Julie C. Libarkin

Geocognition Research Lab
Michigan State University

Affiliations with Michigan State University Centers and Programs:
Cognitive Science Program, Environmental Science and Policy Program, CREATE for STEM Institute for Research on Mathematics and Science Education

CONTACT:

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CURRENT POSITION

Associate Professor, Director of Geocognition Research Lab: Michigan State University
Research focusing on geocognition, assessment of student learning, validity and reliability in assessment, curriculum and visual design. Includes assessment of learning across MSU integrative studies programs in natural science, social science, and arts & humanities.

EDUCATION

Ph.D., 1999 **The University of Arizona**, Geosciences
B.S., 1994 **College of William and Mary**, Dual major in Physics and Geology

PROFESSIONAL EXPERIENCE

2009-present **Associate Professor**, Geocognition Research Lab, Department of Geological Sciences & Center for Integrative Studies in General Science, Michigan State University.

2012-2015 **Assessment Advisor, Integrative Studies Assessment**, Associate Provost for Undergraduate Studies.

2011-2014 **Director of Educational Research**, Center for Integrative Studies in General Science, Michigan State University.

2011-2012 **Coordinator - Integrative Studies in Physical Science Laboratory**, Center for Integrative Studies in General Science, Michigan State University.

2006-2009 **Assistant Professor**, Department of Geological Sciences & Division of Science and Mathematics Education, Michigan State University.

2003-2006 **Assistant Professor**, Department of Geological Sciences, Ohio University.

2002-2003 **Research Associate**, Science Education Department and Science Media Group, Harvard-Smithsonian Center for Astrophysics.

2000-2002 **National Science Foundation Postdoctoral Fellowship in Science, Mathematics, Engineering, and Technology Education (PFSMETE)**, Science Education Department and Science Media Group, Harvard-Smithsonian Center for Astrophysics.

Spring, 2000 **Adjunct Lecturer**, Department of Geosciences, University of Arizona.

1999-2000 **National Science Foundation Postdoctoral Fellowship (PFSMETE)**, University Learning Center, University of Arizona.

1999	**Teaching Assistant and Workshop Facilitator**, University Learning Center, University of Arizona.
1994-1999	**Teaching Assistant**, Departments of Geosciences and Hydrology, University of Arizona.
1994-1998	**Research/Field Assistant**, Department of Geosciences, University of Arizona.
Summer, 1997	**Summer Intern**, Mobil Exploration and Producing, Houston, TX.
1990-1994	**Junior Fellow**, United States Geological Survey (U.S.G.S.).

HONORS and AWARDS (postgraduate only)

2014-2015	**MSU Global Innovation Fellow***,* MSU Global, Michigan State University.
2014	**MSU-AT&T Instructional Technology Award - First Place in the Fully Online Course Category**, Information Technology Services, Michigan State University. *Recognition for team development of ISB 202-731, Applications of Environmental and Organismal Biology*.
2012	**Teaching Excellence Recognition**, College of Natural Science, Michigan State University. *Recognition of excellent contributions to teaching.*
2012	**Postdoctoral Mentoring Award**, College of Natural Science, Michigan State University. *Recognition of effective mentoring to postdoctoral researchers in both professional development and holistic balance.*
2012	**Outstanding Paper Award**, Journal of Geoscience Education. Inaugural award for *Clark, Libarkin, Kortz, and Jordan, 2011, How well do non-science undergraduates understand basic plate tectonic concepts?*
2010	**Meritorious Faculty Award**, College of Natural Science, Michigan State University. *Recognition of demonstrated excellence in the areas of teaching, research, and service.*
2008	**Lorena V. Blinn Endowed Teaching Award**, College of Natural Science, Michigan State University. *Recognition of a teacher in Natural Science that shows special care in regards to teaching students.*
2007	**Shea Award**, National Association of Geoscience Teachers. *Recognition of exceptional contributions in the form of writing and/or editing of Earth Science materials.*
2005-2008	**Distinguished Speaker**, The National Association of Geoscience Teachers (NAGT) Distinguished Lecturer Series
1999	Wakonse Teaching Conference **Fellowship**, Arizona Chapter

TEACHING EXPERIENCE (Ohio University and Michigan State University)

Undergraduate: Introduction to Geology, Geodynamics, Solid Earth Geophysics, Paleomagnetism, Climate Change, Natural Hazards, Humans and the Environment Lab

Graduate: College Student Cognition, Teaching Methods in Geological Sciences, Teaching, Learning, and Classroom Management for College Courses, Research Seminar

Online curriculum development: Introduction to Geology, Climate Change, Freshman Seminar on Critical Thinking, MOOC on Foundations of Science

GRANT SUPPORT (postgraduate only): $8.16 million total; $3.27 million to home institutions

Active Grants to Michigan State University					
Title	**Agency**	**Total**	**MSU Total**	**Dates**	**Role and Details**
Applying Multidimensional Item Response Theory Models to Generate an Interconnected Bank of Items for Earth System Science	NSF-IUSE	$225,584	$225,584	8/1/15-7/31/17	PI at MSU; co-PI: R. Bowles
Confronting the Challenges of Climate Literacy	NSF-DRK12	$2.8M	$263,634	9/15/10-10/31/15	PI at MSU; Lead PI T. Ledley at TERC
Grants Under Consideration					
Investigating Entrepreneurship Education as a Means to Developing the 21st Century Engineer	NSF-IUSE	$249,945	*negotiating*		PI at MSU; Lead PI: A. Huang-Saad at Univ. of Michigan
Previous Grants to Michigan State University					
Cultural Validity of Geoscience Assessment	NSF-GEOED	$149,995	$90,684	10/01/10-9/30/14	PI
Automated Analysis of Constructed Response Concept Inventories	NSF-CCLI	$382,601	$382,601	9/01/10-8/31/14	Co-PI; PI: M. Urban-Lurain
The Foundations of Science MOOC	Gates Foundation D2L match	$49,939 $50,000	$49,939	11/1/12-4/01/14	Co-PI; PI: S. Thomas
Evaluation of spatial reasoning and its impact on learning in Organic Chemistry and Biochemistry	MSU – CREATE4 STEM	$40,000	(internal)	9/1/12-5/31/13	Co-PI; PI: T. Kim
Building Global Climate Change Literacy Through Analogical Reasoning	NSF-CCLI	$175,342	$81,848	08/31/10-08/30/13	PI; co-PI: D. Sibley, D. Gentner
Investigation of alternative conceptions about Plate Tectonics across the expert-novice continuum– When a well-known theory isn't so well known	NSF-CCLI	$214,684	$214,684	01/01/09-12/31/12	PI; co-PI: S. Clark
Learning across the Expert-Novice Continuum: Cognition in the Geosciences	NSF-REESE	$998,000	$434,581	04/01/09-12/31/12	PI at MSU; Lead PI at Western Michigan Univ.
The Great Lakes Climate Change Science and Education Systemic Network (GLCCSESN)	NSF-CCEP	$1.0 M	$338,000	09/15/10-09/14/12	PI at MSU. Lead PI at Eastern Michigan Univ.
Earth System Science: A Key to Climate Literacy	NASA-Global Education	$280,000	$15,000	08/31/09-08/30/12	Co-PI; Lead PI T. Ledley at TERC
Evaluating Student Learning in Geoscience Curricula that Employ Conceptests Using Electronic Student Response Systems	NSF-CCLI	$200,000	$77,756	8/1/07-7/31/12	PI at MSU; Lead PI D. Steer at University of Akron.
Community Development of an Expanded Geoscience Concept Inventory: A Webcenter for Question Generation, Validation and Online	NSF-CCLI	$500,000	$331,008	8/16/07-8/31/11	PI; co-PI: S. Anderson, G. Kortemeyer

testing					
Pre-MSU Grants					
Title	**Agency**	**Total**		**Dates**	**Role and Details**
A Multi-Isotope Approach to Cosmogenic Paleoaltimetry	Ohio Univ.	$5000		2005	PI
The Origin and Evolution of Student Conceptions	Ohio Univ.	$6000		2004	PI
Collab. Res.: Miocene Uplift of the Bolivian Altiplano	NSF-GEO	$213,310		2003-2006	Co-PI; PI: Garzione
Oxygen and Cosmogenic Isotope Approaches to Altiplano Paleoaltimetry	NSF-SGER GEO	$9300		2002-2004	Co-PI; PI: Garzione
Conceptual Understanding of Earth Processes in General Education and Introductory Courses: Test Development and Validation	NSF-DUE	$498,984		2001-2005	Lead PI
The Science Education Assessment Project (SEAP): Dissemination of Effective Teaching Methods at the Undergraduate Level	NSF-DGE PFSMETE	$153,000		1999-2002	PI

Grant Proposals – In Review

Title	**Agency**	**Total**	**MSU Total**	**Dates**	**Role and Details**
GEOPATHS-IMPACT: The Geo Tech High School Academy: A combined program of experiential field learning and classroom instruction	NSF-GeoPATHS	$300,000	$122,919	*in review*	Submission 3/16/15 PI at MSU; Lead PI: K. Ellins
Social Capital and Mentoring: Building a Diverse Workforce for Earth System Science in the 21st Century	NSF-CORE	$481,795	$481,795	*in review*	Submission 2/3/15 Lead PI
Examining the Effect of Entrepreneurial Education Pedagogy on the Development of Women in STEM	NSF-REE	$300,000	$98,343	*in review*	Submission 1/22/15 PI at MSU; Lead PI: A. Huang-Saad
Building Better Geoscience Instructors: Using a Geoscience Education Course for Future Faculty as a Mechanism for Sustained Professional Development in Undergraduate Teaching	NSF-IUSE	$2M	$354,610	*in review*	Submission 1/13/15 PI at MSU; Lead PI: D. McConnell
Developing a STEM Entrepreneurship Learning Environment to Build the Innovative Workforce of Tomorrow	NSF-IUSE	$600K	$196,565	*in review*	Submission 1/13/15 PI at MSU; Lead PI: A. Huang-Saad
Investigating Effective Supports for Developing Undergraduate Temporal, Spatial, and Systems Thinking Skills	NSF-IUSE	$600K	$199,039	*in review*	Submission 1/13/15 PI at MSU; Lead PI: T. Ledley
Journalistic and Scientific	NSF-AISL	$298,365	$298,365	*in review*	Submission 11/14/14

