Goldstein, S.L., **Creel, R.C.,** Bolge, L., Raymo, M.E. Antarctic and Greenland Ice-sheet Contributions to Last Interglacial Global Sea-level: Evidence from Stratigraphic Analysis and U-Th Ages of Fossil Corals from the Bahamas. AGU Annual meeting 2022.

Callaghan, K.L., Wickert, A.D., Austermann, J., **Creel, R.,** The Water Table One Hundred Years From Now: A Range of Scenarios for the United States. AGU Annual meeting 2022.

Austermann, J.A., Wickert, A., Pico, T., Kingslake, J., Callaghan, K., **Creel, R.C.** Glacial Isostatic Adjustment Shapes Proglacial Lakes Over Glacial Cycles. AGU Annual meeting 2022.

Creel, R.C., Miesner, F., Overduin, P.P., Austermann, J.A., Impacts of Relative Sea Level on Past and Future Arctic Subsea Permafrost. PALSEA Annual meeting 2022.

Creel, R.C., Austerman, J.A., Kopp, R., Khan, N., Ashe, E., Kingslake, J., Albrecht, T. Sea Level Likely Higher Than Present in the Late Holocene. WCRP Annual Meeting 2022.

Creel, R.C., Austerman, J.A., Kopp, R., Khan, N., Ashe, E., Kingslake, J., Albrecht, T. A Probabilistic Estimation of Holocene Global Mean Sea Level. EGU Annual Meeting 2022.

Creel, R.C., Austerman, J.A., Kopp, R., Khan, N., Ashe, E., Kingslake, J., Albrecht, T. Probabilistic Estimate of Mid-Holocene Global Mean Sea Level. AGU Fall Meeting 2021.

Dumitru, O.A., Dyer, B., Austermann, J.A., Sandstrom, M.R., D'Andrea, W., Cashman, M., Goldstein, S.L., **Creel, R.,** Bolge, L., Raymo, M.E. New Constraints on Last Interglacial Sea Level from Fossil Coral Reefs of the Bahamian Islands. AGU Fall Meeting 2021.

Brody, P., Quintana, L., Chang, C., **Creel, R.C.,** Austermann, J., Nichols, J., Heusser, L., Peteet, D.,, Early Holocene Sea Level: new constraints from Submerged Peat Layers in the New York Bight. AGU Fall Meeting 2020.

Creel, R.C., Austerman, J.A., Dyer, B., D'Andrea, W.J., Khan, N., Balascio, N.L., Ashe, E. Improving reconstructions of Northern European and Arctic Holocene Relative Sea Level: a data-model synthesis. AGU Fall Meeting 2020.

Creel, R.C., Austerman, J.A., Dyer, B., D'Andrea, W.J., Khan, N., Balascio, N.L., Ashe, E. Reconstructing Northern European and Arctic Holocene Relative Sea Level to test Meltwater Pulse 1a Timing. Graduate Climate Conference 2020.

Austermann, J.A., **Creel, R.,** Dyer, B., D'Andrea, W., Cashman, M., Dumitru, O.A., Sandstrom, M.R., Goldstein, S.L., Raymo, M.E. Last Interglacial Sea Level: Stratigraphic analysis and chronological constraints from the Crooked-Acklins platform, Bahamas. AGU Fall Meeting 2020.

Creel, R.C, Khan, N., Ashe, E., Kingslake, J., Austermann, J., Estimating the Amount of Holocene Readvance of the West Antarctic Ice Sheet using Sea Level Records. AGU Fall Meeting 2019.

Kingslake, J., Wearing, M., Austermann, J., Scherer, R.P., Albrecht, T., **Creel, R.,** 2018. Dating Holocene ice sheet advance in West Antarctica using englacial radio-stratigraphy and sea-level records. AGU Fall Meeting 2018.

Creel, R.C., Fike, D., Jones, D.S.. Diagenesis and Dolomitization of Epicontinental Carbonates during the Ordovician-Silurian Icehouse. Midwest Geobiology Conference 2015.

Jones, D.S., **Creel, R.C.,** Rios, B.A., and Santiago, D.P. Late Ordovician and early Silurian glacioeustatic sea level changes and carbon isotope chemostratigraphy. Geological Society of America Fall Meeting 2014.

Jones, D.S., **Creel, R.C.,** Rios, B.A., and Santiago, D.P.. Chemostratigraphy of an Ordovician-Silurian carbonate platform: implications for the interpretation of $\delta^{13}C$ excursions under glacioeustatic exposure surfaces. Geological Society of America Northeast Meeting 2013.

Creel, R. C. and Jones, D. S. Meteoric diagenesis of sequence boundaries in late Ordovician- early Silurian dolomites of the Great Basin, Nevada. Geological Society of America Northeast Meeting 2013.

INVITED PRESENTATIONS

Harvard BiSEPPS seminar – October 2023

Colorado School of Mines WAIS Workshop – October 2023

University of Bergen Snapshot seminar – September 2023

Pal(a)eoPERCS Seminar – May 2023

U. of Alaska Arctic Coastal Observations, Research, and Networking (ACORN) series–February 2023

NASA Goddard Institute for Space Studies Sea Level seminar – January 2023

FIELD EXPERIENCE

Hawaii Field Season **Columbia University/Lamont Doherty Earth Observatory**
June 2023

Turks & Caicos Field Season **Columbia University/Lamont Doherty Earth Observatory**
June 2022

Bahamas Field Season **Columbia University/Lamont Doherty Earth Observatory**
Collected Last Interglacial sea level data June 2019

