

Department of Geology
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Rhawn F. Denniston

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Education

Ph.D., Geosciences, University of Iowa, 2000
M.S., Earth & Planetary Science, University of New Mexico, 1995
B.A., Geology, Hamilton College, 1991

Professional Experience

Cornell College

W.H. Norton Professor of Geology, 2017-present; Professor, 2013–16; Associate Professor, 2006–13;
Assistant Professor, 2000–06
Chair, Department of Geology, 2003–06; 2009–12; 2014–15; 2016-18
Chair, Environmental Studies Program, 2001 – present

External Appointments

Executive Committee, Center for Global and Regional Environmental Research, 2016-present
Affiliate Associate Professor, Geological & Atmospheric Science, Iowa State University, 2016–present
Visiting Scientist, Earth and Planetary Sciences, University of New Mexico, 2006–07
Adjunct Assistant Professor, Earth & Environmental Science, University Iowa, 2001–present

Course Offerings

Dynamic Earth (GEO 111)	Climate Change (GEO 122)
Advanced Paleoclimatology (GEO 322)	Environmental Perspectives (ENV 101)
Geology of New Zealand (GEO 329)	Hydrogeology (GEO 320/ENV 301)
Tectonics (GEO 214)	

Published Manuscripts (Last 10 Years; Undergraduate Authors in **Red**)

Denniston, R.F., **Houts, A.N.**, Asmerom, Y., Wanamaker, Jr., A.D., Haws, J.A., Polyak, V.J., Thatcher, D.L., **Altan-Ochir, S.**, **Borowski, A.C.**, Breitenbach, S.F.M., Ummenhofer, C.C., Regala, F.T., Benedetti, M.M., and Bicho, N. (2018) A stalagmite test of North Atlantic SST and Iberian hydroclimate linkages over the last two glacial cycles, *Climate of the Past*, 14, 1-21.

PAGES Flood Working Group Consortium: Wilhelm, B., Baker, V., Ballesteros, C.J.A., Barriendos, M., Benito, G., Brauer, A., Corella, J.P., Denniston, R., Glaser, R., Ionita, M., Kahle, M., Tao, L., Luetscher, M., Madonald, N., Macklin, M., Mudelsee, M., Manoz, Schulte, L., St. George, S., Markus, S., Toonen, W.H.J, and Oliver, W. (2018). Interpreting historical, botanical, and geological evidence to aid preparations for future floods. *WIREs Water*, 10.1002/wat2/1318.

Denniston, R.F., Asmerom, Y., Polyak, V.J., Wanamaker, A.D., Ummenhofer, C.C., Humphreys, W.F., Cugley, J., Woods, D., and **Lucker, S.L.** (2017) Short Communication: Decoupling of monsoon activity across the northern and southern Indo-Pacific during the Late Glacial. *Quaternary Science Reviews*, 176, 101-105.

Lachniet, M.L., Asmerom, Y., Polyak, V.J., and Denniston, R.F. (2017) Arctic cryosphere and Milankovitch forcing of Great Basin paleoclimate. *Scientific Reports*, 7:12955; doi: 10.1038/s41598-017-13279-2.

Denniston, R.F. and Luetscher, M. (2017) Invited Review: Speleothems as high-resolution paleoflood archives. *Quaternary Science Reviews*, 170, 1-13.

Weiss, T.L., Denniston, R.F., Wanamaker, A.D., Jr., Villarini, G., von der Heydt, A.S. (2017) ENSO-like variability at the Miocene/Pliocene transition recorded in a Caribbean coral. *Geology*; 45, 643-646.

