

Faculty Directory

The College

AS News

Linda Ivany
Professor, Earth
Sciences and
Director of
Undergraduate
Studies



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Earth Sciences

214

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[Ivany CV](#)

Research and Teaching Interests

Primary fields of research:

Paleoecology, Paleoclimatology - [view my research page](#)

Professor Ivany's work fits broadly into the fields of earth history and paleobiology. Most research projects lie at the intersection of marine paleoecology and paleoclimate, and relate to how ecosystems and their component taxa evolve and respond to changes in the physical environment on a variety of temporal and spatial scales. Many studies incorporate the stable isotopic chemistry of accretionary skeletal hard parts to reconstruct records of life history, seasonality, and environment in deep time.

She has particular interest in the biotic and

climatic evolution of the early Cenozoic, with longstanding projects in the molluscan records of the US Gulf Coastal Plain and Antarctica. Ongoing work on early Permian bivalves relates to the oxygen isotopic composition of seawater in deep time. Other interests include the long-term dynamics of ecological assemblages, including the proposed pattern of coordinated stasis, and how the architecture and composition of the sedimentary record influence metrics of Phanerozoic diversity.

Ivany's research has been funded through the National Science Foundation and the American Chemical Society's Petroleum Research Fund. She has served as both a Distinguished Lecturer and Councilor-at-Large for the Paleontological Society, and is a member and past president of the Board of Trustees for the Paleontological Research Institution in Ithaca NY. She is active in the peer-review process for NSF and a variety of disciplinary journals, including Associate Editor stints with *Geology*, *Geobiology*, and *Paleobiology*.

Courses Taught

First-Year Forum (CAS 101)

Earth Science (EAR 105)

History of Earth and Life (EAR 102)

Introduction to Paleobiology (EAR 325)

Paleoecology (EAR 624)

Geochemical Patterns in the History of Earth and Life (EAR 455/655)

Topics in Paleobiology (EAR 429/629)

Field Methods in the Geological Sciences – field geology taught through the University of Missouri-Columbia during the summers in the Wind River Mountains, WY

Students

Emily Judd (PhD)

Facilities

The Paleoecology Lab at SU features a MerchanteK (New Wave) MicroMill, a microsampling device that allows high-resolution sampling of accretionary biogenic materials for stable isotope analysis. A number of samples can be collected in sequence within a series of growth increments, e.g., in a mollusk shell or coral skeleton, that record intra-annual variation in composition and can allow for the reconstruction of seasonal temperature changes experienced throughout the life of the organism. All of the facilities needed for preparation of samples (sectioning, mounting, polishing) are available in the laboratory, including an Isomet 1000 slow speed saw and Buehler polishing wheel.

Two Brasseler hand-held dental drills with assorted bits can be used for larger samples or lower-resolution sampling. Imaging equipment includes an Olympus SZ61 binocular microscope with a variety of oculars and dedicated digital camera, and a Canon digital SLR camera with several lenses including a 5X macro zoom. In addition, the lab includes facilities for screen-washing bulk samples and cabinets for storage of paleontological collections.

Selected Publications

(*student author; †postdoc author)

Douglas, P.D., Affek, H.P., **Ivany**, L.C., Houben, A.J., Sijp, W.P., Sluijs, A., Schouten, S. Pagani, M. (2014) Pronounced zonal heterogeneity in Eocene southern high-latitude sea surface temperatures. *Proceedings of the National Academy of Sciences USA*, v. 111, p. 6582-6587.

Ivany, L.C. (2012) Reconstructing paleoseasonality from accretionary skeletal carbonates: challenges and opportunities.

In L. C. **Ivany**, and B. T. Huber (Editors),
Reconstructing Earth's Deep-Time Climate.
Paleontological Society Papers, v. 18.

