

ROBIN R. DAWSON (nee CANAVAN)

rrdawson@umass.edu

Department of Geosciences
Morrill Science Center II
627 North Pleasant Street
University of Massachusetts
Amherst, MA 01003-9297

CURRENT POSITION

University of Massachusetts Amherst

Amherst, MA

Postdoctoral Research Associate

Sept. 2019 - Present

EDUCATION

Yale University

New Haven, CT

PhD, Geology & Geophysics

Sept. 2012 – May 2019

Dissertation: The Cretaceous Greenhouse: Applications of Clumped Isotopes

University of Wyoming

Laramie, WY

MS, Geology & Geophysics

Sept. 2009 – 2012

Thesis: Cenozoic paleoelevation reconstructions of the Puna Plateau, NW Argentina

Indiana University Geologic Field Station

Cardwell, MT

Field Camp: Geology in the Rocky Mountains

Summer 2008

Macalester College

Saint Paul, MN

BA, *cum laude*, Geology.

Sept. 2004 – May 2008

Honors Thesis: Authigenic cements and rare earth element signatures in microfossil bonebeds
from the Upper Cretaceous Judith River Formation, northcentral Montana

The University of Otago

Dunedin, NZ

Courses: Field Studies and New Zealand Geology, Structural Geology

Feb.-June 2007

GRANTS AND AWARDS

NASA CT Space Grant: \$10,000

2015

Connecticut Space Grant Consortium

Goldschmidt Student Ambassador: Evolution of Earth's Environment

2015

Appointed by the European Association of Geochemistry & The Geochemical Society

NSF USSP Scholarship

2014

Awarded by the Urbino Summer School in Paleoclimatology	
AAPG 2014 Grants-in-Aid: \$2,750	2014
Awarded by the American Association of Petroleum Geologists	
GSA 2014 Graduate Student Research Grant: \$900	2014
Awarded by the Committee on Research Grants of the Geological Society of America	
Yale Institute for Biospheric Studies Small Grants: \$3,000	2013
Awarded by the Yale Institute for Biospheric Studies	
John F. Enders Fellowship: \$600	2013
Awarded by Yale University Graduate School of Arts & Sciences	
GSA 2011 Graduate Student Research Grant: \$3,000	2011
Awarded by the Committee on Research Grants of the Geological Society of America	
Arts and Sciences Independent Study Award: \$3,000	2011
Awarded by the University of Wyoming College of Arts and Sciences	
AWG 2011 Outstanding Woman Student Award	2011
Presented by the Association for Women Geoscientists Laramide Chapter	
Judson Mead Scholarship: \$300	2008
Awarded by Indiana University Field Camp	
Wallace Grant: \$3,500	2007
Awarded by Macalester College	
Beltmann Grant: \$3,500	2006
Awarded by Macalester College	

RESEARCH EXPERIENCE

Yale University New Haven, CT
Graduate Researcher; Advisors: Pincelli M. Hull, Mark Pagani 2012-Present
and Hagit P. Affek

Clumped isotope (Δ_{47}) analysis of modern and fossil carbonates

- Off-line sample prep via phosphoric-acid digestion, vacuum-line and Gas-Chromatograph separation techniques to purify CO₂
- Analysis of CO₂ on a MAT-253 dual-inlet mass spectrometer

Train new users (fellow students, visiting researchers, and lab personnel) on use of vacuum-line, and peripherals for Δ_{47} mass spectrometer analysis.

Utilization of various diagenetic screening techniques for fossil carbonates

- Identification of microstructure using petrographic and scanning electron microscopy (SEM)
- Bulk trace metal analysis on a ICP-MS
- Cathodoluminescent imaging to characterize distribution of trace metals (e.g. Fe, Mn)

University of Wyoming Laramie, WY
Graduate Researcher; Advisor: Mark Clementz 2009-2012

Stable isotope (δD) analysis of hydrated volcanic glass to reconstruct the paleoelevation of the Andes

- Physical (Wilfley table), magnetic (Frantz) and heavy liquid separation (lithium polytungstate & methylene iodide) of glass and zircons
- U/Pb analysis on LA-ICP-MS at University of Arizona LaserChron Center
- TCEA couple with GC-IRMS analysis of δD of hydrated volcanic glass
- Preparation for field season in Puna Plateau, Argentina, measuring section and cataloguing sampled volcanic tuffs and ignimbrites

