

Curriculum Vitae Jennifer B. Glass

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Education

- Ph.D. Candidate, Geological Sciences, with emphasis in Biogeochemistry (expected graduation May 2011) Arizona State University, Tempe, AZ
Thesis: Molybdenum requirements for the nitrogen cycle (Ariel Anbar, chair)
- B.S. 2006, Oceanography, *summa cum laude* with Distinction University of Washington, Seattle, WA
Thesis: Development of an intrusive core complex and early landsliding on Juana Ridge, Fernandina northwest submarine rift zone, Galápagos Archipelago
- B.S. 2006, Earth and Space Sciences, *cum laude* with Distinction University of Washington, Seattle, WA
Thesis: Timescales of seawater-oceanic crust interaction at ODP Hole 1256, Leg 206, from uranium-series disequilibria

Research Interests

Trace metal biogeochemistry, geomicrobiology, environmental bioinorganic chemistry, nitrogen biogeochemistry

Peer-Reviewed Publications

- Godrey LV, JB Glass. The geochemical record of the ancient nitrogen cycle, nitrogen isotopes and metal co-factors. Submitted for special issue of *Methods in Enzymology*
- Glass JB, F Wolfe-Simon, JJ Elser, AD Anbar. 2010. Molybdenum-nitrogen colimitation in freshwater and coastal heterocystous cyanobacteria. *Limnology & Oceanography* 55(2): 667-676
- Glass JB, F Wolfe-Simon, AD Anbar. 2009. Coevolution of metal availability and nitrogen assimilation in cyanobacteria and algae. *Geobiology* 7(2): 100-123
- Glass JB, DJ Fornari, HF Hall, AA Cougan, HA Berkenbosch, ML Holmes, SM White, G de la Torre. 2007. Submarine volcanic morphology of the western Galápagos based on EM300 bathymetry and MR1 side-scan sonar, *Geochemistry Geophysics Geosystems* 8, Q03010, doi:10.1029/2006GC001464

Manuscripts in Preparation

- Glass JB. Molybdenum limitation of nitrate assimilation in Castle Lake, California. In revision for *Biogeochemistry*. Experimental-100% complete, Text-75% complete, Planned submission 8/15/10.
- Glass JB, ES Boyd, SJ Romaniello, AD Anbar. Evolution of molybdenum nitrogenase due

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to declining marine nickel at 2.7 Ga. In prep. for *Nature Geoscience*. Text-50% complete, Planned submission 9/1/10.

Glass JB, A Chappaz, B Eustis, AC Heyvaert, D Waetjen, AD Anbar. Anthropogenic vs. natural sources of molybdenum to Castle Lake, California. In prep. for *Geochimica Cosmochimica Acta*. Experimental-90% complete, Text-50% complete, Planned submission 10/1/10.

Glass JB, F Wolfe-Simon, AT Poret-Peterson, AD Anbar. 2010. Regulation of Mop, a molybdenum storage protein, in the cyanobacterium *Nostoc* PCC 7120. In prep. for *Applied and Environmental Microbiology*. Experimental-95% complete, Text-25% complete, Planned submission 12/1/10.

Morgan JL, JB Glass, KA Alexander, A Hamilton, R Mestek, J Shipp, R Raiswell, AD Anbar. Growth of an Arctic diatom on iceberg iron nanoparticles. In prep. for *Marine Chemistry*. Experimental-100% complete, Text-90% complete, Planned submission 9/1/10.

Conference Presentations (* indicates a published abstract; ** indicates an invited talk)

2010. Glass JB, F Wolfe-Simon, AT Poret-Peterson, ED Hughes, AD Anbar. Post-transcriptional regulation of Mop expression by molybdenum. 7th International BioMetals Symposium (Poster)

2010. Glass JB, F Wolfe-Simon, AT Poret-Peterson, ED Hughes, AD Anbar. Transcriptional and translational controls on molybdenum regulation of *mop* expression. Environmental Bioinorganic Chemistry Gordon Research Conference (Poster)

*2010. Glass JB, S Chandra, JJ Elser, AD Anbar. Molybdenum limitation of nitrate assimilation in Castle Lake, California. ASLO-NABS Joint Meeting (Oral presentation)