Sessa[†], J.A., **Ivany**, L.C., Schlossnagle*, T.,
Samson, S.D., and Schellenberg, S.A.
(2012) The fidelity of oxygen and strontium
isotope values from shallow shelf settings:
implications for temperature and age
reconstructions. *Palaeogeography,*
Palaeoclimatology, Palaeoecology v. 342-
343, pp. 27-39.

Sessa[†], J.A., Bralower, T.J., Patzkowsky,
M.E., Handley, J.C. and **Ivany**, L.C. (2012)
Environmental and biological controls on the
diversification and ecological reorganization
of Late Cretaceous and early Paleogene
marine ecosystems in the Gulf Coastal Plain.
Paleobiology v. 38, pp. 218-239.

Wall*, P.D., **Ivany**, L.C., and Wilkinson, B.H.
(2011) Impact of outcrop area on estimates
of Phanerozoic terrestrial biodiversity trends.
In A. McGowan and A.B. Smith (Eds.)
*Comparing the Geological and Fossil
Records: Implications for Biodiversity
Studies.* Geological Society of London,
Special Publication 358, p. 53-62.

Ivany, L.C., Brey, T., Huber, M., Buick, D.P.,
and Schöne, B.R. (2011) El Niño in the
Eocene greenhouse recorded by fossil
bivalves and wood from Antarctica.
Geophysical Research Letters. v. 38,
L16709, doi:10.1029/2011GL048635.

Keating-Bitonti*, C.R., **Ivany**, L.C., Affek,
H.P., Douglas, P., Samson, S.D. (2011)
Warm, not super-hot, temperatures in the
early Eocene subtropics. *Geology* v. 39, pp.
771-774.

Visaggi*, C.C. and **Ivany**, L.C. (2010) The
influence of data type and selection on
interpretations of stability in Oligocene
faunas of Mississippi. *Palaios* v. 25, pp.
769-779

Ivany, L.C. and Runnegar, B. (2010) Early
Permian seasonality from bivalve $\delta^{18}\text{O}$ and
implications for the oxygen isotopic
composition of seawater. *Geology* v. 38, pp.
1027-1030.

Haveles*, A.W., and **Ivany**, L.C. (2010)

Rapid growth explains large size of mollusks in the Eocene Gosport Sand, US Gulf Coast. *Palaios* v. 25, pp. 550-564.

Ivany, Linda C., Brett, Carlton E., Wall*, Heather L.B., Wall*, Patrick D., Handley, John C. (2009) Relative taxonomic and ecologic stability in Devonian marine faunas of New York State: A test of coordinated stasis. *Paleobiology*, v. 35, p. 499-524.

Brett, C.E., L.C. **Ivany**, A.J. Bartholomew, M.K. DeSantis, and G.C. Baird. (2009) Devonian ecological-evolutionary subunits in the Appalachian Basin: A revision and a test of persistence and discreteness. In Koenigshof, P. (ed.) *Devonian Change: Case Studies in Palaeogeography and Palaeoecology*. Journal of the Geological Society of London, Special Publication 314, p. 7-34.

Aronson, R.B., Moody, R.M., **Ivany**, L.C., Blake, D.B., Werner, J.E., and Glass, A. (2009) Climate change and trophic response of the Antarctic bottom fauna. *PLoS One*, v. 4, e4385, doi: 10.1371/journal.pone.0004385.

Wall, Patrick D.*, **Ivany**, Linda C., and Wilkinson, Bruce H. (2009) Revisiting Raup: Exploring the influence of outcrop area on diversity in light of modern sample-standardization techniques. *Paleobiology*, v. 35, p. 149-170.

Allmon, W.D., Morris, P.J., Ivany, L.C. (2009) A tree grows in Queens: Stephen Jay Gould and ecology. In W.D. Allmon (ed.) *His View of Life*. New York: Oxford University Press, pp. 147-170.

Ivany, L.C., Lohmann, K.C, Blake, D.B., Hasiuk, F., Aronson, R.B., Glass, A., and Moody, R. (2008) Eocene climate record of a high southern latitude continental shelf: Seymour Island, Antarctica. *GSA Bulletin*, V. 120, no. 5/6, p. 659-678.