Macalester College

Saint Paul, MN

Student Researcher; Advisor: Raymond R. Rogers

2005-2008

Characterization of taphonomic signatures of microfossil bone beds from the Cretaceous of Montana

- Petrographic and SEM imaging of microfossil bone beds from fluvial and floodplain deposits
- Rare-earth-element characterization of fluvial and floodplain bone bed samples using LA-ICP-MS

TEACHING EXPERIENCE

Yale University

New Haven, CT

Teaching Fellow: Natural Disasters (aka Physical Geology)

Fall 2013, 2017

- Primary responsibilities: Grading homework and holding office hours for problem-sets

Teaching Fellow: Forensic Geoscience

Spring 2015, Fall 2012

- Primary responsibilities: Assist in teaching 2 lab practica/semester, hold office hours for help with weekly readings and presentations, grade final papers

Teaching Fellow: History of Life (aka Historical Geology)

Spring 2013, 2014

- Primary responsibilities: Assist in teaching lab practica on fossil morphology, paleoecology, micropaleontology and Cenozoic mammals, develop class discussion activities, grade exams and term papers.

University of Wyoming

Laramie, WY

Teaching Assistant: Principles of Paleontology

Spring 2012

- Primary responsibilities: Teach weekly 2 hour laboratory section for corresponding lecture section of class. Help develop take-home exercises, assemble appropriate fossil specimens for weekly lesson, created introductory lectures, weekly labs and 2 lab exams on fossil morphology, functional/environmental interpretations, and evolutionary history.

Upper Missouri River Breaks National Monument Interpretive Center

Fort Benton, MT

Education Specialist, GeoCorps America Program – MT BLM

Summer 2009, 2010

- Primary responsibilities: Instruct volunteer docents, develop education programs, lead geology field trips and run programs for youth group trips to interpretive center on local Central Montana geology.

RELATED PROFESSIONAL EXPERIENCE

Co-President of Local-33, Unite Here, Yale Graduate Student Union

- Work with other graduate students and administrators across the university on issues such as better mental health coverage, increasing racial and gender diversity and accessibility, secure funding and teaching positions for graduate student teachers

Graduate Student Assembly Representative to the Yale Presidential Carbon Charge Task Force (2014-2015)

- Work with administrators and faculty members on the feasibility and effectiveness of an internal carbon pricing mechanism as part of Yale University's sustainability efforts

Urbino Summer School in Paleoclimatology (2014)

- Attended 2.5 week intensive course on paleoclimate proxies and modeling techniques

Fundamentals of Teaching in the Sciences: A Yale Graduate Teaching Center Workshop Series (Fall, 2012)

- Attended 4 week (1.5 hr/week) workshop series on effective teaching of undergraduates
- Each week focused on different topics including:
 - Setting standards, policies, and goals
 - Structuring class/lab time and different learning/teaching styles
 - Promoting critical thinking and active learning to engage students
 - Effective grading, assessment and feedback

PROFESSIONAL ASSOCIATIONS

Geological Society of America
American Geophysical Union
The Geochemical Society

CONFERENCE PRESENTATIONS

Dawson, R.R., Affek, H., Elder, L.E., Bostock, H., Goldklang, M., Pagani, M., Hull, P.M., Cretaceous Tropical Sea Surface Temperatures from Bulk Foraminiferal Clumped Isotope Thermometry. Oral presentation delivered at Goldschmidt, Session No. 08g, Advances in paleoclimate proxy development and application, August 21, 2019.

Dawson, R.R., Hull, P.M., O'Brien, C.L., Pagani, M., Sageman, B.B., McGregor, D.A., Ivany, L.C., Landman, N.H., Cochran, J.K., Affek, H.P. Evolution of Late Cretaceous Meridional Temperature Gradients. Oral presentation delivered at the Geological Society of America's Annual Meeting, November 7, 2018.

Canavan, R.R., Hull, P.M., Elder, L.E., Goldklang, M., Affek, H.P., Pagani, M. Carbonate clumped isotope thermometry of bulk planktonic foraminifera. Oral presentation

delivered at Goldschmidt, Session No. 10a, Geochemical proxies in marine biogenic carbonates: new developments and applications to global change, August 18, 2017.

Canavan, R.R., McGregor, D.A., Affek, H.P., Ivany, L., Pagani, M. Clumped isotope sea surface temperature estimates: analysis of paleoclimate and diagenesis. Oral presentation delivered at Goldschmidt, Session No. 08c, Environmental Proxies in Marine Carbonates: From Culturing Experiments to Archives and Diagenetic Alteration, August 21, 2015.