Communication of Uncertainty – Identifying Norms and Communicating Best Practices					Co-PI; PI: B. Takahashi
Effective Climate Change Communication: From Physical Exhibits to Augmented Reality	NSF-AISL	$1.6M	$987,556	*in review*	Submission 11/14/14 Collaborative PI; Lead PI: K. McNeal
TV Crawl Motion Best Practices for Crisis Weather Alerts: An Interdisciplinary Approach	NOAA	$84,053	$84,053	*in review*	Submission 9/12/14 Co-PI; PI: J. Ware

SELECTED PROFESSIONAL SERVICE and ACTIVITIES (postgraduate only)

Disciplinary Service

2014-present Guest Editor, GEOSPHERE Themed Issue: Human Dimensions in Geoscience. Published by Geological Society of America
2014-2015 Chair, Geoscience Education Division, Geological Society of America
2014-2015 Joint Technical Program Committee, Geological Society of America
2013-2014 Conference Organizing Committee, MOOCs in STEM: Exploring New Educational Technologies
2013-2014 First Vice-Chair, Geoscience Education Division, Geological Society of America
2012-2013 Second Vice-Chair, Geoscience Education Division, Geological Society of America
2012-present Advising Past Editor and Associate Editor, Journal of Geoscience Education
2009-2011 Advisor, Lawrence Hall of Science, Earth Science Curriculum for Middle School
2009-2011 Editor-in-Chief, Journal of Geoscience Education. Three year term, Jan. 1, 2009 through Dec. 31, 2011
2009-present External committee member for geoscience or science education graduate students, including at Purdue University, University of South Florida, McGill University, and North Carolina State University
2007-2012 Interviewer for Knowles Science Teaching Foundation Fellowships
2006 Reviewer for AAAS Project 2061 Atlas of Scientific Literacy, Earth Resources Concept Map (Fall 2006)
2005-2012 Advisor for Science Media Group productions, including *A Systems Approach to Environmental Science* and *The Habitable Planet*
2004-2005 Associate Editor for Special Issue of Journal of Geoscience Education on *Conceptions, Cognition, and Change: Student Thinking about the Earth*
2002-2008 Associate Editor, Journal of Geoscience Education
2001-2004 Advisor and Contributor, Harvard-Smithsonian Science Media Group (SMG), *Science in Focus: Energy and Motion; Essential Earth Science Series*
2001-2004 NARST Co-Coordinator (Curriculum, Evaluation, and Assessment)
2001-2006 Co-author of review series in Journal of Geoscience Education
2000-present Proposal reviews in select years for NSF (DUE, EAR, SBE), Keck Foundation, and NARST; Panel member in select years for CCLI, REU, DRK-12 grants

University Service

2014-2015 Member, Fate of the Earth 2015 Symposium Organizing Committee
2013-2014 Member, Fate of the Earth 2014 Symposium Organizing Committee
2012-2015 CREATEforSTEM Colloquium Committee

2013-present Chair, Integrative Studies Classroom Assessment Committee
2011-present Research Mentor, Associate Provost for Undergraduate Education Committee on Integrative Studies
2011-2012 Member, University Committee on Data Management
2011 External Review, Neuroscience Program
2010-2011 Search Committee, Director, Institute for Mathematics and Science Education Research (now CREATEforSTEM)

College/Department Service

2014-present Education Research Advisor, CISGS
2014-2015 Member, Search Committee, CISGS/GLG joint hire, MSU
2012-2015 Chair, Awards Committee, Geological Sciences, MSU
2012-2014 Assessment Director, CISGS
2011-2012 Member, Advisory Committee, Geological Sciences, MSU
2010-2015 Co-Facilitator, Faculty Learning Community (FLC) on Assessment and Learning in Integrative Studies in General Science
2010-2012 Search Committees, Disciplinary Science Education & ISP Coordinator, MSU
2009 CRCSTL Director Search Committee, CRCSTL, MSU
2009 Ad Hoc Committee member for CNS Dean's Budget Advisory Committee, MSU
2009 Search Committee, Integrated Studies Program – ISB Coordinator, MSU
2007-2011 Advisory Committee, Michigan State University Center for Research on College Science Teaching and Learning (CRCSTL)
2007-2008 Postdoctoral Fellows Committee, Michigan State University Center for Research on College Science Teaching and Learning (CRCSTL)
2007-2008 Seminar Series Committee and Organizer, Michigan State University Center for Research on College Science Teaching and Learning (CRCSTL)

Community Service & Outreach (selected)

2013-2014 Science Advisor for screenplay, Americana Films, LLC, My Worst Enemy, LLC.
2013 Tsunami Activity, Haslett Robotics Club.
2012 Rivers Activity, Pinecrest Elementary grade 2.
2011 Café Scientifique, "Confusing Climate: The Role of Images in Conveying Climate Change", presentation with Stephen Thomas.
2006-present Individual and group advising related to backward design and assessment in college courses.

Selected External Evaluation Projects

Program Evaluation: Black Hills State University - Physical Science Program, Michigan State University – Neuroscience Program

Project Evaluation: Quantitative Microbial Risk Assessment (NIH # PA-11-351); REU - Integrative Biology of Social Behaviors (NSF # 1153888); Ethics Education in Environmental Science (NSF # 1338614); Conceptests in Geoscience (NSF #0716397); Software Carpentry Workshop (at MSU); EDEMAME Workshop (at MSU); Bioinformatics - Next-Generation Sequencing Workshop (x3 at MSU)

Journal Article Reviews: Science Education, Journal of Engineering Education, Journal of Geoscience Education, McGill Journal of Science Education, Bulletin of the American Meteorological Society, Journal of Women and Minorities in Science and Engineering, Science & Education, International Electronic Journal of Elementary Education, Discourse Processes, Journal of Research in Science Teaching, Journal of Geography in Higher Education, Journal of Structural Geology

PUBLICATIONS

Submitted

Conrad, D., and Libarkin, J.C., *in revision after review*, Image schema in student reasoning about Earth: The case of plate tectonics in Germany and the United States: *Journal of Geography in Higher Education* [submitted 11/10/14]

Peer-Reviewed Articles and Book Chapters

1. Anderson, S.W., Libarkin, J.C., *accepted pending revision*, Conceptual mobility and entrenchment in introductory geoscience courses: New questions regarding physics' and chemistry's role in learning Earth Science concepts: *Journal of Geoscience Education*.
2. LaDue, N.D., **Libarkin, J.C.**, Thomas, S.R., *in press*, Visual representations on high school biology, chemistry, earth science, and physics assessments: *Journal of Science Education and Technology*.
3. Staffend, N.A., **Libarkin, J.C.**, *in review after revision*, Understanding by design: Mentored implementation of backward design methodology at the university level: *Bioscene*.
4. **Libarkin, J.C.**, Thomas, S.R., Ording, G., *in review after third revision*, Factor analysis of drawings: Application to college student models of the greenhouse effect: *International Journal of Science Education*.
5. Thomas, S.R., Knott, J.L., **Libarkin, J.C.**, *in press*, The Foundations of Science MOOC: A case study on community development of free-choice learning resources. In Corbeil, J.R., Corbeil, M.E., and Khan, B.H. (*Eds.*), The MOOC Case Book: Case Studies in MOOC Design, Development and Implementation: Linus Books.
6. Drost, R., Trobec, J., Steffke, C., **Libarkin, J.**, *in press*, Eye tracking: Evaluating the impact of gesturing during televised weather forecasts: *Bulletin of the American Meteorological Society*.
7. McNeal, K.S., **Libarkin, J.C.**, Shapiro-Ledley, T., Bardar, E., Haddad, N., Ellins, K., and Dutta, S., 2014, The role of research in on-line curriculum development: The case of EarthLabs climate change and Earth System modules: *Journal of Geoscience Education*, v. 62, p. 560-577.
8. **Libarkin, J.C.**, 2014, Evaluation and Assessment of Civic Understanding of Planet Earth. *In* G. Roehrig, D. Dalbotten, & P. Hamilton (Eds.) *Future Earth: Advancing Civic Understanding of the Anthropocene*, p. 41-52.
9. Orion, N., and **Libarkin, J.C.**, 2014, Earth Systems Science Education. In N. Lederman (Ed.) *Handbook of Research on Science Education*, v. 2, p.481-496.
10. **Libarkin, J.C.**, 2014, The role of scholarly publishing in geocognition and discipline-based geoscience education research. *In* V. Tong (Ed.) Geoscience Research and Education: Teaching at Universities, p. 69-76.