- Denniston, R.F., Ummenhofer, C.C., Wanamaker, A.D., Jr., Lachniet, M.S., Villarini, G., Asmerom, Y., Polyak, V.J., **Passaro, K.J.**, Cugley, J., Woods, D., Humphreys, W.F. (2016) Expansion and contraction of the Indo-Pacific tropical rain belt over the last three millennia. *Scientific Reports*, 6, 34485; doi: 10.1038/srep34485.
- Villarini, G. and Denniston, R.F. (2016) Contribution of tropical cyclones to extreme rainfall in Australia. *International Journal of Climatology*, 36, 1019-1025; doi: 10.1002/joc.4393.
- Denniston, R.F., Villarini, G., **Gonzales, A.N.**, Polyak, V.J., Ummenhofer, C.C., Lachniet, M.S., Wanamaker, A.D., Jr., Humphreys, W.H., Woods, D., and Cugley, J. (2015) Reply to Nott: Assessing Biases in Speleothem Records of Flood Events. *Proceedings of the National Academy of Sciences of the United States of America*, 112.
- Denniston, R.F., Villarini, G., **Gonzales, A.N.**, Wyrwoll, K-H, Polyak, V.J., Ummenhofer, C.C., Lachniet, M.S., Wanamaker, A.D., Jr., Humphreys, W.H., Woods, D., and Cugley, J. (2015) Extreme rainfall activity in the Australian tropics reflects changes in the El Niño/Southern Oscillation over the last two millennia. *Proceedings of the National Academy of Sciences of the United States of America*, 112:15, 4576-4581; doi/10.1073/pnas.1422270112.
- Sedlacek, A.R.C., Saltzman, M.R., Algeo, T.J., Horacek, M., Brandner, R., Foland, K, and Denniston, R.F. (2014) Strontium isotope stratigraphy from the Early Triassic of Zal, Iran: linking temperature to weathering rates and prolonged recovery. *Geology* 42, 779-782. doi:10.1130/G35545.1
- Lachniet, M.L., Denniston, R.F., Asmerom, Y., and Polyak, V.J. (2014) Orbital control of southwestern North America atmospheric circulation and climate over two glacial periods. *Nature Communications*, 5:3805; doi: 10.1038/ncomms4805.
- Denniston, R.F., Wyrwoll, K.-H., Polyak, Brown, J. Asmerom, Y., Wanamaker, A. Jr., LaPointe Z., **Ellerbroek, R., Barthelmes, M., Cleary, D.**, Cugley, J., Woods, D., Humphreys, W. (2013) A Stalagmite Record of Holocene Indonesian-Australian Summer Monsoon Variability from the Australian Tropics. *Quaternary Science Reviews* 78, 155-168; 10.1016/j.quascirev.2013.08.004.
- Denniston, R.F., Asmerom, Y., Lachniet, M., Polyak, V., Hope, P., **An, N., Rodzinyak, K.**, and Humphreys, W. (2013) A Last Glacial Maximum Through Middle Holocene Stalagmite Record of Coastal Western Australia Climate. *Quaternary Science Reviews* 77 101-112; 10.1016/j.quascirev.2013.07.002.
- Denniston, R.F., Wyrwoll, K.-H., Asmerom, Y., Polyak, V.J., Humphreys, W., Cugley, J., Woods, D., **Peota, J.** and **Greaves, E.** (2013) North Atlantic Forcing of Millennial-Scale Australian Monsoon Variability during the Late Glacial. *Quaternary Science Reviews* 72, 159-168.
- Polyak, V. and Denniston, R. (2011) Paleoclimate Records in Caves *In* Culver, D. and White, W. (Eds). *Encyclopedia of Caves*, 2nd edition, Elsevier.
- Haws, J. Funk, C., Benedetti, M., Bicho, N., Daniels, J., Minckley, T., Denniston, R., Jeraj, M., Gibaja, J. and Hockett, B. (2011) Paleolithic seascapes along the west coast of Portugal *In* Bicho, N., Haws, J., and Davis, L. (Eds). *Trekking the Shore: Changing Coastlines and the Antiquity of Coastal Settlement*. Springer, 450 p.
- Denniston, R.F., **Penn, S.C.**, Carpenter, S.J., and Budd, A.F. (2008) Constraints on Late Miocene Shallow Marine Seasonality for the Central Caribbean using $d^{18}O$ and Sr/Ca Ratios in a Fossil Coral. *In* Nehm, R.H. and A. F. Budd (Eds). *Evolutionary Stasis: Species and Communities through Geological Time*. Springer: New York, pp. 47-52.
- Denniston, R.F., Asmerom, Y., Polyak, V., McNeill, D.F., Klaus, J.S., **Cole, P.**, and Budd, A.F. (2008) Caribbean Chronostratigraphy Constrained with U-Pb and $^{87}Sr/^{86}Sr$ Analysis of a Miocene Coral. *Geology*, 36, 151-154.

