

Biographical Sketch – David A. Butterfield, Ph.D.

Principal Research Scientist

Earth Ocean Interactions Group

University of Washington Joint Institute for the Study of the Atmosphere and Ocean (JISAO) &
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Professional Preparation

Portland State University, Chemistry and German, with honors, B.A. 1980

University of Washington, Chemical Oceanography with Professor Russell E. McDuff, Ph.D. 1990

Pacific Marine Environmental Laboratory, Boron and Strontium Isotope Systematics in Hydrothermal Systems with Senior Scientist Richard Feely, NRC Postdoctoral Fellow 1991-1993

Appointments

Acting Group Leader, PMEL Earth-Ocean Interactions	2019 – present
Principal Research Scientist, JISAO, University of Washington	2014 – present
Senior Research Scientist, JISAO, University of Washington	2003 – 2014
Affiliate Associate Professor, School of Oceanography, University of Washington	2003 – present
Affiliate Assistant Professor, School of Oceanography, University of Washington	1993 – 2003
Oceanographer, JISAO, University of Washington	1993 – 2003

Products: 5 Most Relevant Papers (of 98 published peer-reviewed journal articles)

- 1) **Butterfield DA**, K Nakamura, B Takano, MD Lilley, JE Lupton, JA Resing, KK Roe. **2011**. High SO₂ flux, sulfur accumulation, and gas fractionation at an erupting submarine volcano. *Geology* 39:803–806. doi:10.1130/G31901.1
- 2) Hager KW, H Fullerton, **DA Butterfield**, CL Moyer. **2017**. Community structure of lithotrophically-driven microbial mats from the Mariana arc and back-arc. *Front. Microbiol.* 8:1578. doi:10.3389/fmicb.2017.01578
- 3) Baker ET, SL Walker, JA Resing, WW Chadwick, Jr, SG Merle, MO Anderson, **DA Butterfield**, NJ Buck, S Michael. **2017**. The effect of arc proximity on hydrothermal activity along spreading centers: New evidence from the Mariana back-arc (12.7°–18.3°N). *Geochem. Geophys. Geosyst.* 18:4211–4228. doi:10.1002/2017GC007234
- 4) Spietz RL, **DA Butterfield**, NJ Buck, BI Larson, WW Chadwick, Jr, SL Walker, DS Kelley, RM Morris. **2018**. Deep-sea volcanic eruptions create unique chemical and biological linkages between the subsurface lithosphere and oceanic hydrosphere. *Oceanography* 31:128–135. doi:10.5670/oceanog.2018.120
- 5) Trembath-Reichert E, **DA Butterfield**, JA Huber. **2019**. Active seafloor microbial communities from Mariana back-arc venting fluids share metabolic strategies across different thermal niches and taxa. *ISMEJ* 13:2264-2279. doi:10.1038/s41396-019-0431-y

Five Other Related Papers

- 6) Opatkiewicz AD, **DA Butterfield**, JA Baross. **2009**. Individual hydrothermal vents at Axial Seamount harbor distinct seafloor microbial communities. *FEMS Microbiology Ecology* 70:413–424. doi:10.1111/j.1574-6941.2009.000747.x
- 7) **Butterfield, DA**, MD Lilley, WW Chadwick, Jr, JE Lupton, S Nooner, E Olson, L Evans, KK Roe, BI Larson, ET Baker, G Proskurowski. **In revision**. Balance of hydrothermal and magmatic CO₂ flux at a hotspot-influenced submarine volcano. *Earth Planet. Sci. Lett.*

- 8) **Butterfield, DA**, MD Lilley, JA Huber, KK Roe, RE Embley, JA Baross, GJ Massoth. **2004**. Mixing, reaction and microbial activity in the sub-seafloor revealed by temporal and spatial variation in diffuse flow vents at Axial Volcano. In *The Sub-seafloor Biosphere at Mid-ocean Ridges*, (eds. WSD Wilcock, DS Kelley, JA Baross, E DeLong, C Cary) Geophysical Monograph, American Geophysical Union.
- 9) Anderson MO, WW Chadwick, Jr, MD Hannington, SG Merle, JA Resing, ET Baker, **DA Butterfield**, SL Walker, N Augustin. **2017**. Geological interpretation of volcanism and segmentation of the Mariana back-arc spreading center between 12.7°N and 18.3°N. *Geochem. Geophys. Geosyst.* 18:2240–2274. doi:10.1002/2017GC006813
- 10) Fortunato CS, B Larson, **DA Butterfield**, JA Huber. **2018**. Spatially distinct, temporally stable microbial populations mediate biogeochemical cycling at and below the seafloor in hydrothermal vent fluids. *Environ. Microbiol.* 20:769–784. doi:10.1111/1462-2920.14011

Synergistic Activities, Grants, and Awards

- Development of innovative deep-sea technology to promote interdisciplinary research involving ecology, microbiology, fluid chemistry, and particle chemistry
- Participant in 67 research expeditions in the Pacific and Atlantic, 41 Alvin submersible dives, 6 other submersible dives
- Chief scientist on 5 expeditions
- Leadership and Service: RIDGE 2000 Steering Committee 2001-2006. 89th Dahlem Conference organizing committee. NEPTUNE Canada Science Users Committee 2010-2013. NEPTUNE Canada Ocean Observatory Council 2013-2019.
- Organized community workshop for Axial Seamount science related to the OOI observatory, November 2011
- Student mentoring through graduate and undergraduate research projects and summer internships
- Academic committee member for 7 Ph.D. and 7 M.S. students
- Associate Editor for *Geochemistry*, *Geophysics*, *Geosystems* and *Economic Geology*
- Recipient of research funding from NOAA Ocean Exploration and Research, NOAA National Undersea Research Program, National Science Foundation, Washington Sea Grant, Keck Foundation, Gordon and Better Moore Foundation, and Schmidt Ocean Institute.