

Laura L. Haynes

PhD, Geochemistry and Paleoclimatology

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PROFESSIONAL EXPERIENCE

Rutgers University

Postdoctoral Fellow of Earth, Ocean, and Atmospheric Science

July 2019-Present

EDUCATION

Columbia University, New York, NY

- PhD, Dept. of Earth and Environmental Sciences 2013-2019
Dissertation Title: *“The Influence of Paleo-Seawater Chemistry on Foraminifera Trace Element Proxies and their Application to Deep-Time Paleo-Reconstructions”*.
Committee: Bärbel Hönisch (primary advisor), Maureen Raymo, and Sidney Hemming.
Concentrations: Geochemistry, Paleoclimate, and Geology.
- M.Phil. in Earth and Environmental Sciences January 2017
- M.A. in Earth and Environmental Sciences May 2015

Pomona College, Claremont, CA

- B.A. in Geology *cum laude*, Minor in Environmental Analysis May 2013
Thesis Title: *“Interbasin Paleoclimate Records from Pleistocene Lake Bonneville Marl of the Tule and Bonneville Basins, UT”*.
Advisor: Robert Gaines.

FUNDING, HONORS, AND AWARDS

- 2019 Rutgers EOAS Postdoctoral Fellowship (\$61,000)
“Determining the Source of Vital Effects in Foraminifer Paleoclimate Proxies via Transcriptome Sequencing”
- 2017-2018 Schlanger International Ocean Discovery Program (IODP) Graduate Fellowship (\$30,000)
“Assessing Deep Pacific Carbonate Storage Across the Mid-Pleistocene Transition”
- 2017 Columbia Earth Institute Research Assistant Funding (\$1,800)
- 2017 Virtual Drillship Course Scholarship, IODP (\$1,200)
- 2017 Sara Langer Book Prize for Contributions to Student Life
- 2016-2019 Columbia Climate Center Award (\$10,000)
“Deep Pacific Carbonate Chemistry Across the Mid-Pleistocene Transition”
- 2015 Chevron Student Initiative Fund Award (\$900)
“Assessing the Impact of Hydrothermal Activity on B/Ca in Benthic Foraminifers”
- 2015 NSF Urbino Summer School In Paleoclimatology Scholarship
- 2014, 2015 NSF GRFP Honorable Mention
- 2013 Phi Beta Kappa, Pomona College
- 2013 Richard Strehle Award in Geology, Pomona College
[Awarded to a student with the qualities desirable in a field geologist.]
- 2012 Pomona College Summer Undergraduate Research Fellowship
- 2011 Andrew W. Mellon Foundation Environmental Analysis Research Fellowship

PUBLICATIONS

Farmer, J.R., Hönisch, B., **Haynes, L.L.**, Kroon, D., Jung, S., Ford, H.L., Raymo, M.E., Bell, D.B., Jaume-Seguí, M., Goldstein, S.L., Pena, L.D., Yehudai, M., and Kim, J. “Deep Atlantic Ocean Carbon Storage and the Rise of 100-kyr cycles”. *Nature Geoscience* 12(5), 355-360.

Hönisch, B., Eggins, S.M., **Haynes, L.L.**, Allen, K.A., Holland, K. and Lorbacher, K. (2019). Boron Proxies in Paleooceanography and Paleoclimatology, First Edition. John Wiley and Sons Ltd., Series on New Analytical Methods in Earth and Environmental Sciences.

Haynes, L.L., Hönisch, B., Dyez, K., Holland, K., Rosenthal, Y., Fish, C., Subhas, A. V. & Rae, J. W. B. (2017). “Calibration of the B/Ca proxy in the planktic foraminifer *Orbulina universa* to Paleocene seawater conditions”. *Paleoceanography* 32(6), 580-599. <https://doi.org/10.1002/2016PA003069>

Holland, K., Eggins, S.M., Hönisch, B., and **Haynes, L.L.** (2017) “Calcification rate and microenvironment response of the planktic foraminifer *Orbulina universa* to changing seawater carbonate chemistry”. *Earth and Planetary Science Letters* 464, 124-134. <https://doi.org/10.1016/j.epsl.2017.02.018>

Allen, K.A., Hönisch, B., Eggins, S.M., **Haynes, L.L.**, Rosenthal, Y., & Yu, J. (2016). “Trace element proxies for surface ocean conditions: A synthesis of culture calibrations with planktic foraminifera”. *Geochimica et Cosmochimica Acta* 193, 197-221. <http://dx.doi.org/10.1016/j.gca.2016.08.015>

In revision

Holland, K., Branson, O., **Haynes, L.L.**, Hönisch, B., Allen, K.A., Russell, A., Fehrenbacher, J., Spero, H., Eggins, S.M. “Constraining multiple controls on planktic foraminiferal Mg/Ca”. In revision at *Geochimica et Cosmochimica Acta*.