11. **Libarkin, J.C.**, Jardeleza, S.E., McElhinny, T., 2014, The role of concept inventories in course assessment. *In* V. Tong (Ed.) Geoscience Research and Education: Teaching at Universities, p. 275-297.
12. Lorenz, A.R., **Libarkin, J.C.**, Ording, G., 2014, Disgust in response to some arthropods aligns with disgust provoked by pathogens: *Global Ecology and Conservation*, v. 2, p. 248-254.
13. Geraghty Ward, E.M., Semken, S., **Libarkin, J.C.**, 2014, The design of place-based, culturally informed geoscience assessment: *Journal of Geoscience Education*, v. 62 (1), p. 86-103.
14. McElhinny, T.L., Dougherty, M.J., Bowling, B.V., and **Libarkin, J.C.**, 2014, Genetics curriculum and assessment: The status of instruction for bioscience majors in the United States: *Science & Education*, v. 23 (2), p. 445-464.
15. Atchison, C.L., and **Libarkin, J.C.**, 2013, Fostering accessibility in geoscience training programs: *EOS*, v. 94 (44), p. 400.
16. Hollinger, C., **Libarkin, J.C.**, Stickle, J.E., Hauptman, J.G, Henry, R., Doig, K., Scott, M.A., 2013, Effects of a curricular revision on educational outcomes in veterinary clinical pathology: *Journal of Veterinary Medical Education*, v. 40(2), p. 158-170.
17. McCallum, C., Thomas, S.W., and **Libarkin, J.C.**, 2013, AlphaMOOCS: Building a Massive Open Online Course one graduate student at a time, *eLearningPapers*, issue 33, http://elearningeuropa.info/en/article/The-AlphaMOOC%3A-Building-a-Massive-Open-Online-Course-One-Graduate-Student-at-a-Time.
18. **Libarkin, J.C.**, and Schneps, M.H., 2012, Elementary children's retrodictive reasoning about earth science: *International Electronic Journal of Elementary Education*, v.5, p. 47-62.
19. Baker, K.M., Petcovic, P., Wisniewska, M., and **Libarkin, J.**, 2012, Spatial signatures of mapping expertise among field geologists: *Cartography and Geographic Information Science*, v. 39, n. 3, p. 119-132.
20. Hambrick, D.Z., **Libarkin, J.C.**, Petcovic, H.L., Baker, K., Elkins, J., Callahan, C., Turner, S., Rench, T., and LaDue, N., 2012, Scientific problem solving in the wild: A test of the circumvention-of-limits hypothesis in geological bedrock mapping: *Journal of Experimental Psychology: General*, v. 121, p. 397-403. doi: 10.1037/a0025927
21. **Libarkin, J.C.**, and Ording, G., 2012, The utility of writing assignments in undergraduate bioscience: *CBE-Life Science Education*, v. 11, p. 39-46.
22. Turner, S., and **Libarkin, J.C.**, 2012, Novel applications of Tablet PCs to investigate expert cognition in the geosciences: *Computers & Geosciences*, v. 42, p. 162-167.
23. **Libarkin, J.C.**, Asghar, A., Crockett, C., and Sadler, P., 2011, Invisible Misconceptions: Student understanding of ultraviolet and infrared radiation: *Astronomy Education Review*, v. 10, n.1, doi:10.3847/AER2011022.
24. Clark, S.K., **Libarkin, J.C.**, Kortz, K.M., Jordan, S.C., 2011, Alternative conceptions of plate tectonics held by nonscience undergraduates, *Journal of Geoscience Education*, v. 59, p. 251-262. ***Outstanding Paper Award 2012***
25. **Libarkin, J.C.**, Ward, E.M.G., Anderson, S.W., Kortemeyer, G., Raeburn, S.P., 2011, Revisiting the Geoscience Concept Inventory: A call to the community: *GSA Today*, v. 21, n. 8, p. 26-28.
26. Clark, S. K. and **Libarkin, J.C.**, 2011, Designing a mixed-format research instrument and scoring rubric: Case study of a plate tectonics instrument. In A. Feig & A. Stokes (Eds.)

Qualitative Inquiry in Geoscience Education Research. Boulder, CO: Geological Society of America Special Paper, p. 81-96.

27. **Libarkin, J.C.** and Ward, E.M.G., 2011, The qualitative underpinnings of quantitative concept inventory questions. In A. Feig & A. Stokes (Eds.) Qualitative Inquiry in Geoscience Education Research. Boulder, CO: Geological Society of America Special Paper, p. 37-48.
28. Ward, E.M.G., **Libarkin, J.C.**, Kortemeyer, G., Raeburn. S., 2010, The Geoscience Concept Inventory WebCenter provides new means for student assessment: *eLearningPapers*. http://www.elearningpapers.eu/en/article/The-Geoscience-Concept-Inventory-WebCenter-provides-new-means-for-student-assessment
29. Asghar, A.A., and **Libarkin, J.C.**, 2010, Gravity, magnetism, and "down": Non-physics college students' conceptions of gravity: *The Science Educator*, v. 19, n. 1, p. 42-55.
30. Clark, S.K., Sibley, D., **Libarkin, J.C.**, and Heidemann, M., 2009, A novel method to teaching and understanding transformations of matter in dynamic Earth systems: *Journal of Geoscience Education*, v. 57, n. 4, p. 233-241.
31. Petcovic, H.L., **Libarkin, J.C.**, and Baker, K.M., 2009, An empirical methodology for investigation of geocognition in the field: *Journal of Geoscience Education*, v. 57, n. 4, p. 316-328.
32. Garzione, C.N., Hoke, G.D., **Libarkin, J.C.**, Withers, S., MacFadden, B., Eiler, J., Mulch, A., Ghosh, P., 2008, The rise of the Andes: Pulsed surface uplift in orogenic plateaus: *Science*, v. 320, p. 1304-1307.
33. **Libarkin, J.C.**, and Anderson, S.W., 2007, Development of the Geoscience Concept Inventory, *in* Proceedings of the National STEM Assessment Conference, Washington DC, October 19-21, 2006, p. 148-158.
34. Riihimaki, C., and **Libarkin, J.C.**, 2007, Terrestrial Cosmogenic Nuclides as Paleoaltimetric Proxies, *in* Reviews in Mineralogy and Geochemistry, v. 66: Paleoelevation: geochemical and thermodynamic approaches, Ed. M. Kohn, p. 269-278.
35. Coblentz, D., **Libarkin, J.C.**, Sussman, A., and Chase, C.G., 2007, Paleolithospheric structure revealed by continental geoid anomalies: *Tectonophysics*, v. 443, p.106-120.
36. **Libarkin, J.C.**, Kurdziel, J.P., and Anderson, S.W., 2007, College student conceptions of geological time and the disconnect between ordering and scale: *Journal of Geoscience Education*, v. 55, p. 413-422.
37. **Libarkin, J.C.**, and Kurdziel, J.P., 2006, Ontology and the teaching of earth system science: *Journal of Geoscience Education*, v. 54, p. 408-413.
38. Farley, K.A., **Libarkin, J.**, Mukhopadhyay, S., and Amidon, W., 2006, Cosmogenic ^{3}He in apatite, titanite, and zircon: *Earth and Planetary Science Letters*, v. 248, p. 436-446.
39. **Libarkin, J.C.**, and Anderson, S.W., 2006, The Geoscience Concept Inventory: Application of Rasch Analysis to Concept Inventory Development in Higher Education: *in* Applications of Rasch Measurement in Science Education, ed. X. Liu and W. Boone: JAM Publishers, p. 45-73.
40. Garzione, C.N., Molnar, P., **Libarkin, J.C.**, and MacFadden, B.J., 2006, Rapid Late Miocene rise of the Bolivian Altiplano: Evidence for removal of mantle lithosphere: *Earth and Planetary Science Letters*, v. 241, p. 543-556.
41. **Libarkin, J.C.**, and Anderson, S.W., 2005, Assessment of learning in entry-level geoscience courses: Results from the Geoscience Concept Inventory: *Journal of Geoscience Education*, v. 53, p. 394-401.

42. Sussman, A.J., Rogers, A., **Libarkin, J.C.**, 2005, Analysis and ranking of Earth Science story-books based on terminology, illustrations, and demographics: WEPAN/NAMEPA 2005 Conference Proceedings, http://www.x-cd.com/wepan05/prof73.html.
43. Dahl, J., Anderson, S.W., and **Libarkin, J.C.**, 2005, Digging into Earth Science: Alternative conceptions held by K-12 teachers: *Journal of Science Education*, v. 12, p. 65-68.
44. **Libarkin, J.C.**, Anderson, S., Dahl, J., Beilfuss, M., Boone, W., and Kurdziel, J., 2005, College students' ideas about geologic time, Earth's interior, and Earth's crust: *Journal of Geoscience Education*, v. 53, n. 1, p. 17-26.
45. **Libarkin, J.C.**, Crockett, C., and Sadler, P., 2003, Density on dry land: Demonstrations without buoyancy challenge student misconceptions: *The Science Teacher*, v. 70, no. 6, p. 46-50.
46. Chase, C.G., **Libarkin, J.C.**, and Sussman, A., 2002, Colorado Plateau: Geoid and means of isostatic support: *International Geology Review*, v. 44, p. 575-587.
    REPRINTED: Chase, C. G., **Libarkin, J. C.**, and Sussman, A. J., 2003, Colorado Plateau; geoid and means of isostatic support: *Lithosphere of western North America and its geophysical characterization*, Ernst, W.G. (Ed.) Columbia, MD: Bellwether Publishing for the Geological Society of America, p. 391-403.
47. **Libarkin, J.C.**, Quade, J., Chase, C.G., Poths, J., McIntosh, W., 2002, Measurement of ancient cosmogenic ^{21}Ne in quartz from the 28 Ma Fish Canyon Tuff, CO: *Chemical Geology*, v. 186, p. 199-213.
48. Wood, D.A., Hart, J., DeToro, D., Tollefson, S., and **Libarkin, J.C.**, 2001, The Role of Graduate Teaching Assistants in Undergraduate Education: Embracing a New Model of Teaching and Learning, in "Student Assisted Teaching and Learning: Strategies, Models, and Outcomes", ed. Miller, J.E., Groccia, J.E., and Dibasio, D., Anker Publishers, 250 pp.
49. **Libarkin, J.C.** and Mencke, R., 2001, Students teaching students: Peer training in undergraduate education: *The Journal of College Science Teaching*, v. 31, p. 235-239.
50. **Libarkin, J.C.**, 2001, Development of an assessment of student conception of the nature of science: *Journal of Geoscience Education*, v. 49, p. 435-442.
51. **Libarkin, J.C.**, Butler, R.F., Richards, D.R., and Sempere, T., 1998, Tertiary remagnetization of Paleozoic rocks from the Eastern Cordillera and Sub-Andean Zone of Bolivia: *Journal of Geophysical Research*, v. 103, p. 30,417-30,429.

