

CURRICULUM VITAE

BROOKE A. LOVE

2208 Henry Street, Bellingham WA 98225 ▪ (360)650-2894 ▪ (206)300-4999 (cell) ▪ Brooke.Love@wwu.edu

I am a geochemist, interested in the chemistry of volatiles in the marine environment. I have examined gasses in the context of ocean acidification, submarine volcanoes, and hydrothermal systems. I also have an interest in the development of novel instrumentation that will increase the scope of the possible research questions in these areas. I have ten years of research and teaching experience in chemistry, engineering geology, and oceanography. I hold a PhD in Chemical Oceanography, an MS in Chemical Oceanography from the University of Washington and a BS in Geology from Stanford University. I am currently an Assistant Professor at Western Washington University.

EDUCATION

University of Washington, PhD in Chemical Oceanography, 2009

Marvin Lilley, Advisor

Stanford University, B.S. Engineering Geology, 1997

David Pollard, Advisor

California Polytechnic State University, Additional Chemistry Coursework

Nanine VanDraanen, Advisor

RESEARCH EXPERIENCE

WESTERN WASHINGTON UNIVERSITY, SHANNON POINT MARINE CENTER, BELLINGHAM WA

2009-Present

- Co-PI on NSF study which will explore the connections between ocean acidification, the food quality of phytoplankton, especially their lipid profiles, and the growth and reproduction of copepods which feed on them. This study was awarded over \$500,000 starting in January of 2013 to address these questions in collaboration with colleagues at the University of Washington who were awarded an additional \$200,000 for this work.
- Co-PI on NSF study to investigate the effects of ocean acidification on food web interactions of the coccolithophorid, *Emiliania huxleyi*, and its microzooplankton grazers, including design and construction of a laboratory system for creating modified CO₂ atmospheres, and measuring the resulting water chemistry. (>\$500,000 over three years starting in 2010, including support of two graduate students)
- Co-Chief Scientist on a research cruise to recover ocean bottom seismometers deployed on the seamount Lo'ihī, and to investigate the water chemistry of the overlying plume. Research was supported by an RSP mini grant. (summer of 2011)
- Research advisor for four NSF summer REU students as well as four MIMSUP (multicultural program) students. Supported in part by a grant from the Borman Family Foundation.

UNIVERSITY OF WASHINGTON, CHEMICAL OCEANOGRAPHY, SEATTLE, WA

2002-2009

- Designed, constructed and tested a prototype dissolved carbon dioxide sensor for use in hydrothermal vents at pressures of 300 bar and temperatures up to 400 C.
- Collaborated in development, high temperature calibration and field testing of an in-situ Raman spectrometer for use in hydrothermal environments, including operating the instrument from Alvin at the East Pacific Rise.
- Participated in numerous research cruises, including dives on DSV Alvin, work with the ROV ROPOS, CTD operations, sample preparation on a seagoing vacuum line and analysis of samples by gas chromatography.

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PFIZER GLOBAL RESEARCH – SAN DIEGO, CA – LABORATORY TECHNICIAN

Summer 2001

- Synthesized experimental pharmaceuticals using combinatorial chemistry, focusing on the effects of catalysis.
- Developed proficiency in low temperature and glove box techniques as well as FT-NMR and LC-MS.

TEACHING EXPERIENCE

WESTERN WASHINGTON UNIVERSITY, BELLINGHAM WA

2009-present

Visiting Assistant Professor (2009-2012)

Assistant Professor (2012- present)

- Taught undergraduate lecture and lab courses in oceanography as part of an intensive multicultural program, lecture and lab in water quality, and introduced a marine component to the environmental systems course.
- Taught graduate courses in marine chemistry and estuarine ecology.
- Developed new courses in marine conservation and marine chemistry.
- Student evaluations were consistently very good to excellent.