Haynes, L.L., Hönisch, B., Holland, K., Rosenthal, Y., and Eggins, S.M. “Evaluating the planktic foraminiferal B/Ca proxy for application to deep time paleoceanography”. In revision at *Earth and Planetary Science Letters*.

Under review

Harper, D.T., Hönisch, B., Zeebe, R., **Haynes, L.L.**, Thomas, E., and Zachos, J.C. “Surface ocean acidification during Eocene-Thermal Maximum-2: Implications for Carbon Release”. Under review at *Paleoceanography and Paleoclimatology*.

In preparation

Haynes, L.L., Hönisch, B., Holland, K., Rosenthal, Y., and Eggins, S.M. “New Constraints on Oceanic Dissolved Inorganic Carbon during the Paleocene-Eocene Thermal Maximum”.

Haynes, L.L., Hönisch, B., Holland, K., Rosenthal, Y., Eggins, S.M. “Influence of pH on foraminiferal Mg/Ca in low seawater Mg/Ca composition”.

Haynes, L.L., Hönisch, B., Farmer, J.R., Ford, H.L., Raymo, M.E. “Constraining deep-sea carbonate ion across the Mid-Pleistocene Transition: A deep Atlantic synthesis”.

Hönisch, B., Fish, C., Phelps, S., **Haynes, L.L.**, Dyez, K., Holland, K., Fehrenbacher, J., Eggins, S.M. and Goes,

J., “Unraveling vital effects: Photosynthesis of symbiotic algae in foraminifera hosts”

TEACHING EXPERIENCE

Guest Lecturer, Paleoceanography, Climate and Society Case Studies: Columbia University, Spring 2018, Spring 2019.

Course Design and Instructor, “Climate Science Communication”: Grace Church High School, Fall 2018.

Laboratory Section T.A., Introduction to the Climate System: Columbia University, Fall 2015, 2016.

Lead Teaching Fellow, Columbia University, 2016-2017.

Teaching Assistant, Introduction to Oceanography: Columbia University, Fall 2014.

Teaching Assistant, “The Changing Climate” Freshman Writing Seminar: Pomona College, Fall 2012.

MENTORING EXPERIENCE

NSF/International Ocean Discovery Program REU Mentor Summer 2016, 2018

Ingrid Izaguirre (University of Miami '19), now LDEO graduate student

Vincent Clementi (Rutgers University '17), now Rutgers U. graduate student

Earth Institute Research Assistant Supervisor Fall 2016-Spring 2018

Nina Castro (Barnard '19), Jennifer Falsetta (Columbia '18),

and Emily Utset (Columbia '19)

INVITED TALKS

2019 Princeton University Seminar Series

2019 Montclair State University

2018 U.S. Advisory Committee for Scientific Ocean Drilling, Summer Meeting

2018 Rutgers University, Meeting on *Using Na/Ca for reconstructing seawater calcium and alkalinity budgets*

2017 Rutgers University, Lunch seminar

2017 Cambridge University, Isotope Coffee Seminar

2015 AGU Fall Meeting. “Calibration of the B/Ca proxy in symbiont-bearing planktonic foraminifera for application to the Paleocene-Eocene Thermal Maximum”. [\[Abstract\]](#)

FIELD EXPERIENCE

- Inorganic Geochemist on JR100 Sediment Coring Cruise:
Extending high-resolution paleoclimate records from the Chilean Margin to the Eemian July-Aug. 2019
- Sedimentologist on IODP Expedition 378 Sediment Coring Cruise:
South Pacific Paleogene Paleoclimate Upcoming Jan.-March 2020
- Live Foraminifer Culture Experiments:
Catalina Island, CA & Isla Magueyes, Puerto Rico 2013, 2015
- Field Geology Course: Azores Islands Geology & Biogeography 2017
- Field Geology Course: Bahamas Carbonate Platform Sedimentology 2015
- Geological Field Mapping Course: Catskills Region, NY 2014
- Senior Thesis Research: Carbonate Sediments of the Pluvial Lake Bonneville 2012
- Keck Geology Consortium: Sediment Coring of Lough Carra, Ireland 2012

PROFESSIONAL TRAINING AND WORKSHOPS ATTENDED

- IODP NEXT Workshop: Scientific Ocean Drilling beyond 2020 2019
- RCN Workshops: Cenozoic pCO₂ Reconstructions 2017, 2018
- European Consortium for Ocean Research Drilling Virtual Drillship Training Course 2017
- Individual Foraminifera Analysis Workshop, ICP 2016 2016
- Urbino Summer School in Paleoclimatology 2015
- PADI Rescue Diver Certification 2014