2010. Glass JB, F Wolfe-Simon, AT Poret-Peterson, ED Hughes, AD Anbar. Signatures of low-Mo ancient ocean may be preserved in cyanobacterial genomes. Astrobiology Science Conference, League City, TX (Poster)

2010. Glass JB, F Wolfe-Simon, AT Poret-Peterson, ED Hughes, AD Anbar. Regulation of *mop* gene expression by Mo in heterocystous cyanobacteria: Signatures of Mo-limited photosynthesis in the ocean before 800 Ma? 7th Annual Southern California Geobiology Symposium, California Institute of Technology (Poster)

2010. Glass JB, F Wolfe-Simon, AT Poret-Peterson, ED Hughes, AD Anbar. Signatures of low-Mo ancient oceans may be preserved in cyanobacterial genomes. 11th Annual Graduates in Earth, Life and Social Sciences Conference, Arizona State University (Oral presentation)

2009. Glass JB, W Gilhooly, C Reinhard, T Lyons, AD Anbar. Molybdenum inhibition of sulfate reduction: Mo-addition incubation experiments at Lake Mahoney, British Columbia. 6th Annual Southern California Geobiology Symposium, University of California Riverside (Poster)

**2009. Glass JB, F Wolfe-Simon, JJ Elser, AD Anbar. Molybdenum storage: connections to the nitrogen, carbon and sulfur cycles. 6th Annual Southern California Geobiology Symposium, University of California Riverside (Oral presentation)

*2008. Glass JB, F Wolfe-Simon, AD Anbar. Molybdenum storage in cyanobacteria:

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- "Mopping" up excess Mo. *Eos Trans. AGU*, 89(52), Fall Meet. Suppl., Abstract B21B-0343 (Poster)
2008. Glass JB, F Wolfe-Simon, AD Anbar. Molybdenum-nitrogen colimitation and distribution of putative Mo storage and regulatory proteins in diazotrophic cyanobacteria. Environmental Bioinorganic Chemistry Gordon Research Conference (Poster)
- *2008. Glass JB, F Wolfe-Simon, AD Anbar. The co-evolution of nitrogen and molybdenum biogeochemical cycles: Mo requirements for nitrogen assimilation in diazotrophic heterocystous cyanobacteria. *Astrobiology* 8: 357 (Oral presentation)
2008. Glass JB, F Wolfe-Simon, AD Anbar. Coping with low molybdenum: cyanobacterial strategies to scavenge and store a precious metal. 5th Annual Southern California Geobiology Symposium, University of Southern California (Poster)
2008. Glass JB, F Wolfe-Simon, AD Anbar. Molybdenum requirements for nitrogen assimilation in heterocystous cyanobacteria and implications for Proterozoic ocean chemistry. 9th Annual Graduates in Earth, Life and Social Sciences Conference, Arizona State University (Oral presentation)
- *2007. Glass JB, F Wolfe-Simon, AD Anbar. Molybdenum metallomics in heterocystous cyanobacteria. 1st Annual International Symposium on Metallomics Meeting, Nagoya Japan (Poster)
2007. Glass JB, F Wolfe-Simon, AD Anbar. Molybdenum requirements for nitrogen fixation in cyanobacteria: Response to changing Mo concentration in growth media. Center for Environmental Bioinorganic Chemistry Meeting, Princeton (Poster)
2007. Glass JB, F Wolfe-Simon, AD Anbar. Molybdenum-nitrogen colimitation in cyanobacteria: the evolutionary imprint of changing metal availability in ancient oceans. 4th Annual Southern California Geobiology Symposium, California Institute of Technology (Oral presentation)
- *2007. Glass JB, ML Krieg, F Wolfe-Simon, AD Anbar. Trace metal controls on the efficiency of nitrogen fixation: assessing microbial metal requirements in ancient oceans. ASLO 2007 Aquatic Sciences Meeting, Abstract 1037 (Poster)
- *2006. Glass JB, DF Fornari, MA Tivey, HF Hall, AA Cougan, HA Berkenbosch, ML Holmes, SM White, G de la Torre. New insights on submarine volcanism in the western Galapagos archipelago from high resolution sonar and magnetic surveys. *Eos Trans. AGU*, 87(52), Fall Meet. Suppl., Abstract V23A-0590 (Poster)
- *2005. Glass JB, KM Cooper, JC Alt, T Elliott, DAH Teagle. Recent alteration of 15-Ma oceanic crust, ODP Site 1256, Leg 206. 2005. *Eos Trans. AGU*, 86(52), Fall Meet. Suppl., Abstract V43B-1568 (Poster)