Alroy, John, and the NCEAS Marine Invertebrate Working Group (2008) Phanerozoic trends in the global diversity of marine invertebrates. *Science*, v. 321, p. 97-100.

Allmon, W.D. and **Ivany**, L.C. (2008) Testing

for causal relationships between environmental and evolutionary change in the marine Paleogene of the US Gulf Coastal Plain: The nature of the problem. Transactions of the Gulf Coast Association of Geological Societies, v. 58, p. 25-44.

Ivany, L.C. 2007. Contributions to the Eocene climate record of the Antarctic Peninsula. in Antarctica: A Keystone in a Changing World – Online Proceedings of the 10th International Symposium on Antarctic Earth Sciences X, edited by A. K. Cooper and C. R. Raymond et al., USGS Open-File Report 2007-1047, Extended Abstract 068, p. 1-4.

Ivany, Linda C., Van Simaey, Stefaan, Domack, Eugene W., Samson, Scott D. (2006) Evidence for an earliest Oligocene ice sheet on the Antarctic Peninsula. Geology, v. 34, p. 377-380.

De Man, Ellen M.* , **Ivany**, Linda C., and Vandenberghe, Noël (2004) Stable oxygen isotope record of the Eocene-Oligocene transition in the southern North Sea Basin: positioning the Oi1-event. The Netherlands Journal of Geosciences, v. 83, pp 193-197.

Buick, Devin P.* and **Ivany**, Linda C. (2004) 100 years in the dark: extreme longevity of Eocene bivalves from Antarctica. Geology, v. 32, pp. 921-924. **Ivany**, Linda C., Peters, Stephen C., Wilkinson, Bruce H., Lohmann, Kyger C, Reimer, Beth A.* (2004) Seawater Sr/Ca and Mg/Ca records from an Oligocene coral. Geobiology, v. 2, pp. 97-106.

Kobashi, Takuro, Grossman, Ethan L., Dockery, David T., and **Ivany**, Linda C. (2004) Watermass stability reconstructions from greenhouse (Eocene) to icehouse (Oligocene) for the northern Gulf Coast continental shelf (U.S.A.). Paleoceanography, v. 19, PA 1022, doi: 10.1029/2003PA000934 (16 pages).

Ivany, Linda C., Wilkinson, Bruce W., Lohmann, Kyger C, Johnson, Emily R., McElroy, Brandon J., and Cohen, Gregory J.* (2004) Intra-annual isotopic variation in *Venericardia* bivalves: Implications for early Eocene climate, seasonality, and salinity on the US Gulf Coast. Journal of Sedimentary

Ivany, Linda C., Lohmann, Kyger C, and Patterson, William P. (2003) Paleogene temperature history of the US Gulf Coastal Plain inferred from fossil otoliths. In Prothero, D., Ivany, L.C., and Nesbitt, E. (eds) From Greenhouse to Icehouse: The Marine Eocene-Oligocene Transition. New York: Columbia University Press, pp. 232-251.

Ivany, Linda C., Nesbitt, Elizabeth A., and Prothero, Donald R. (2003) The marine Eocene-Oligocene transition: a synthesis. In Prothero, D.R., Ivany, L.C., and Nesbitt, E.A. (eds) From Greenhouse to Icehouse: The Marine Eocene-Oligocene Transition. New York: Columbia University Press, pp. 522-534.

Prothero, Donald, **Ivany**, L.C., and Nesbitt, Elizabeth (Editors) (2003) From Greenhouse to Icehouse: The Marine Eocene-Oligocene Transition. New York: Columbia University Press, 541 p.

Ivany, Linda C., Wilkinson, Bruce H., and Jones, Douglas S. (2003) Using stable isotopic data to resolve rate and duration of growth throughout ontogeny: an example from the surf clam, *Spisula solidissima*. *Palaaios* 18, pp. 126-137.