Editor-Reviewed Publications

52. Callahan, C.N., Libarkin, J.C., McCallum, C.M., Atchison, C.L., *in press*, Using the lens of social capital to understand diversity in the Earth System Sciences workforce: *Journal of Geoscience Education*.
53. Ellins, K.K., Shapiro-Ledley, T., Haddad, N., McNeal, K., Gold, A., Lynds, S., and **Libarkin, J.**, 2014, EarthLabs: Supporting teacher professional development to facilitate effective teaching of climate science: *Journal of Geoscience Education*, v. 62 (4), p. 330-342.
54. Jardeleza, S.W., Cognato, A., Gottfried, M., Kimbirauskas, R., **Libarkin, J.**, Olson, R., Ording, G., Owen, J., Rasmussen, P., Stoltzfus, J., Thomas, S., 2013, The Value of Community Building: One Center's Story of How the AAC&U VALUE Rubrics Provided Common Ground: *Liberal Education*, v. 99(3), http://www.aacu.org/liberaleducation/le-su13/jardeleza.cfm.

55. Ledley, T.S., Haddad, N., Bardar, E., Ellins, K., McNeal, K., **Libarkin, J.**, 2012, EarthLabs – An Earth System Science Laboratory Module to Facilitate Teaching About Climate Change: *The Earth Scientist*, v. 28, n. 3, p. 19-24.
56. **Libarkin, J.C.**, and Geraghty Ward, E., 2011, Understanding Earth processes: Student alternative conceptions about geophysics concepts: *The Earth Scientist*, v. 27, n. 1, p. 27-32.
57. **Libarkin, J.C.**, and Stokes, A., 2011, The Moon has no gravity: Examples of idea mixing in explanations of physical processes, *Planet*, v. 24, P. 50-53.
58. Stokes, A., King, H., and **Libarkin, J.C.**, 2007, Research in Science Education: Threshold Concepts, *Journal of Geoscience Education*, v. 55, p. 434-438.
59. Petcovic, H.L., and **Libarkin, J.C.**, 2007, Research in Science Education: The Expert-Novice Continuum, *Journal of Geoscience Education*, v. 55, p. 333-339
60. **Libarkin, J.C.**, and Kurdziel, J.P., 2004, Research Methodologies in Science Education: Human Subjects and Education Research, *Journal of Geoscience Education*, v. 52, p. 199-203.
61. Kurdziel, J. P., and **Libarkin, J.C.**, 2003, Research Methodologies in Science Education: Training Graduate Teaching Assistants to Teach: *Journal of Geoscience Education*, v.51, p. 347-351.
62. **Libarkin, J.C.**, and Kurdziel, J., 2003, Research Methodologies in Science Education: Gender and the Geosciences: *Journal of Geoscience Education*, v.51, p. 446-452.
63. **Libarkin, J.C.**, Kurdziel, J., and Beilfuss, M., 2003, Research Methodologies in Science Education: Mental Models and Cognition in Education: *Journal of Geoscience Education*, v. 51, p. 121-126.
64. Kurdziel, J., and **Libarkin, J.C.**, 2002, Research Methodologies in Science Education: Undergraduate Research Mentoring, Teacher Workshops, and K-12 Outreach Activities: *Journal of Geoscience Education*, v. 50, p. 602-609.
65. **Libarkin, J.C.**, and Brick, C., 2002, Research Methodologies in Science Education: Visualization in the Geosciences: *Journal of Geoscience Education*, v. 50, p. 449-455.
66. Kurdziel, J., and **Libarkin, J.C.**, 2002, Research Methodologies in Science Education: Students' Ideas About the Nature of Science: *Journal of Geoscience Education*, v. 50, p. 322-329.
67. **Libarkin, J.C.**, and Kurdziel, J., 2002, Research Methodologies in Science Education: Qualitative Data: *Journal of Geoscience Education*, v. 50, p. 195-200.
68. **Libarkin, J.C.**, and Kurdziel, J., 2002, Research Methodologies in Science Education: The Qualitative/Quantitative Debate: *Journal of Geoscience Education*, v. 50, p. 78-86.
69. Kurdziel, J., and **Libarkin, J.C.**, 2001, Research Methodologies in Science Education: Assessing Students' Alternative Conceptions: *Journal of Geoscience Education*, v. 49, p. 378-383.
70. **Libarkin, J.C.**, and Kurdziel, J., 2001, Research Methodologies in Science Education: Strategies for Productive Assessment: *Journal of Geoscience Education*, v. 49, p. 300-304.

Editorials, Reports, Non-Reviewed Articles, and other Writings

71. Locke, S., **Libarkin, J.C.**, and Chang, C., 2012, Editorial: Geoscience Education and Global Development: *Journal of Geoscience Education*, v. 60, p. 199-200.
72. St. John, K., **Libarkin, J.C.**, 2012, Editorial: …Where We Are Headed: *Journal of Geoscience Education*, v. 60, p. 1-2.

73. **Libarkin, J.C.**, St. John, K., 2011, Editorial: Where We Have Been…: *Journal of Geoscience Education*, v. 59, p. 175.
74. **Libarkin, J.C.**, Baker, K., Hambrick, Z.D., and Petcovic, H.L., 2011, Practical Lessons from Research on Field Cognition and Behavior: *In The Trenches*, v.1. n.4, p. 14-17.
75. **Libarkin, J.C.**, and Finkelstein, N., 2011, Seeding DBER: Evaluating the early history of the National Science Foundation's Postdoctoral Fellowships in Science, Mathematics, Engineering and Technology Education (PFSMETE) as a pathway into Discipline Based Education Research: Commissioned by the National Research Council.
76. **Libarkin, J.C.**, 2010, Editorial: Technology and the Future for JGE: *Journal of Geoscience Education*, v. 58, p. 252.
77. **Libarkin, J.C.**, Elkins, J.T., McNeal, K., and St. John, K., 2010, Editorial: What role do geoscientists play in society?: *Journal of Geoscience Education*, v. 58, p. 1.
78. **Libarkin, J.C.**, Elkins, J.T., and St. John, K., 2009, Editorial: Evolution of JGE: Responding to Our Community's Needs: *Journal of Geoscience Education*, v. 57, p. 165-167.
79. **Libarkin, J.C.**, 2008, Concept Inventories in Higher Education Science. Prepared for the National Research Council Promising Practices in Undergraduate STEM Education Workshop 2 (Washington, D.C., Oct. 13-14, 2008). http://www7.nationalacademies.org/bose/PP_Commissioned_Papers.html
80. **Libarkin, J.C.**, 2008, Acceptance Speech for 2007 Shea Award: *Journal of Geoscience Education*, v. 56, p. 191.
81. Garzione, C.N., Molnar, P., **Libarkin, J.C.**, and MacFadden, B.J., 2007, Reply to Comment on "Rapid late Miocene rise of the Bolivian Altiplano: Evidence for removal of mantle lithosphere" by Garzione et al. (2006), Earth Planet. Sci. Lett. 241 (2006) 543-556: *Earth and Planetary Science Letters*, v. 259, p. 630-633.
82. **Libarkin, J.C.**, 2006, College student conceptions of geological phenomena and their importance in classroom instruction: *Planet*, v. 17, p. 6-9.
    REPRINTED: **Libarkin, J.C.**, 2007, College student conceptions of geological phenomena and their importance in classroom instruction: *First Break*, v. 25, p. 55-60.
83. **Libarkin, J.C.**, 2006, Geoscience Education in the United States: Planet, v. 17, p. 60-63.
    REPRINTED: **Libarkin, J.C.**, 2007, Geoscience Education in the United States: *First Break*, v. 25, p. 49-53.
84. Truscott, J.B., Boyle, A., Burkill, S., **Libarkin, J.**, and Lonsdale, J., 2006, The concept of time: can it be fully realised and taught?: *Planet*, v. 17, p. 21-23.
85. **Libarkin, J.C.**, 2005, Geoscience Educators in Geology Departments; Expectations and Experiences: NAS Workshop on Education Research in STEM Disciplinary Departments, Dec. 5, 2005. http://www7.nationalacademies.org/cfe/STEM_Disciplines_Agenda.html.
86. **Libarkin, J.C.**, 2005, Conceptions, Cognition, and Change: Student Thinking about the Earth: Journal of Geoscience Education, v. 53, p. 342 (Editorial for the Special Issue on Conceptions, Cognition, and Change). http://nagt.org/nagt/jge/columns/editorials.html#edv53n4.
87. **Libarkin, J.**, Farley, K., Spell, T., and Garzione, C., 2005, Cosmogenic noble gases as potential paleoaltimeters: Paleoelevation Workshop Extended Abstract http://www.ei.lehigh.edu/paleoelevation/abstracts.htm.
88. Garzione, C.N, **Libarkin, J.C.**, Ghosh, P., Eiler, J., 2005, Oxygen Isotope Paleoaltimetry from Paleosol Carbonates: An Example from the Northern Altiplano, Bolivia:

Paleoelevation Workshop Extended Abstract
http://www.ei.lehigh.edu/paleoelevation/abstracts.htm

89. **Libarkin, J.C.**, and Chase, C.G., 2003, Comment on Timing of Colorado Plateau Uplift: Initial constraints from vesicular basalt-derived paleoelevations: *Geology*, v. 31, p. 191-192.
90. **Libarkin, J.C.**, 2002, Building a Research Paradigm, written for the Wingspread Conference: Bringing Research on Learning to the Geosciences, http://serc.carleton.edu/research_on_learning/workshop02/essays.html.
91. McCartan, L., Weedman, S.D., Wingard, G.L., Edwards, L.E., Sugarman, P.J., Feigenson, M.D., Buursink, M.L., and **Libarkin, J.C.**, 1995, Age and diagenesis of the Upper Floridan aquifer and the intermediate aquifer systems in southwestern Florida: *U.S. Geological Survey, Bulletin* B-2122, 62 pp.
92. Weedman, S.D., Scott, T.M., Edwards, L.E., Brewster-Wingard, G.L., and **Libarkin, J.C.**, 1995, Preliminary analysis of integrated stratigraphic data from the Phred-#1 corehole, Indian River County, Florida: *U.S. Geological Survey Open File Report* 95-824, 63 p.