UNIVERSITY OF WASHINGTON, SEATTLE WA

2002-2009

Research Assistant, Teaching Assistant

- Received an overall score of 4.45/5 on student evaluations in introductory Oceanography class for majors
- TA for introductory graduate class in chemical oceanography, fall 2007

CALIFORNIA POLYTECHNIC, SAN LUIS OBISPO, CA

2000-2002

Teaching Assistant

STANFORD UNIVERSITY, STANFORD CA

1993-1997

Teaching assistant

AWARDS AND RECOGNITION

Nominated for Excellence in Teaching Award, Western Washington University	2016
Link Foundation Fellowship for Ocean Engineering and Instrumentation – stipend, research and publication funds	2006
Dean A McManus Excellence in Teaching Award - for outstanding graduate teaching.	2003
Achievement Reward for College Scientists (ARCS) fellowship – for recruitment of exceptional students to U.W.	2002
Selected for membership in honor society at California Polytechnic State University.	2001
Outstanding Woman Geoscientist Award – Bay Area Association of Women Geoscientists	1997
Academic Honors conferred at graduation from Stanford University.	1997

PUBLICATIONS

Love, B.A, J.A Resing, J.P. Cowen, J.E. Lupton, D.J. Fornari, T.M. Shank, D. Biller, (2009) Methane, manganese, and helium in hydrothermal plumes following volcanic eruptions on the East Pacific Rise near 9 degrees 50' N, *Geochemistry, Geophysics, Geosystems*, 9, Q06T01 June 28

Cowen, J.P., D.J. Fornari, T. Shank, B. Love, B. Glazer, A.H. Treusch, R.C. Holmes, S.A. Soule, E.T. Baker, M. Tolstoy,

K.R. Pomraning, (2007) Volcanic Eruptions at East Pacific Rise Near 9°50'N. *Eos Trans. AGU*, 88(7), 81, 83.

Tolstoy, M., J.P. Cowen, E.T. Baker, D.J. Fornari, K.H. Rubin, T.M. Shank, F. Waldhauser, D.R. Bohnenstiehl, D.W. Forsyth, R.C. Holmes, B.A. Love, M.R. Perfit, R.T. Weekly, S.A. Soule, B. Glazer, (2006) A sea-floor spreading event captured by seismometers, *Science* 314 (5807): 1920-1922 Dec 22

Dable, B., B. Love, T. Battaglia, K. Booksh, M. Lilley, B. Marquardt (2006) Characterization and Quantitation of a Tertiary Mixture of Salts by Raman Spectroscopy in Simulated Hydrothermal Vent Fluid, *Applied Spectroscopy*, 60 (7): 773-780

ABSTRACTS AND PROFESSIONAL MEETINGS

Student authors in italics

Love, B., *C.E.O'Brien*, D. Bulthuis, N. Burnett, H. Bohlmann, (2014) Extreme variability in pCO₂ in a macotidal estuary Padilla Bay. Salish Sea Ecosystem Conference, Seattle WA, May 2014

C.E.O'Brien, **Love, B.**, M.B. Olson, D. Bulthuis, (2014) Extreme variability in pCO₂ in a macotidal estuary governed by tidal and diurnal forcings. Ocean Sciences, Honolulu HI

Risenhoover, K. A.; Olson, M. B.; **Love, B. A.**; *Kendall, K. A.*; (2014) Higher Microzooplankton Grazing and growth when feeding on phytoplankton cultured under elevated pCO₂ conditions, Joint Aquatic Sciences meeting, Portland OR

Kendall, K. A.; Olson, M. B.; **Love, B. A.**; Strom, S. L.; *Risenhoover, K.*; (2014) Marine Microzooplankton are indirectly affected by ocean acidification through effects on their phytoplankton prey, Ocean Sciences Meeting, Honolulu HI, (Abstract ID: 17426)

Villalobos, C.; Schoo, K; *McLasky, A.*; Love, B., Keister, J, (2014) Ocean acidification impacts of copepod respiration rates, Western Society of Naturalists

Love, B., M.D. Lilley, D. Butterfield, J. Lupton, E. Olson (2010) What short term variability of chloride and gas content reveal about phase separation at the Main Endeavour Field. ASLO, Portland OR

Love, B., M.D. Lilley, D. Butterfield, E. Olson (2006) Fluid Chemistry and Dissolved Gasses on the Endeavour Segment from 1991 to 2005: Lasting Effects of Volcanic Activity on Field and Segment Scales *Eos Trans. AGU*, 87(52), Fall Meet. Suppl., Abstract V23B-0613