PROFESSIONAL SERVICE

- Session Convener, Goldschmidt Geochemistry Conference: “Dynamics and Mechanisms of Warm Climates & Climate Transitions” 2018
- Lamont-Doherty Professional Conduct Committee Member 2018-2019
- Lamont-Doherty Colloquium Steering Committee Member 2017-2018
- Lamont-Doherty Gender and Diversity Group Programming: Led Harassment in Fieldwork Discussion, “Speed Mentoring” Event 2017, 2018
- Chevron Student Initiative Fund Proposal Review Panel 2016-2018
- Graduate Student Committee co-Chair 2014-2016
- Reviewer, *Paleoceanography and Paleoclimatology*, *Geochimica et Cosmochimica Acta*, *Journal of Oceanology & Limnology*

OUTREACH AND SCIENCE COMMUNICATION

- School of the Future, NYC: Climate Science Expert Class Visitor 2018
- Girl's Science Day Volunteer: Sediment Coring, Ocean Acidification Experiments 2013, 2014, 2018
- “Ask a Climate Scientist” Day with the Climate Museum 2018
- Lamont Doherty Open House 2016, 2017, 2018
- Port Chester High School Science Research Program Symposium Guest Speaker 2017
- Workshop on Journalism and Climate: The Brown Institute for Media Innovation Fall, Spring 2017
- St. Thomas Aquinas Earth Day Fair 2015
- The Hastings Pre-School Geology Visitor 2014

CONFERENCE ABSTRACTS

**Summer REU Undergraduate Student

Haynes, L.L., Hönisch, B., Holland, K., Eggins, S.E., and Rosenthal, Y. “Carbon system influences on the planktic foraminiferal Mg/Ca proxy in low seawater Mg/Ca”. Submitted to the American Geophysical Union (AGU) Fall Meeting, 2019.

Harper, D.T., Hönisch, B., Zeebe, R.E., **Haynes, L. L.**, and Zachos, J. “Long-term trends and orbital variability in late Paleocene and early Eocene (LPEE) climate, carbonate chemistry and planktic foraminiferal Mg/Ca”. Submitted to the AGU Fall Meeting, 2019.

Ford, H., **Haynes, L.L.**, Farmer, J. R., Hönisch, B., & Raymo, M.E. “A view from the North Pacific: seawater δ¹⁸O and B/Ca records over the Mid-Pleistocene Transition”. AGU Fall Meeting, 2018. (Poster)

Harper, D., Hönisch, B., Zeebe, R., **Haynes, L.L.**, Thomas, E., and Zachos, J.C. “Surface Ocean Acidification across Eocene Thermal Maximum-2 (ETM-2)”. AGU Fall Meeting, 2018. (Poster)

Izaguirre, I., **Haynes, L.L., and Hönisch, B. “B/Ca derived deep Pacific carbonate ion saturation across the Mid-Pleistocene Transition”. AGU Fall Meeting, 2018. (Poster)

Haynes, L.L. Hönisch, B., Farmer, J., Clementi, V., Ford, H.L., Raymo, M., Goldstein, S.L., Pena, L.D., Yehudai, M., Bickert, T., and Lea, D.W. “The Deep Ocean Carbon System Across the Mid-Pleistocene”. Goldschmidt Geochemistry Conference, Boston, MA, 2018. (Talk) [\[Abstract\]](#)

Hönisch, B., Harper, D., **Haynes, L.L.**, Zachos, J.C. and Zeebe, R.E. “Ocean Acidification and Carbon Cycle Perturbations across Eocene Hyperthermals”. Goldschmidt Geochemistry Conference, Boston, MA, 2018. (Poster) [\[Abstract\]](#)

Le Houedec, S., Erez, J., Rosenthal, Y., **Haynes, L.L.**, Hönisch, B., and Zhou, X. “Calcium concentration controls on shell Na/Ca in cultured planktonic foraminifera (*Globigerina siphonifera*)”. Goldschmidt Geochemistry Conference, Boston, MA, 2018. (Talk) [\[Abstract\]](#)

Haynes, L.L., Hönisch, B., Farmer, J., Ford, H.L., Yehudai, M., Raymo, M., Goldstein, S.L., Pena, L.D., and Bickert, T. “Assessing Deep Ocean Carbon Storage Across the Mid-Pleistocene Transition”. AGU Fall Meeting, 2017. (Poster) [\[Abstract\]](#)