Wilkinson, Bruce H. and **Ivany**, Linda C. (2002) Paleoclimatic inference from stable isotopic compositions of accretionary biogenic hardparts – a quantitative approach to the evaluation of incomplete data. *Palaeogeography, Palaeoclimatology, Palaeoecology*, 185, pp. 95-114.

Bonuso, Nicole B., Newton, Cathryn R., Brower, James C., and **Ivany**, Linda C. (2002) Does coordinated stasis yield taxonomic and ecologic stability? Middle Devonian Hamilton Group of Central New York State. *Geology* 30, pp. 1055-1058.

Bonuso, Nicole B., Newton, Cathryn R., Brower, James C., and Ivany, Linda C. (2002) Statistical testing of community patterns: Uppermost Hamilton Group, Middle Devonian (New York State, U.S.A.). *Palaeogeography, Palaeoclimatology, Palaeoecology*, 185, pp.1-24.

Walker, Luke J., Wilkinson, Bruce H., and **Ivany**, Linda C. (2002) Continental drift and Phanerozoic carbonate accumulation in shallow shelf and deep marine settings. *Journal of Geology* 110, pp 75-87.

Alroy, John, and the NCEAS Phanerozoic Diversity Working Group (2001) Effects of sampling standardization on estimates of Phanerozoic marine diversification. *Proceedings of the National Academy of Sciences USA*, 98(11), pp. 6261-6266.

Ivany, **Linda C.**, Patterson, William P., and Lohmann, Kyger C (2000) Cooler winters as a possible cause of mass extinctions at the Eocene-Oligocene boundary. *Nature*, 407, pp. 887-890.

Ivany, Linda C. (1998) Sequence stratigraphy of the middle Eocene Claiborne Stage, US Gulf Coastal Plain. *Southeastern Geology*, 38(1), pp. 1-20.

Schopf, Kenneth M. & **Ivany**, Linda C. (1998) Scaling the ecosystem: a hierarchical view of stasis and change, in McKinney, Michael L. and Drake, James A. (eds) *Biodiversity Dynamics: Turnover of Populations, Taxa, and Communities*. Columbia University Press, New York, pp. 187-211.

Ivany, Linda C. (1996) Coordinated stasis or coordinated turnover? Exploring intrinsic versus extrinsic controls on pattern. *Palaeogeography, Palaeoclimatology, Palaeoecology*, Volume 127(1-4), pp. 239-256.

Brett, Carlton E., **Ivany**, Linda C., & Schopf, Kenneth M. (1996) Coordinated stasis in marine communities: an overview. *Palaeogeography, Palaeoclimatology, Palaeoecology*, Volume 127(1-4), pp. 1-20.

Ivany, Linda C. & Schopf, Kenneth M. (Editors) (1996) "New perspectives on faunal stability in the fossil record", a theme issue of *Palaeogeography, Palaeoclimatology, Palaeoecology*, Volume 127, no. 1-4.

Morris, Paul J., **Ivany**, Linda C., Schopf, Kenneth M., & Brett, Carlton E. (1995) The challenge of paleoecological stasis:

Reassessing sources of evolutionary stability. Proceedings of the National Academy of Sciences USA, Volume 92, no. 24, pp. 11269-11273.

Ivany, Linda C., Newton, Cathryn R., & Mullins, Henry T. (1994) Benthic invertebrates of a modern carbonate ramp: a preliminary survey. Journal of Paleontology, Volume 68, pp. 417-433.

Ivany, Linda C. & Salawitch, Ross J. (1993) Carbon isotopic evidence for biomass burning at the K-T boundary. Geology, Volume 21, pp. 487-490

Ivany, Linda C., Portell, Roger W., & Jones, Douglas S. (1990) Animal-plant relationships and paleobiogeography of an Eocene seagrass community from Florida. Palaios, Volume 5, pp. 244-258.

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