Books

Book proposal submitted to GSA: PUTTING RESEARCH INTO PRACTICE: TEACHING ABOUT EARTH'S SYSTEMS by *Julie Libarkin and Blake Colaianne* [expected completion, Aug. 2015]

Curricular Materials

2014-15	Co-development of freshmen research seminar on Science, Art and Communication Research
2014	Co-development of online course for critical thinking
2013-2014	Development of Global Climate Change course online
2013	Co-Leadership of team development of Foundations of Science MOOC
2011, 2012	Earth-Human Interactions Lab: The Red Cedar River (w/ S. Turner, C. Steffke)
2010	Multiple-choice questions for Introduction to Geology, Pearson.
2005, 2007	Updating of Instructor's Manual to accompany Physical Geology, 11th and 12th editions, by Plummer, McGeary, and Carlson: McGraw-Hill Publishers.
2004, 2005	Libarkin, J.C., Introduction to Geology Laboratory Manual: Ohio University (revisions and additions).
2000	Butler, R.F., and Libarkin, J.C., NATS 101: A Geological Perspective (course workbook): Department of Geosciences, University of Arizona.
1999	Larson, H., and Libarkin, J., Teaching Teams Handbook: Improving Education Through Faculty-Student Collaboration: University of Arizona.

CONFERENCE CONTRIBUTIONS and PRESENTATIONS

Invited Contributions to Professional Conferences and Workshops

1. Atchison, C., Libarkin, J.C., 2014, How accessible are the geosciences? A study of professionally held perceptions and what they mean for the future of geoscience workforce development, AGU Fall Meeting 2014, ED31I-01. *Invited*.
2. Libarkin, J.C., Miller, H., Thomas, S.R., 2013, Scientists' internal models of the greenhouse effect: AGU Fall Meeting 2013, ED32A-05. *Invited*.

3. Libarkin, J.C., Thomas, S.R., McCallum, C., 2013, Online Learning and Critical Thinking: Geological Society of America Abstracts with Programs, Vol. 45, No. 7, p. 284. *Invited*.
4. Libarkin, J.C., 2012, Geophysics Education Research: Practice and Potential: 6th International Conference on Applied Geophysics [Kanchanaburi Province, Thailand, 15-17 November 2012]. *Plenary Speaker*
5. Anderson, S.W., and Libarkin, J.C., 2012, Conceptual Mobility of Geoscience Concepts in Introductory College-Level Courses: Results from Pre- and Post-testing with the Geoscience Concept Inventory: AGU Fall Meeting 2012, ED11B-0725. *Invited*.
6. Libarkin, J.C., McNeal, K.S., and Templeton, C., 2012, Climate change communication: Barriers and knowing what students know: Geological Society of America Abstracts with Programs, Vol. 44, No. 7, p. 468. *Invited*.
7. Libarkin, J.C., and Thomas, S., 2012, Best Practices in Visualizing Science: Michigan Association of Laboratory Science Educators (MALSE). *Invited*.
8. Libarkin, J.C., 2011, Visual Scientific Literacy and Learning: Gordon Research Conference - Chemistry Education Research. *Plenary Speaker.*
9. Libarkin, J.C., 2011, Visual Scientific Literacy and Learning: Chicago Symposium Series, Excellence in Teaching Mathematics and Science: Research and Practice. *Plenary Speaker.*
10. Libarkin, J.C., 2009, Geocognition: An International Discipline: Eos Trans. AGU, 90(52), Fall Meet. Suppl., Abstract ED44A-03. *Invited*.
11. Libarkin, J., 2009, Building a Community for Geoscience Education, NAGT-ES Spring Conference (May16, 2009; Sterling VA). *Keynote Speaker.*
12. Anderson, S.W., and Libarkin, J.C., 2008, Mobility of College-level Student Ideas as Revealed by the Geoscience Concept Inventory: Implications for Teaching Introductory Courses: Eos Trans. AGU, 89(53), Fall Meet. Suppl., Abstract ED41B-01. *Invited*
13. Libarkin, J., Riihimaki, C.A., Farley, K.A., 2006, Terrestrial Cosmogenic Nuclides as Paleoaltimeters: New Approaches and Future Potential: 16th Annual V.M. Goldschmidt Conference 2006 (Aug. 27-Sept. 1, 2006: Melbourne, Australia). *Invited*
14. Libarkin, J.C., 2006, The Geoscience Concept Inventory: Physics Education Research Conference (PERC; July 27, 2006: Syracuse, NY). *Plenary Speaker*
15. Libarkin, J., and Asghar, A., 2006, Gravity, magnetism, and "down": College student's conceptions of gravity: American Association of Physics Teachers Summer Meeting (July 26, 2006: Syracuse, NY). *Invited*
16. Libarkin, J., 2006, Magnetic Gravity, Equatorial Volcanoes, and State Tectonics: Student Ideas about the Earth, Subject Centre for Geography, Earth & Environmental Sciences (GEES) (http://www.gees.ac.uk) Annual Conference (June 26-27th in Plymouth, England). *Keynote Speaker*
17. Libarkin, J., 2006, North American Perspective of Geoscience Education Research, Subject Centre for Geography, Earth & Environmental Sciences (GEES) (http://www.gees.ac.uk) Annual Conference (June 26-27th in Plymouth, England). *Invited.*
18. Libarkin, J.C., Garzione, C.G., Farley, K., and Spell, T., 2005, Cosmogenic Paleoaltimetry, Paleoelevation Workshop (Lehigh University, Lehigh, PA: June 6, 2005). *Invited*.
19. Garzione, C.G., Libarkin, J.C., Ghosh, P., and Eiler, J., 2005, Oxygen Isotope Paleoaltimetry from Paleosol Carbonates: An Example from the Northern Altiplano, Bolivia, Paleoelevation Workshop (Lehigh University, Lehigh, PA: June 6, 2005). *Invited*

20. Libarkin, J.C., and Anderson, S.W., 2005, Assessment of Diverse Geoscience Courses Through Rasch Development of Geoscience Concept Inventory Sub-Tests, Geological Society of America Abstracts with Programs, v. 37, n. 7, p. 119. *Invited*.
21. Libarkin, J., 2004, "A Tale of Three Theories: Development of the Geoscience Concept Inventory": Integrating Science and Mathematics Education Research into Teaching Conference, hosted by The Center for Science and Mathematics Education Research and The Maine Mathematics-Science Teacher Excellence Collaborative (MMSTEC) at The University of Maine (June 20-22, 2004). *Invited*.
22. Libarkin, J., and Anderson, S., 2003, The Geoscience Concept Test: Linking Grounded Theory, Scale Development, and Item Response Theory: *Eos Trans. American Geophysical Union*, v. 84 (46), Fall Meet. Suppl., Abstract ED22E-06. *Invited*
23. Anderson, S., and Libarkin, J., 2003, The retention of geologic misconceptions: Alternative ideas that persist after instruction: *Eos Trans. American Geophysical Union*, v. 84 (46), Fall Meet. Suppl., Abstract ED22E-07. *Invited*
24. Libarkin, J., 2003, "Impact of classroom assessment on teaching and learning", Project Kaleidoscope Workshop "Linking Insights about How People Learn to Curricular Reform" (Richmond VA: Nov. 1, 2003). *Plenary Speaker*
25. Libarkin, J., 2000, "Evaluation of Attitude and Conception of Science in General Education and Introductory Science Courses", Associated Colleges of the South, Science Education for Non-Science Majors Workshop (San Antonio TX: June 9-11). *Invited*

Workshop Leadership and Invited Participation (selected)

26. Libarkin, J., 2013, Evaluation of Computational Science Workshops for Biologists (Annapolis MD, July 8-9).
27. Libarkin, J., 2011, Getting Started with Assessment, University of Washington – Bothell (Bothell, WA, May 20, 2011).
28. Reed-Rhoads, T., and Libarkin, J., 2011, Facilitating Teaching and Learning: Concept Inventories, AAC&U "Engaged STEM Learning: From Promising to Pervasive Practice" (Miami, FL, March, 24, 2011).
29. Libarkin, J., 2011, They Think What?: Capturing and Using Student Ideas in Instruction, Chicago Symposium Series, Excellence in Teaching Mathematics and Science: Research and Practice (Chicago, IL, February, 2011).
30. Invited Participant, 2009, Voices from the Community: A Workshop on Climate Change Education, AGU and NSF (Washington, D.C., July 29-31, 2009).
31. Libarkin, J., 2008, Developing Geoscience Concept Inventory Questions, GSA Annual Meeting (Houston, TX, October 4, 2008).
32. Libarkin, J., 2008, CCLI Conference Workshop: Development of Concept Inventory Questions: 2008 Course Curriculum and Laboratory Improvement (CCLI) PI Conference, (Washington, D.C., Aug. 13-18, 2008).
33. Invited Participant, 2007, Assessing the State of STEM Concept Inventories: A National Workshop (NSF-Sponsored, Washington, D.C., May, 2007).
34. Libarkin, J., 2006, Informal Workshop on Teaching Introductory Geology Laboratories, Kansas State University, Department of Geology (Feb. 8, 2006).
35. Invited Participant in Workshop on Education Research Positions in STEM Disciplinary Departments: Number 2 in the Series of CFE Symposia on Growing Human Capital in

STEM Higher Education: *The National Academies*, Center for Education, Division of Behavioral and Social Sciences and Education (Washington, D.C.: December 5, 2005).

36. Libarkin, J., 2005, Designing Effective Geoscience Education Research: Qualitative and Quantitative Methods, Geological Society of America K-16 workshop (with J. Sexton; Oct. 16, 2005; 53 participants).
37. Libarkin, J., 2004, "They Think What?: Capturing and Using Student Ideas in the Classroom": Integrating Science and Mathematics Education Research into Teaching Conference, hosted by The Center for Science and Mathematics Education Research and The Maine Mathematics-Science Teacher Excellence Collaborative (MMSTEC) at The University of Maine, Orono ME (June 21, 2004). *Invited two-hour workshop*
38. Libarkin, J., 2004, "Development of Assessment Tools for Educational Research": Integrating Science and Mathematics Education Research into Teaching Conference, hosted by The Center for Science and Mathematics Education Research and The Maine Mathematics-Science Teacher Excellence Collaborative (MMSTEC) at The University of Maine, Orono ME (June 23&24, 2004). *Invited two-day workshop*
39. Invited Participant in *Wingspread Conference:* Bringing Research on Learning to the Geosciences, sponsored by National Science Foundation and Johnson Foundation (2002).
40. Libarkin, J., Finkelstein, N., and Luft, J., 2001, "Who Cares About Post-Doc's Anyway?", Invited discussion at the National Association for Research in Science Teaching Annual Conference.