Haynes, L.L., Hönisch, B., Farmer, J., Ford, H.L., Yehudai, M., Raymo, M., Goldstein, S.L., Pena, L.D., and Bickert, T. “Deep Equatorial Atlantic Carbon Storage Across the Mid-Pleistocene Transition”. PAGES Open Science Meeting, Zaragoza, 2017. (Poster)

Haynes, L.L., Hönisch, B., Farmer, J., Ford, H.L., Yehudai, M., Raymo, M., Goldstein, S.L., Pena, L.D., and Bickert, T. “Deep Atlantic Carbonate Chemistry Across the Mid-Pleistocene Transition”. International Conference on Paleoceanography, Utrecht, 2016. (Poster)

Hönisch, B. and **Haynes, L.L.** “Estimating the boron isotope/pH sensitivity in ancient marine carbonates.” International Conference on Paleoceanography, Utrecht, 2016. (Poster)

Clementi, V., **Haynes, L.L., Hönisch, B., Costa, K., and McManus, J. “Testing the benthic foraminiferal B/Ca proxy in a hydrothermal vent environment to determine its validity under extreme conditions”. AGU Fall Meeting, 2016. (Poster) [\[Abstract\]](#)

Hönisch, B., **Haynes, L.L.**, Harper, D.T., Penman, D.E., Holland, K., Rosenthal, Y., and Zachos, J.C. “Deciphering the boron proxy records of the Paleocene-Eocene Thermal Maximum”. AGU Fall Meeting, 2016. (Poster) [\[Abstract\]](#)

Yehudai, M., Kim, J., Seguí, M.J., Goldstein, S.L., Pena, L.D., **Haynes, L.L.**, Hönisch, B., Farmer, J.R., Ford, H.L., Raymo, M.E., and Bickert, T. “Changes in Equatorial Atlantic Ocean Thermohaline Circulation across the Mid-Pleistocene Transition”. AGU Fall Meeting, 2016. (Poster) [\[Abstract\]](#)

Farmer, J., Hönisch, B., **Haynes, L.L.**, Kroon, D., Bell, D.B., Jung, S., Jaume-Seguí, M.E., Raymo, M.E., Goldstein, S., Pena, D. “Trace element evidence for abrupt changes in deep South Atlantic Ocean nutrient and carbonate chemistry across the Mid-Pleistocene Transition”. AGU Fall Meeting, 2016. (Poster) [\[Abstract\]](#)

Rosenthal, Y., Woodard, S.C., Evans, D.A., **Haynes, L.L.**, Sosdian, S.M., Lear, C.H., Hönisch, B., and Erez, J., “Did the mid Pliocene warmth bring the Northern Hemisphere Chill?” AGU Fall Meeting, 2015. (Talk) [\[Abstract\]](#)

Allen, K.A., Hönisch, B., Eggins, S.M., **Haynes, L.L.**, Rosenthal, Y., & Yu, J. “Sr/Ca of planktic foraminiferal calcite varies with pH and DIC in culture experiments”. Geological Society of America Annual Meeting, 2015. (Poster) [\[Abstract\]](#)

Haynes, L.L., Hönisch, B., Eggins, S.M., Holland, K., Rosenthal, Y. “Calibration of the B/Ca proxy in cultured *O. universa* tests under Paleogene seawater conditions”. AGU Fall Meeting, 2014 (Poster) [\[Abstract\]](#)

Haynes, L.L., Hönisch, B., Eggins, S.M., Holland, K., Baptist, C.B., “Calibration of the B/Ca proxy in cultured *O. universa* tests during simulated Paleocene-Eocene ocean acidification”. Gordon Research Conference on Ocean Global Change Biology, 2014 (Poster)

Ku, T. C. W., Shackleton, S., Martini, A.M., **Haynes, L.L.**, Gaffey, R., Donovan, A. “The carbon isotope record and early diagenesis of marl lake sediments, Lough Carra, Ireland”. Geological Society of America Annual Meeting, 2013. (Talk) [\[Abstract\]](#)

Haynes, L.L. and Gaines, R. “Stratigraphy, geochemistry, and paleoclimatic implications from endogenic marl sediments of the Tule Valley sub-basin of Pleistocene Lake Bonneville”. Geological Society of America Annual Meeting, 2013 (Talk) [\[Abstract\]](#)

Haynes, L.L. and Horton, T. “Stable isotope record of a Metro Cave speleothem for the analysis of Pleistocene and Holocene climate change in Westland, New Zealand”. Geological Society of America Annual Meeting, 2012 (Poster). [\[Abstract\]](#)

SOCIETY MEMBERSHIPS

- The Geochemical Society 2018-Present
- Association for Women Geoscientists 2015-Present
- American Geophysical Union 2013-Present
- Geological Society of America 2012-Present, with lapses