Love, B., M.D. Lilley, B. Marquardt (2006) Development of an Improved In-situ Carbon Dioxide Sensor for High Temperature Hydrothermal Systems, , Proceedings of the Ridge Theoretical Institute, Mammoth Lakes, CA, 25-30 June

Love, B., M. Lilley, R. Johnson, D. Demaray, (2005) Development of an In-situ CO₂ Sensor for Hydrothermal Vents, Ridge 2000 Cyprus Field School, Troodos Ophiolite, Cyprus

The Next Generation of in-situ Biological and Chemical Sensors in the Ocean, Woods Hole Inst. of Oceanography, 2003

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SERVICE AND OUTREACH ACTIVITIES

Numerous public speaking and education engagements, including Padilla Bay Youth Environmental Summit, Nooksack Salmon Enhancement Association Citizen Action Training School, Sound Living Community, Inaugural Western Legacy Lunch, and Anacortes Save Our Seas, WWU Classes without quizzes, Western Green Tie Gala, Bellingham FCCB earth day address.

WWU Green Energy Fee team faculty advisor (2010-2011) – Worked with a team of students and helped them win a grant for over \$60,000 for the installation of LED lights in a campus parking lot.

Mentor for American Society of Limnology and Oceanography Multicultural Program (2010) – guided students through their first large meeting.

Compass 2 Campus host 2009, 2010, 2011, 2012 – Hosted multiple groups of 5th graders during campus event.

Huxley College Community Affairs Committee (2009-2010), Senate Library Committee (2012-2014), as well as service on graduate committees

WWU Sigma Xi Poster completion judge (2010, 2011)

Ocean Science Bowl Official (2006, 2007) – Served as rules judge for regional ocean science competition for high school students. Winning team goes on to national competition.

SEAGOING EXPERIENCE

July 2011	R.V. Kilo Moana: Co-Chief Scientist, water column sampling for methane, helium, pH and trace metals at Lo'ihī seamount.
Nov. 2006	R.V. Atlantis: Vacuum extraction for gas analysis of high temperature samples collected by DSV Alvin at 9° N East Pacific Rise
May 2006	R.V. New Horizon: Response cruise to 9° N East Pacific Rise. Collected water column and near bottom tow-cam samples for helium and methane isotopic composition, shipboard analysis of methane concentrations.
Nov. 2004	R.V. Atlantis: 9° N East Pacific Rise, Alvin Dive 4043, In-Situ Raman Spectroscopy
May 2004	R.V. Atlantis: Juan de Fuca Ridge, Alvin Dive 4019, Marker Deployment, mapping, trash run
July 2003	R.V. Thomas G. Thompson, Juan de Fuca Ridge, gas chromatography of water column samples

ADDITIONAL EXPERIENCE

UNITED STATES PEACE CORPS – MALI, WEST AFRICA

1998-2000

Volunteer-Natural Resources Management

- Elected as president of regional volunteer association. Led training sessions for incoming volunteers.
- Implemented vaccination tracking system at local health center.
- Funded and built two wells in a women's cooperative garden.
- Taught English in 7th and 8th grade classrooms.
- Carried out world map and Africa map projects in three schools.

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TRIMBLE NAVIGATION– SUNNYVALE, CA
Technical Support Specialist

1997-1998

- Provided technical support and trouble shooting of GPS hardware and software to professional surveyors.
- Tested new products for identification of bugs or defects before release.

SELECTED SKILLS & METHODOLOGIES

Gas Chromatography	CTD operations
Vacuum extraction, gas tight sampling	Matlab programming, data and signal processing
High pressure and high temperature systems	Low temperature and glove box chemistry
Trained Alvin submersible observer	French and Fulani language proficiency

MEMBERSHIP

American Geophysical Union
American Chemical Society
National Association of Geoscience Teachers

STUDENT COMMENTS ON TEACHING

Great! I'm definitely a hands on learner and she did a great job at leading small groups.

Knowledgeable and approachable, she knew her stuff and did a good job of answering class questions.

Brooke was easy to approach, very kind, but knowledgeable and helpful at the same time.

Brooke's comments were very thorough and helpful in getting my paper started and she gave great advice about where to go for more sources.

I really enjoyed her lectures. The handouts were great – they really highlight the important information.