Popular Science Articles

- Glass JB. 2006. Methane mimosas on ice: Scientists explore a reservoir of frozen methane on the seafloor off the northwest coast. *Northwest Science & Technology*
- Glass JB. 2006. Microbial iron miners on Mars? Tiny tunnels in meteorite suggest the possibility of ancient life on the red planet. *Northwest Science & Technology*
- Glass JB. 2005 (Feb 28). Glaciers carved out much of what makes Puget Sound special. *The Olympian*

Fellowships, Honors and Awards

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P.E.O. Scholar Award, \$15,000, 2010-2011
National Science Foundation Graduate Research Fellowship (Geosciences-Geochemistry), \$91,000, 2007-2010
Best Poster Award, 7th Annual Southern California Geobiology Symposium, 2010
2nd Place, NASA Astrobiology Institute Poster Competition, Astrobiology Science Conference (AbSciCon), 2010
Student Travel Award, Astrobiology Science Conference (AbSciCon), 2010
University Graduate Fellowship, Arizona State University, \$12,000, 2006-2009
Poster Award, Journal of Analytical and Bioanalytical Chemistry, Nagoya, Japan, 2007
2nd Place Best Talk, 4th Annual Southern California Geobiology Symposium, 2007
Student Travel Award, ASLO Aquatic Sciences Meeting, 2007
Graduate Student Travel Award, Arizona State University, 2007
First Place Undergraduate Student Poster Session, Northwest Geological Society, 2006
Douglas E. Merrill Prize for Excellence, Dept. Earth & Space Sciences, University of Washington, 2006
Leroy Backus Scholarship, School of Oceanography, University of Washington, 2005-2006
Undergraduate Service Award, Dept. Earth & Space Sciences, University of Washington, 2005 & 2006
Wooley, Crooks and Wheeler Scholarship, Department of Earth and Space Sciences, University of Washington, 2004-2006
Undergraduate Research Travel Award, University of Washington, 2005
Kenneth Robbins Scholarship for Field Geology Study, University of Washington, 2005
Undergraduate Library Research Award, University of Washington, 2004

Research Experience

Ph.D. Thesis Research	Astrobiology Laboratories (PIs Ariel Anbar & James Elser), Metallomics Laboratory (PI Ariel Anbar), W.M. Keck Environmental Biogeochemistry Laboratory (PI Ariel Anbar) Growth of algal cultures in chemostat, elemental analysis by inductively-coupled plasma mass spectrometry and elemental analyzer, quantitative real-time polymerase chain reaction, immunoblotting, protein overexpression, gas chromatography	Arizona State University, Tempe, AZ (2006-present)
Summer Student Fellow	Deep Ocean Exploration Institute, PI Daniel Fornari Editing and analysis of multibeam bathymetry and magnetometer data	Woods Hole Oceanographic Institution, Woods Hole, MA (2006)
Undergraduate Research Assistant	Isotope Geochemistry Laboratory, PIs Bruce Nelson & Kari Cooper Preparation of rock and mineral samples for isotopic analysis; ion exchange column chemistry;	University of Washington, Seattle, WA (2004-2006)

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multi-collector inductively coupled plasma mass spectrometry

Undergraduate Research Assistant	Cosmogeochemistry Laboratory, PI John Baross Polymerase chain reaction; culturing experiments, processing of Lost City Hydrothermal Field samples	University of Washington, Seattle, WA (2005-2006)
Undergraduate Research Assistant	Stable Isotope Laboratory, PI Ana Christina Ravelo Preparation of foraminifera fossils from Ocean Drilling Program sediment cores for stable isotopic analysis	University of California Santa Cruz, CA (2002-2003)

Grant Activity

Lewis and Clark Fund for Exploration and Field Research in Astrobiology, American Philosophical Society and NASA Astrobiology Institute, \$5,000, 2009
Graduate and Professional Student Association Jumpstart Grant, ASU, \$500, 2009
Sigma Xi National Grants-in-Aid Research Program, \$400, 2008-2009
Graduate and Professional Student Association Research Grant, ASU, \$1,998, 2008-2009
Geological Sciences Research Initiation Grant, ASU, \$1,000, 2006-2007
Mary Gates Undergraduate Research Grant, U. Wash., \$8,000, 2004-2006