Professional Conference Contributions

41. Mote, A., Lockwood, J., Ellins, K., Haddad, N., Ledley, T., Lynds, S., McNeal, K., Libarkin, 2014, EarthLabs Climate Detectives: Using the science, data, and technology of IODP Expedition 341 to investigate the Earth's past climate, AGU Fall Meeting 2014, ED51C-3444.
42. Haddad, N., Ledley, T., Ellins, K., Bardar, E., Youngman, E., Dunlap, C., Lockwood, J., Mote, A., McNeal, K., Libarkin, J., Lynds, S., Gold, A., 2014, Preparing teachers to support the development of climate literate students, AGU Fall Meeting 2014, ED13C-3462.
43. Callahan, C.N., Libarkin, J.C., Bomzer, D., Smrecak, T.A., 2014, Jargon or gibberish?: How does science read to undergraduate students?, Geological Society of America Abstracts with Programs. Vol. 46, No. 6, p.245.
44. Ellins, K.K., Lockwood, J., Haddad, N., Ledley, T.S., Lynds, S., McNeal, K.S., Libarkin, J.C., Gold, A., 2014, IODP Expediction 341 Science Team, EarthLabs Climate Detectives: Curriculum based on IODP Expedition 342 on the Joides Resolution, Geological Society of America Abstracts with Programs. Vol. 46, No. 6, p.602.
45. Libarkin, J.C., Thomas, S.R., 2014, Best Practices in Visualization: The Case of Common Climate Change Images, Geological Society of America Abstracts with Programs. Vol. 46, No. 6, p.602.
46. Ward, E.M.G., Semken, S., Libarkin, J.C., 2014, Cultural Validation in Practice: Leveraging Place and Culture in Geoscience Assessment, Geological Society of America Abstracts with Programs. Vol. 46, No. 6, p.388.
47. Ledley, T.S., McNeal, K., Ellins, K., Libarkin, J., 2014, Confronting the Challenges of Climate Literacy, DRK-12 Meeting, August 5, 2014.

48. McCallum, C.M., Libarkin, J.C., 2014, Building a Culture of Assessment Across University Colleges, American Educational Research Association Annual Meeting.
49. Kidwell, K., Libarkin, J., Lucas, J., McCallum, C., 2014, Assessment for Change: Using Evidence to Guide Curriculum Reform, Association of American Colleges & Universities Conference on General Education and Assessment.
50. McNeal, K., Libarkin, J.C., Ledley, T.S., Gold, A.U., Lynds, S.E., Haddad, N., Ellins, K.K., Bardar, E., Dunlap, C., and Youngman, E., 2013, Development of a Climate Concept Inventory and Assessment of High-School Students Engaged in the EarthLabs Climate Modules, AGU Fall Meeting 2013, ED31D-06.
51. Lynds, S.E., Gold, A.U., McNeal, K., Libarkin, J.C., Buhr Sullivan, S., Ledley, T.S., Haddad, N., Ellins, K.K., Investigating Climate Science Misconceptions Using a Teacher Professional Development Workshop Registration Survey, AGU Fall Meeting 2013, ED33A-0766.
52. Forcino, F.L., Libarkin, J.C., 2013, Not Saying "Evolution" May Be the Key to Teaching Evolution, Geological Society of America Abstracts with Programs. Vol. 45, No. 7, p.284.
53. Drost, R.E., Libarkin, J.C., Thomas, S.R., Casteel, M.A., Mesiter, M., 2013, Communicating Tornado Warnings, Geological Society of America Abstracts with Programs. Vol. 45, No. 7, p.506.
54. Lee, C.I., and Libarkin, J.C., 2013, Draw-A-Geologist: Insight into student preconceptions, Geological Society of America Abstracts with Programs. Vol. 45, No. 7, p.471.
55. Steffke, C.L., Libarkin, J.C., 2013, Which Colors Are Better?: An Eye Tacking Study of Color Ramp Symbology, Geological Society of America Abstracts with Programs. Vol. 45, No. 7, p.284.
56. Callahan, C.N., Petcovic, H.L., Libarkin, J.C., Baker, K., 2013, What Would Chamberlin Think? Experts Map without Multiple Working Hypotheses, Geological Society of America Abstracts with Programs. Vol. 45, No. 7, p.471.
57. Ellins, K.K., Ledley, T.S., Haddad, N., McNeal, K., Gold, A.U., Lynds, S.E., Libarkin, J.C., Quartini, E., Thirumala, K., Cavitte, M., 2013, EarthLabs: Supporting Teacher Professional Development to Facilitate Effective Teaching of climate Science, Geological Society of America Abstracts with Programs. Vol. 45, No. 7, p.502
58. Ebert, J.R., LaDue, N.D., Schmidt, R.W., Libarkin, J.C., Ellis, T.D., Kluge, S., 2013, Fanning the Flames of Student Interest: Dual Credit Courses and Recruitment of Geoscience Majors, Geological Society of America Abstracts with Programs. Vol. 45, No. 7, p.432.
59. Steffke, C., and Libarkin, J.C., 2013, Conveying Information With Maps: A Function of Symbology, Geological Society of America Abstracts with Programs. Vol. 45, No. 4, p. 70.
60. Martin, N., Libarkin, J.C., Geraghty Ward, E.M., and Jardeleza, S., 2013, Unintended Cuing in Test Design: College Student Data and Spatial Analysis of Eye-Tracking: Geological Society of America Abstracts with Programs. Vol. 45, No. 4, p. 71.
61. Haddad, N., Ledley, T.S., Dunlap, C., Bardar, E., Youngman, B., Ellins, K.K., 2012, Climate Literacy: Supporting Teacher Professional Development: AGU Fall Meeting 2012, ED23A-0734.
62. Dougherty, M., McElhinny, T., Bowling, B. and Libarkin, J., 2012, Alignment and assessment problems in the undergraduate genetics curriculum: A view from the United States. American Society of Human Genetics, San Francisco, November 9, 2012.

63. Libarkin, J.C., and Atchison, C., 2012, Geoscientists' perceptions of people with disabilities: Geological Society of America Abstracts with Programs, Vol. 44, No. 7, p. 513.
64. McNeal, K., Libarkin, J., Ledley, T.S., Haddad, N., Ellins, K.K., 2012, The role of research in online curriculum development: The case of the EarthLabs climate change curriculum: Geological Society of America Abstracts with Programs, Vol. 44, No. 7, p. 469.
65. Haddad, N., McNeal, K., Ledley, T.S., Dunlap, C., Bardar, E., Youngman, B., Ellins, K.K., Buhr, S., Lynds, S., and Libarkin, J., 2012, EarthLabs workshops: Increasing teachers' understanding and ability to teach climate science: Geological Society of America Abstracts with Programs, Vol. 44, No. 7, p. 350.
66. Steffke, C., and Libarkin, J.C., 2012, Guiding symbology and display selection to produce more effective images for conveying information: Geological Society of America Abstracts with Programs, Vol. 44, No. 7, p. 113.
67. Templeton, C.M., McNeal, K.S., and Libarkin, J.C., 2011, Misconceptions Surrounding Climate Change: A Review of the Literature: AGU Fall Meeting 2011, ED11B-0774.
68. McNeal, K.S., Libarkin, J., Ledley, T., Dutta, S., Templeton, M., and Geroux, J., Blakeney, G.A., 2011, Understanding Student Cognition about Complex Earth System Processes Related to Climate Change: AGU Fall Meeting 2011, ED11B-0777.
69. Petcovic, H.L., Libarkin, J., Hambrick, D.Z., Baker, K.M., Elkins, J.T., Callahan, C.N., Turner, S., Rench, T.A., LaDue, N., 2011, Novice to Expert Cognition During Geologic Bedrock Mapping: AGU Fall Meeting 2011, ED13C-0837.
70. Libarkin, J., Singer, T., Drost, R.E., McNeal, K.S., and Ledley, T.S., 2011, Search efficiency and usability in an online climate change curriculum: Geological Society of America Abstracts with Programs, Vol. 43, No. 5, p. 535.
71. Clark, S.K., Thomas, S., and Libarkin, J., 2011, Improving communication of geologic concepts through effective information design: Geological Society of America Abstracts with Programs, Vol. 43, No. 5, p. 534.
72. LaDue, N., Sibley, D.F., Goldwater, M., Libarkin, J., and Gentner, D., 2011, Causality in analogies generated by expert and novice geoscientists: Geological Society of America Abstracts with Programs, Vol. 43, No. 5, p. 533.
73. Ward, E.M.G., Semken, S., and Libarkin, J., 2011, Collaborative development of place-based, culturally informed geoscience assessment: Geological Society of America Abstracts with Programs, Vol. 43, No. 5, p. 75.
74. Ruetenik, G., Steffke, C., Thomas, S., and Libarkin, J., 2011, Analyzing visual representations of climate change: Geological Society of America Abstracts with Programs, Vol. 43, No. 5, p. 571. *Best Paper Award – Science & Society Division*
75. LaDue, N., Thomas, S., and Libarkin, J., 2011, Earth Science graphics: What students are expected to do with scientists' representations: Geological Society of America Abstracts with Programs, Vol. 43, No. 5, p. 594.
76. McNeal, K.S., Libarkin, J., Ledley, T., Dutta, S., Templeton, M., and Geroux, J., 2011, Measures of high school students understanding of temporal and spatial thinking related to Earth System Science: Geological Society of America Abstracts with Programs, Vol. 43, No. 5, p. 184.
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81. Sibley, D., Gentner, D., and Libarkin, J.C., 2010, Analogical reasoning and global change literacy: Geological Society of America Abstracts with Programs
82. Richardson, K., and Libarkin, J.C., 2010, Training matters: Eye-tracking insights into the role of training on map viewing behavior: Geological Society of America Abstracts with Programs
83. Gulich, L., Libarkin, J.C., McNeal, K., and Ledley, T., 2010, High school student understanding of the cryosphere: Geological Society of America Abstracts with Programs
84. Drost, R., Geraghty Ward, E.M., Libarkin, J.C., 2010, The role of emotion during geologic field mapping: Relationships between emotion, performance, and demographics: Geological Society of America Abstracts with Programs
85. Libarkin, J.C., Clark, S.K., and Simmon, R., 2010, The color of confusion in an expert world: Geological Society of America Abstracts with Programs
86. Libarkin, J.C., Petcovic, H.L., and Hambrick, D.Z., 2009, Geoscientific expertise and spatial visualization: Geological Society of America Abstracts with Programs, v. 41, no. 7, p. 196.
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97. Stokes, A., King, H., Libarkin, J., 2008, Threshold Concepts: Unstuffing the Geoscience Curriculum: Geological Society of America Abstracts with Programs, abstract 221-6.
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99. Rossman, S.L., Libarkin, J.C., and Clark, S.K., 2008, Missing Connections in Student Conceptions of Global Change: Geological Society of America Abstracts with Programs, abstract 175-4.
100. King, H., Clark, S., Libarkin, J., and Stokes, S., 2008, The Emerging Field of Geocognition: Geological Society of America Abstracts with Programs, abstract 274-2.
101. Libarkin, J., and Anderson, S., 2008, CCLI Conference Poster: The Geoscience Concept Inventory: 2008 Course Curriculum and Laboratory Improvement (CCLI) PI Conference, (Washington, D.C., Aug. 13-18, 2008).
102. Libarkin, J., and Baker, K., 2007, Analysis of student conceptions of global earthquake and volcano occurrence: Geological Society of America Abstracts with Programs, v. 39, p. 578.
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104. Baker, K., Libarkin, J., Petcovic, H., 2007, Geologic mapping strategies of novices and experts as evidenced through GPS track and map analysis: Geological Society of America Abstracts with Programs, v. 39, p. 557.
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106. Stokes, A., King, H., and Libarkin, J., 2007, Threshold concepts: A new approach to understanding the way we think and practice in the geosciences?: Geological Society of America Abstracts with Programs, v. 39, p. 552.
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108. Anderson, S.W., and Libarkin, J.C., 2007, Alternative Planetary Science Conceptions Exhibited by College-Educated Americans: Results from Questionnaires and the Geoscience Concept Inventory: 38th Lunar and Planetary Science Conference, (Lunar and Planetary Science XXXVIII), held March 12-16, 2007 in League City, Texas. LPI Contribution No. 1338, p.1396.
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118. Wunderle, M., Libarkin, J.C., and Zickefoose, M., 2006, Investigation of alternative conceptions among pre- and in-service science educators, National Science Teacher Association (Anaheim, CA: April 7, 2006).
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124. Garzione, C.N., and Libarkin, J.C., 2004, Oxygen isotope evidence for rapid Late Miocene uplift of the Altiplano, Bolivia, Geological Society of America Abstracts with Programs, v. 36, No. 5, p. 48.