- Coastal field mapping with dGPS
- Fossil coral sample collection
- Tide gauge deployment
- Sedimentology and geomorphological assessments and interpretations of outcrops
- Drone photogrammetry with Agisoft Metashape, QGIS, & Blender

Anticosti Island, QC Field Season **Massachusetts Institute of Technology**
Collected Ordovician-Silurian carbonates to extract ancient ocean temperatures August 2017

- Fossil coral sample collection
- Field mapping
- Measured stratigraphic sections

Basin and Range Field Season **Amherst College**
Collected stratigraphic data from three mountain ranges in N.E. Nevada May 2012

- Measured stratigraphic sections
- Collected and labeled 1100+ samples
- Field mapping

EMPLOYMENT

Technology pedagogy intern **Columbia University Information Technology**
Designed, organized, and ran Python User Group & Data Club May 2020 – Dec 2023

Resident Director **Shakespeare in Dance, Louisville KY**
Choreographed 7 evening-length Shakespeare ballets August 2016 – August 2023

Sedimentology Lab Research Assistant **Massachusetts Institute of Technology**
Explored formation of Paleozoic and Mesoproterozoic carbonates Oct 2016 – March 2018

- Characterized stromatolite morphologies
- Ran 100+ samples on Nu Clumped Isotope Mass spectrometer
- Assisted mass spectrometer maintenance
- Made 30+ thin sections
- Organized rock inventory

Biogeochemistry Lab Research Assistant **Washington University St. Louis**
Developed novel protocol for carbonate-associated barite extraction May 2015 – August 2015

- Ran 200+ carbon isotope samples on mass spectrometer
- Crushed rock samples in disk mill
- Measured 40+ sample residues with Scanning Electron Microscope
- Analyzed 7 thin sections with Ion Microprobe
- Prepped 50+ rock samples for sulfur isotope analysis

- Maintained large Excel spreadsheets of data

Company Artist **Louisville Ballet, Louisville KY**
Performed in classical and contemporary ballets August 2013 – August 2018

Dance Teacher **That's Dancing, Louisville Kentucky**
Taught ballet, jazz, and hip hop to children ages 6-18 September 2013 – May 2018

TEACHING EXPERIENCE

Field Excursion to Death Valley Teaching Assistant **Columbia University**
Led review sections, co-led field trip with 21 students Jan 2023 – May 2023

Sea Level Change Teaching Assistant **Columbia University**
Taught discussion sections, ran review sessions, graded problem sets Jan 2021 – May 2021

Seminar on Race, Climate Change, and Environmental Justice facilitator **Columbia University**
Designed curriculum, scheduled lectures, led discussion sections Summer 2020 - Summer 2021

Solid Earth Dynamics Teaching Assistant **Columbia University**
Taught discussion sections, ran review sessions, graded problem sets Jan 2020 – May 2020

Principles of Geology teaching assistant **Amherst College Geology Department**
Assisted labs and held office hours for undergraduate class January – May 2012, 2013

SERVICE AND OUTREACH

Reviewer JGR-Oceans, GRL, Paleogeography, Science Advances

Standing Committee on DEIA **Lamont Doherty Earth Observatory**
Implemented DEIA plan Fall 2021 - present

Earth & Environmental Science representative **Columbia Arts & Sciences Graduate Council**
Diversity, Equity, and Inclusion committee Fall 2021 – Fall 2022
Quality of Life committee Fall 2018 – Spring 2021

Disaster Preparedness Subcommittee **WE ACT for Environmental Justice**
Helped draft Northern Manhattan Climate Ready Uptown Plan Fall 2021 – present
Took notes for community meetings

Volunteer Mentor **Marjorie Stoneman Douglass P.S. 36 (Harlem)/Read Ahead**
Mentored 1st graders in science and reading September 2018 – present

Mentor Advisory Board **Read Ahead, NYC Chapter**
Designed mentor development programs Oct 2019 – May 2022

LDEO Open House **Lamont Doherty Earth Observatory**
Taught people of all ages about sea level change October 2018, 2019, 2022

Guest Lecturer & Lab Instructor **Secondary School Field Research Program/**
Designed and executed sea level change seminars **Lamont Doherty Earth Observatory**
June-July 2019

SUBMERGE Outreach Event **Hudson Park Trust/Lamont Doherty Earth Observatory**
Educated the public about corals and sea level change September 2018, 2019

Sun and Earth Day **American Museum of Natural History**
Discussed sea level rise research with attendees of all ages April 2018

Changing Ice Changing Coastlines **Lamont Doherty Earth Observatory 2018-2020**
Institution-wide committee dedicated to promoting interdisciplinary collaboration to advance research on how ice will alter sea level and coastlines in our warming world.

GRADUATE COURSES & SEMINARS

Discrete Mathematics
Data Structures
Quantitative Methods in Data Analysis
Research Computing in the Earth Sciences
Geodynamics
Glaciology
Sea Level Change
Terrestrial Paleoclimate
Intro Java
Inverse Theory
Advanced Programming
Partial Differential Equations
Ordinary Differential Equations
Cenozoic Paleoclimate Seminar
Seismology Seminar

UNDERGRADUATE COURSES

Principles of Geology
Paleontology & Geobiology
Igneous & Metamorphic Petrology
Tectonics & Continental Dynamics
Minerology
Structural Geology
Linear Algebra
Multivariable Calculus
Surface Earth Dynamics
Biology I, II, & III
Chemistry I & II
Physics I

ACADEMIC, HONORARY, AND PROFESSIONAL SOCIETIES

- Geological Society of America, Member
- American Geophysical Union
- Sigma Xi, Scientific Honor Society

PROGRAMMING LANGUAGES

Python, Java, C/C++, Matlab, HTML/CSS, QGIS, Bash/Unix