Teaching Experience

Facilitator, "Strategies for Writing Productivity" Interactive Discussion, Preparing Future Faculty Program, Dec. 4, 2009
Guest Lecturer, "Nitrogen Cycling and Evolution of the Nitrogen Budget," April 15, 2009
GLG 481/CHM 481: Geochemistry (professor: H. Hartnett)
Teaching Assistant, ASU, Tempe, AZ, Fall Semester 2006; "GLG 103: Introduction to Geology Laboratory (3 sections)
Laboratory Mentor, Undergraduate Students: Michelle Krieg (ASU, Geological Sciences, '07); Zureyma Martinez (ASU, Biology, '11); Eric Hughes (ASU, Biology & Geological Sciences, '11)

Invited Seminars

2009 (July 15). U Nevada Las Vegas. School of Life Sciences. Host: Brian Hedlund
2009 (May 18). Princeton University, Department of Geosciences, Environmental Geology and Geochemistry Lecture Series. Host: Bess Ward
2008 (Nov. 12). UC Riverside. Department of Geological Sciences. Host: Tim Lyons

Service

Departmental Chair, School of Earth and Space Exploration Graduate Student Faculty Candidate Search Committee, ASU, 2010
Chair, School of Earth and Space Exploration Colloquium Committee, ASU, 2009 (2 semesters)
President, Earth and Space Sciences Geology Club, U Wash.,

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2005-2006

- Institutional Secretary, Central Arizona Chapter, American Women in Science, 2010-2011
- Member, ASU Hearing Board, 8 May 2009
- Team Volunteer, CareerWISE: Internet-Delivered Resilience Training to Increase the Persistence of Women Ph.D. Students in STEM Fields, ASU, 2007-present
- Grant Reviewer, Graduate and Professional Student Association Research Grant Competition, ASU, 2006
- Professional Discussion Leader, "Metal Ions and Nitrogen Fixation," Environmental Bioinorganic Chemistry Gordon Research Conference, 14 June 2010
- Co-chair, "Bioessential Elements through Space and Time," Astrobiology Science Conference, 28 Apr. 2010
- Co-chair, "Evolution of the Marine Nitrogen Cycle through Time," American Geophysical Union Fall Meeting, 18 Dec. 2008
- Resource Person, NSF Graduate Research Fellowship Program, 2008-2010
- Community Judge, Arizona State Science Fair, 23 Mar. 2009; 24 March 2010
- Geology Course Instructor, Arizona Nature Conservancy Hassayampa River Preserve, Wickenburg, AZ, 2008
- Session Mentor and Volunteer, Girls in Engineering, Math and Science (GEMS), Seattle, WA, 2004-2006
- School Programs Volunteer, UC Santa Cruz, Seymour Center at Long Marine Lab, 2002-2003

Professional Development

- Geoscience Education Reading Group, Spring 2010
- On the Cutting Edge NSF Workshop, Preparing for an Academic Career in the Geosciences, University of Nevada Las Vegas, 16-19 July 2009
- Preparing Future Faculty, Graduate College, ASU, 2008-2010 (Exploratory Phase (2 semesters) and Participatory Phase (2 semesters))
- Professional Development Strategies for Success Workshops, Graduate College, ASU, 2008-2009 (4 workshops attended)
- Applied Phylogenetics Workshop, Bodega Bay Marine Laboratory, CA, March 2008
- Groundwater and Lakes Intern, Snohomish County Surface Water Management, Everett, WA, 2004

Sampling Trips

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Galapagos Islands (R/V Thompson). Jan. 2006 (with U Wash. Oceanography)
Lake Mahoney, British Columbia. July 2008 (with collaborators from UC Riverside)
Castle Lake, California. July 2008; June-July 2009 (with collaborators from U Nevada
Reno, UC Davis, UC Riverside and the Desert Research Institute)
Lake Tahoe, Nevada. Oct. 2009; April-May 2010 (with collaborators from U Southern
California)

Professional Memberships

American Geophysical Union, American Society of Limnology and Oceanography,
Association for Women in Science

Language Proficiency

German (reading); French (reading)