External Grants

Current

National Science Foundation - Collaborative Research: Bridging the Gap from Northern Iberia to Northwest Africa to Reconstruct Atmospheric Dynamics and Hydroclimate for the Last 2,500 Years, 2018-21, co-PI (lead PI Alan Wanamaker, Iowa State University; co-PIs: C. Ummenhofer, WHOI; Y. Asmerom and V. Polyak, UNM)

National Science Foundation - EAGER: Development of a High-Resolution, Multi-Century Paleofire Reconstruction from Tropical Australian Stalagmites, 2018-19, PI

Center for Global and Regional Environmental Research - The El Niño-Southern Oscillation in a Warming World: Developing Coral Records of Ocean Variability from Past Greenhouse Periods, 2017-18, PI

National Science Foundation - Collaborative Research: Reconstructing Holocene Dynamics of the Indo-Pacific Tropical Rain Belt using Australian Stalagmites and Coupled Climate Models, 2016-19, PI (co-PI's C. Ummenhofer, WHOI; A. Wanamaker, ISU; Y. Asmerom, UNM)

National Science Foundation - RUI: Assessing the Influence of Extreme Rainfall Events on Australian Stalagmite Reconstructions of Tropical Cyclone Landfalls and the Indo-Australian Summer Monsoon, 2015-19, PI

Expired

National Science Foundation - EAGER: Assessing the Viability of Pristine Fossil Corals from the Dominican Republic as Indicators of ENSO at the Miocene/Pliocene Boundary, 2015-19, PI

Center for Global and Regional Environmental Research - Development of a Late Holocene Decadal-Scale Proxy Record of the North Atlantic Oscillation from Portuguese Stalagmites, 2013-14, PI

National Science Foundation - RUI: Reconstruction of Recent and Late Holocene Tropical Cyclone Landfalls in Northwestern Australia using Flood Deposits in Aragonite Stalagmites, 2011-14, PI

Center for Global and Regional Environmental Research - Speleothem Evidence for the Influences of ENSO and Solar Variability on the Holocene Australian Summer Monsoon, 2009-10, PI

Mellon Foundation - Enhancing the Integration of Humanities, Social Sciences, and Natural Sciences in Environmental Studies at Cornell College, 2009-12 (one of two primary authors)

Petroleum Research Fund – Dominican Republic Corals As High-Resolution Records Of Shallow Marine Paleoenvironmental Conditions Prior To Closure Of Panamanian Seaway, 2004-06, PI

National Science Foundation – Acquisition of an Alpha Spectrometry System for Research and Undergraduate Training in Geology and Environmental Science, 2001-02, PI (co-PI B. Greenstein, Cornell College)

National Science Foundation – SGER: Collaborative Research: Timing of Late Holocene Changes in Summer Indian Monsoon Intensity as Recorded in Mineralogic Changes in Speleothems, Pokhara Valley, Nepal, 2000-01 (co-PI Luis Gonzalez, U. Kansas)

Synergistic Activities

Reviewer for the Following Journals (Last Five Years)

Nature, Nature Geoscience, Nature Communications, Scientific Reports, Geology, GSA Bulletin, JGR, EPSL, Quaternary Research, GCA, GRL, QSR, Marine Geology, The Holocene, Geosphere, Paleo³,

Reviewer for the Following Granting Agencies (Last Five Years)

NSF, PRF, Swiss National Science Foundation, German Research Foundation, Royal Society of New Zealand, Iowa Science Foundation

Editorial Assignments - Associate Editor for GEOSPHERE, (four-year term beginning 2015)