Canavan, R.R., Field, D.J., Therrien, F., Zelenitsky, D., Affek, H.P. Clumped isotope paleothermometry of eggshells as an indicator of vertebrate endothermy. Poster presentation delivered at the American Geophysical Union Fall Meeting, December 18, 2014.

Canavan, R.R., Affek, H.P., Zaarur, S., Douglas, P.M. and Wang, Z. The calibration of clumped-isotope thermometry on modern marine mollusks. Poster presentation delivered at the American Geophysical Union Fall Meeting, December 9, 2013.

Canavan, R.R., Clementz, M.T., Carrapa, B., Quade, J., DeCelles, P., and Schoenbohm, L. Paleoelevation of the Puna Plateau, Northwestern Argentina inferred from geochemical analyses of volcanic glass. Oral presentation delivered at the Geological Society of America Annual Meeting in Minneapolis, Session No. 224, Paleoclimatology/Paleoceanography, October 12, 2011.

PUBLICATIONS IN PREPARATION

Dawson, R.R., Hull, P.M., Elder, L.E., Affek, H.P., Goldklang, M., Pagani, M. Carbonate Clumped Isotope Thermometry of Bulk Planktonic Foraminifera. (In prep.)

Dawson, R.R., Hull, P.M., O'Brien, C.L., Pagani, M., Sageman, B.B., McGregor, D.A., Ivany, L.C., Landman, N.H., Cochran, J.K., Petersen, S.V., Affek, H.P. Evolution of Late Cretaceous meridional temperature gradients. (In prep.)

PEER-REVIEWED PUBLICATIONS

Dawson, R.R., Field, D.J., Hull, P.M., Zelenitsky, D.K., Therrien, F., Affek, H.P. (in press) Eggshell geochemistry reveals ancestral metabolic thermal regulation in Dinosauria. *Science Advances*.

Laurin, J., Barclay, R.S., Sageman, B.B., **Dawson, R.R.**, Pagani, M., Schmitz, M., Jeffrey Eaton, J., McInerney, F.A., McElwain, J.C. (2019). Terrestrial and marginal-marine record of the mid-Cretaceous Oceanic Anoxic Event 2 (OAE 2): High-resolution framework, carbon isotopes, CO₂ and sea-level change. *Palaeogeography, Palaeoclimatology, Palaeoecology* 524:118–136.

- Quade, J., Dettinger, M.P., Carrapa, B., DeCelles, P., Murray, K.E., Huntington, K.W., Cartwright, A., **Canavan, R.R.**, Gehrels, G., Clementz, M. (2015). The growth of the central Andes, 22°S-26°S. *The Geological Society of America Memoir*. 212:277-308.
- Carrapa, B., Huntington, K.W., Clementz, M., Quade, J., Bywater-Reyes, S., Schoenbohm, **Canavan, R.R.** (2014). Uplift of the Central Andes of NW Argentina associated with upper crustal shortening, revealed by multiproxy isotopic analyses. *Tectonics*. 33:1039-1054.
- Canavan, R.R.**, Carrapa, B. Clementz, M.T., Quade, J., DeCelles, P.G., Schoenbohm, L.M. (2014). Early Cenozoic uplift of the Puna Plateau, Central Andes, based on stable isotope paleoaltimetry of hydrated volcanic glass. *Geology*. 42:447-450.
- Rogers, R.R., Fricke, H.C., Addona, V., **Canavan, R.R.**, Dwyer, C.N., Harwood, C.L., Koenig, A.E., Murray, R., Thole, J.T., Williams, J. (2010). Using laser ablation-inductively coupled plasma-mass spectrometry (LA-ICP-MS) to explore geochemical taphonomy of vertebrate fossils in the Upper Cretaceous Two Medicine and Judith River Formations of Montana. *PALIOS*. 25:183-195.

REFERENCES

Pincelli M. Hull, Ph.D.
Assistant Professor
Geology & Geophysics
Yale University
pincelli.hull@yale.edu

Hagit P. Affek, Ph.D.
Associate Professor
Herrmann Institute of Earth Sciences
The Hebrew University of Jerusalem
hagit.affek@mail.huji.ac.il

Mark T. Clementz, Ph.D.
Professor
Geology & Geophysics
University of Wyoming
mclemen1@uwyo.edu