125. Wunderle, M., Libarkin, J.C., and Rudders, E.C., 2004, Identifying alternative Earth Science conceptions in community college students, Geological Society of America Abstracts with Programs, v. 36, No. 5, p. 218.
126. Rogers, A., Sussman, A.J., and Libarkin, J.C., 2004, Analysis and ranking of Earth Science story books based on terminology, illustrations, and demographics, Geological Society of America Abstracts with Programs, v. 36, No. 5, p. 217.
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128. Libarkin, J.C., and Kurdziel, J.P., 2004, Time is Everything: Geologic Time as a Linchpin to a Complete Understanding of the Earth, submitted as part of a Multiple Paper Set led by S. Brem, "Telling Time: How Science Affects (Mis)Conceptions of the Past, Present, and Future". Paper presented at the National Association for Research in Science Teaching Annual Conference (Vancouver, British Columbia: April 1-4, 2004).
129. Beilfuss, M., Dickerson, D., Libarkin, J., and Boone, W., 2004, Exploring conceptual understandings of groundwater through student's interviews and drawings. Paper presented at the National Association for Research in Science Teaching Annual Conference (Vancouver, British Columbia: April 1-4, 2004).
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132. Boone, W., Libarkin, J.C., and Anderson, S., 2004, Kick it up a notch: Moving beyond vanilla cookbooks in the development of assessments that help science teacher educators. Paper presented at the Association for the Education of Teachers of Science (AEST) 2004 Annual international Conference (Nashville, Tennessee: Jan. 8-11, 2004).
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135. Libarkin, J.C., Beilfuss, M., and Kurdziel, J.P., 2003, Student cognition about the earth system, Paper presented at the National Association for Research in Science Teaching Annual Conference (New Orleans: March 23-26, 2003).
136. Beilfuss, M., Pratt, L., and Libarkin, J., 2003, Exploring views of the global hydrologic cycle through interviews and drawings: Geological Society of America Abstracts with Programs, v. 35, No. 6, p. 155.

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139. Kurdziel, J.P., Libarkin, J.C., Beilfuss, M., 2003, College students' conceptions of evolutionary processes: Probing beyond natural selection, Paper presented at the National Association for Research in Science Teaching Annual Conference (New Orleans: March 23-26, 2003).
140. Beilfuss, M., Stoltman, D., and Libarkin, J., 2003, Analysis of students' spatial knowledge and misconceptions related to earthquakes and volcanoes, Paper presented at the American Association of Geographers Conference (New Orleans, March 3-8, 2003).
141. Boone, W., Libarkin, J.C., Beilfuss, M., and Anderson, S., 2003, Exploring Earth Science misconceptions, Hoosier Association of Science Teachers (February 2003).
142. Libarkin, J.C., Anderson, S.W., Boone, W., Beilfuss, M., [s] Dahl, J., 2002, The Geoscience Concept Test: A New Assessment Tool Based on Student Misconceptions: *Eos Trans. American Geophysical Union*, v. 83 (47), Fall Meet. Suppl., Abstract ED11B-0047.
143. Beilfuss, M., and Libarkin, J.C., 2002, Exploring Views of the Earth System Through Student's Drawings, North Central AETS meeting (October 2002).
144. Libarkin, J.C., Renne, P.R., [s] Knight, K.B., Farley, K., 2002, Cosmogenic isotopes as potential paleoaltimeters: GSA Abstracts With Programs, Paper # 22-11 (October 2002).
145. Chase, C.G., Sussman, A., Libarkin, J.C., 2002, Isostatic support of the Colorado Plateau: GSA Abstracts With Programs, Paper # 113-8 (October 2002).
146. Beilfuss, M., Libarkin, J.C., and Kurdziel, J.P., 2002, Analysis of college students' ideas about the earth through interviews and open-ended questionnaires: GSA Abstracts With Programs, Paper # 154-13 (October 2002).
147. Garzione, C., and Libarkin, J.C., 2002, Carbonate oxygen isotope paleoaltimetry: Calibrating $d^{18}O$ vs. altitude gradients and quantifying the associated errors: GSA Abstracts With Programs, Paper # 22-6 (October 2002).
148. Anderson, S.W., Libarkin, J., Beilfuss, M., Dahl, J., and Boone, W.J., 2002, Analysis of College Students' Ideas about Geologic Time: Questionnaires and Interviews from Four Institutions, Eos, Transactions, v.83, p. S115.
149. Libarkin, J.C, Asghar, A., and Crockett, C., 2002, Invisible Misconceptions: Student Understanding of Ultraviolet and Infrared Radiation. Paper presented at the National Association for Research in Science Teaching Annual Conference (New Orleans).
150. Libarkin, J.C, and Anderson, S.W., 2002, Developing an assessment tool for geology: Stage one, student interviews, Eos, Transactions, v.82, p. F250.
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153. Libarkin, J.C., and Meisner, E., 2001, Comparison of Traditional Introductory Biology Laboratories and General Education Geology Workshops. Paper presented at the National Association for Research in Science Teaching Annual Conference.
154. Libarkin, J.C., and Sussman, A., 2000, Evaluation of proposed mechanisms for Colorado Plateau uplift: Constraints on pre-orogenic crust and mantle lithosphere thickness, GSA Abstracts With Programs, p. A42.
155. Libarkin, J.C., and Garcia, C., 2000, Relationship between student characteristics and science attitudes and conceptions, GSA Abstracts With Programs, p. A353.
156. Libarkin, J.C., 1999, The Science Education Assessment Project (SEAP): Evaluation of Science Teaching in Undergraduate Courses for Non-Majors, GSA Abstracts With Programs, p. A410.
157. Libarkin, J.C., 1999, Inquiry-Based Instruction in the General Education Laboratory, National Association of Research in Science Teaching Final Program and Abstracts, v. 72, p. 200.
158. Libarkin, J.C., Chase, C.G., Quade, J., Poths, J., and McIntosh, W.C., 1998, Cosmogenic ^{21}Ne in quartz as a potential paleoaltimeter: Case study from the 27 Ma Fish Canyon Tuff, CO, Eos, Transactions, v.79, #45, p. F875-876.
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160. Chase, C.G., Quade, J., Libarkin, J.C., and Poths, J., 1996, Cosmogenic ^{21}Ne in quartz as a paleoaltimeter: Eos, Transactions, AGU vol. 77, #46, p. F644.
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162. Libarkin, J. C., 1993, The application of downhole geophysics in a cross section of Cenozoic carbonates and siliciclastics in south-central Florida: GSA Abstracts with Programs, v. 25, #4, p.50.

Department and Other Colloquia (selected)

1. 2014, Expert-novice differences in geologic field mapping and related cognition, Montana Tech, School of Mines and Engineering (October 9, 2014).
2. 2014, Communicating Science: Best Practices for Visualizations, TerreWEB, University of British Columbia (Feb. 27, 2014).
3. 2014, Communicating Science: Best Practices for Visualizations, University of Illinois at Chicago (Feb. 6, 2014).
4. 2014, Visual Communication of Science, North Carolina State University (Jan. 13, 2014).
5. 2013, From Geocognitive Expertise to Student Learning, Arizona State University (March 28, 2013).
6. 2013, Concept Inventories as Research Instruments, Arizona State University (March 28, 2013).
7. 2013, Communicating Science: Best Practices for Visualizations, University of British Columbia (Mar. 14, 2013).
8. 2012, Global Warming and Climate Change: Communication Challenges and Mitigation: Thaksin University, Thailand (Nov. 21, 2012).

9. 2012, Global Warming and Climate Change: Communication Challenges and Mitigation: Prince of Songkhla University, Thailand (Nov. 20, 2012).
10. 2012, Visual Scientific Literacy in Geoscience, Grand Valley State University (Sept. 2012).
11. 2011, Magnetic Continents and Other Conundrums: Student Ideas about the Earth, University of Bayreuth, Germany (Dec. 2011).
12. 2011, Community Development of Concept Inventories: Working Together for Best Practice in Assessment, University of Michigan – Dearborn (Oct. 2011).
13. 2011, Eye-Tracking Climate: The role of imagery in climate change cognition, Rochester Institute of Technology (Sept. 2011).
14. 2011, Assessment in Science, University of Washington – Bothell (May 2011).
15. 2011, Concept Inventories in Science, University of Washington, Biology Education Research Group (May 2011).
16. 2009, Spatial visualization and geocognition, Department of Earth Sciences, University of Rochester (Sept, 2009).
17. 2008, Comparison of expert and novice behavior during field mapping: Insight into best practices for undergraduate field experiences, Department of Earth Sciences, Northern Colorado University (Feb. 1, 2008).
18. 2007, Comparison of expert and novice behavior during field mapping: Insight into best practices for undergraduate field experiences, Center for Research in College Science Teaching and Learning (CRCSTL), Michigan State University (Nov. 29, 2007).
19. 2007, Translating Earth: The State of Geoscience Education in the 21st Century: Department of Geological Sciences, NAGT Distinguished Lecturer Series, University of South Florida (April 6, 2007).
20. 2006, Magnetic Continents and Other Conundrums: Development of the Geoscience Concept Inventory, Towson State University, Department of Geological Sciences (Dec. 12, 2006).
21. 2006, Magnetic Continents and Other Conundrums: Development of the Geoscience Concept Inventory, University of Colorado, Department of Geological Sciences (Nov. 15, 2006).
22. 2006, Asking the Right Questions About Wrong Answers: Scientific Models and Student Ideas, NAGT Distinguished Lecturer Series, Purdue University, Department of Earth and Atmospheric Sciences (Mar. 2, 2006).
23. 2006, Translating Earth: The State of Geoscience Education in the 21st Century, ADVANCE Distinguished Lecture Series, Kansas State University, Department of Geology (Feb. 7, 2006).
24. 2006, Asking the Right Questions About Wrong Answers: Improving Student Learning in College Geoscience, NAGT Distinguished Lecturer Series, Western Michigan University, Department of Geology (Feb. 6, 2006).
25. 2005, When Wrong Answers Ask the Right Questions about Student Learning: Conceptual Change and Assessment in College Science Classrooms: Department of Geology, Bowling Green State University (Nov. 30, 2005).
26. 2005, Rasch Analysis and the Development of the Geoscience Concept Inventory: Physics Education Research Group, Department of Physics, Ohio State University (Nov. 21, 2005).
27. 2005, Asking the Right Questions about Wrong Answers: Department of Geology, Miami University of Ohio (Nov. 16, 2005).

28. 2004, A Tale of Three Theories: Lessons Learned from the Development of the Geoscience Concept Test: Math Education Seminar, Ohio University (March 11, 2004).
29. 2004, Using the Wrong Answers to Ask the Right Questions about Student Learning: Conceptual Change and Assessment in College Science Classrooms: University of Akron (Mar. 16, 2004).
30. 2004, A Tale of Three Theories: Development of the Geoscience Concept Inventory: Department of Astronomy, University of Arizona (Mar. 29, 2004).
31. 2003, Student Ideas about the Earth: Comparing Community Colleges with Other Institutions of Higher Education, Spokane Community College
32. 2003, Women in the Geosciences: From the Classroom to the Professorate: MIT, Dept. of Earth, Atmospheric, and Planetary Sciences.
33. 2001, Muon-production of ^{38}Ar: Evidence and Applications: University of Rochester, Dept. of Earth and Environmental Sciences.

Memberships: Geological Society of America (GSA), American Geophysical Union (AGU), National Association of Geoscience Teachers (NAGT), National Association for Research in Science Teaching (NARST), International Geoscience Education Organization (IGEO)

Current Students, Visiting Scholars, and Postdoctoral Fellows (Michigan State University)

- Amanda Lorenz, PhD student, Entomology. Co-Advised with Gabe Ording. (August 2013-present).
- Caitlin Callahan, Postdoctoral Fellow, Geological Sciences (July 2013-present).
- Christy Steffke, MS student, Geological Sciences (July 2011-present).

Former Students, Visiting Scholars, and Postdoctoral Fellows (Michigan State University)

- Robert Drost, PhD student, Geological Sciences with specialization in Environmental Science & Policy (8/2009-5/2014). *Post Doctoral Fellow, George Mason University's Center for Climate Change Communication (4C).*
- Frank Forcino, Postdoctoral Fellow, Geological Sciences and BEACON (5/2013-5/2014). *Assistant Professor at Western Carolina University*
- Carmen McCallum, Postdoctoral Fellow/Research Associate, Collaboration with Associate Provost for Undergraduate Education and Directors of the Centers for Integrative Studies. (8/2012-8/2013). *Assistant Professor of Counseling and Higher Education, Buffalo State University*.
- Thomas Kim, Sabbatical Scholar with CREATE for STEM. (8/2012-5/2013). *Biochemist from Rochester Institute of Technology*.
- Sheldon Turner, PhD student, Geological Sciences with specialization in Environmental Science & Policy (7/2008-7/2013). *Visiting Assistant Professor in the Institute for the Study of the Environment, Sustainability, and Energy, Northern Illinois University*.
- Nicole LaDue, PhD student, Geological Sciences with specialization in Cognitive Science (8/2009-7/2013). *Assistant Professor of Geology and Environmental Science, Northern Illinois University*.
- Sarah Jardeleza, Postdoctoral Fellow/Research Associate, Center for Integrative Studies in General Science (8/2011-8/2012). *Research Associate, Michigan State University.*

- Terri McElhinny, Postdoctoral Fellow/Research Associate, Geological Sciences and CRCSTL (8/2010-8/2012). *Assistant Professor of Zoology, Michigan State University.*
- Emily Ward, Postdoctoral Fellow/Research Associate, Geological Sciences and CRCSTL (8/2009-7/2011). *Assistant Professor of Science, Rocky Mountain College, Montana.*
- Onchira Chittasirinuwat, Visiting Scholar, PhD student at Mahtidol University, Thailand (10/2010-6/2011). *Deceased.*
- Scott Clark, Postdoctoral Fellow/Research Associate, Geological Sciences and CRCSTL (8/2007-7/2010). *Assistant Professor of Geology, University of Wisconsin-Eau Claire.*
- Juli [Moore] Grettenberger, Graduate Student, Geological Sciences (8/2007-6/2009). *Geologist, Devon Energy, Houston, TX.*
- Suttida Rakkapoa, Visiting Scholar, PhD student at Mahtidol University, Thailand (7/2008-6/2009). *Instructor of Physics, Prince of Songkhla University, Songkhla, Thailand*

Graduate Theses and Undergraduate Independent Studies Supervised (selected and completed)

Robert Drost, Ph.D., Geological Sciences with Specialization in Environmental Science & Policy, Michigan State University: COMMUNICATING NATURAL HAZARD RISK: WARNINGS, DECISIONS AND PRECAUTIONARY BEHAVIOR. 2009-2014.

Nicole LaDue, Ph.D., Geological Sciences with Specialization in Cognitive Science, Michigan State University: INTEREST, SKILLS, AND ABILITY IN THE GEOSCIENCES. 2009-2013.

Sheldon Turner, Ph.D., Geological Sciences with Specialization in Environmental Science & Policy, Michigan State University: THE IMPACT OF VISUALIZATIONS IN PROMOTING INFORMED NATURAL RESOURCE DECISIONS. 2008-2013.

Samuel Rossman, B.S. Biological Sciences, Michigan State University: MISSING CONNECTIONS IN GLOBAL CHANGE: STUDENT IDEAS ABOUT GLOBAL CHANGE OVER TIME. 2007-2008.

Marcus Wunderle, M.S., Geological Sciences, Ohio University: INVESTIGATING IN-SERVICE TEACHERS' AND UNDERGRADUATES' MENTAL TECTONIC MODELS. May 2004-February 2007.

Saunia Withers, B.A. Geological Sciences, Ohio University: MAGNETOSTRATIGRAPHY OF 5-10 MA SEDIMENTS OF THE CORQUE SYNCLINE, BOLIVIA. December 2003-December 2006.

Tim Sekula, M.S. Geological Sciences, Ohio University: THE EFFECTS OF VOCABULARY INTERVENTION ON NINTH GRADERS' UNDERSTANDING OF PLATE TECTONICS. August 2005-December 2006.

Kate Grumbach, B.S. Secondary Science, Ohio University: ARGUING WITH THE EARTH: A LOOK AT EARTH AND SPACE SCIENCE CONCEPTS AT THE COLLEGE LEVEL. 2003-2004.

Crystal Garcia, NASA Space Sciences Undergraduate Intern, University of Arizona: THE SCIENCE EDUCATION ASSESSMENT PROJECT (SEAP). 1999-2000.