

Catherine E. Brennan

Marine Environmental Modelling Group
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Education

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| PhD, 2012 | Earth and Ocean Sciences, University of Victoria, Victoria, BC |
| MS, 2006 | Geosciences, Pennsylvania State University, University Park, PA |
| BA, 2000 | Geology and Women's Studies, <i>cum laude</i> , Wellesley College, Wellesley, MA |

Experience

Research

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| 2012–Present | Post-Doctoral Fellow, Marine Environmental Modelling Group, Department of Oceanography, Dalhousie University, Halifax, NS |
| 2007–2012 | Graduate Researcher, Climate Lab, School of Earth and Ocean Sciences, University of Victoria, Victoria, BC |
| 2004–2006 | Research Assistant, Department of Geosciences, Pennsylvania State University, University Park, PA |
| 1998, Summer | Researcher, NSF Hydrology REU, Bates College, Lewiston, ME |

Teaching

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| 2009–2010 | Teaching Assistant, <i>Climate and Society</i> (EOS 365), University of Victoria, Victoria, BC |
| 2008 | Lab instructor, <i>Introduction to the Earth System II</i> (EOS 120), University of Victoria, Victoria, BC |
| 2004 | Lab instructor, <i>Planet Earth</i> (GEOSC 20), Penn State University, University Park, PA |
| 2003 | Teaching Assistant, <i>National Parks Geology</i> (GEOSC 10), Penn State University, University Park, PA |

Professional

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| 2000–2002 | Geologist II, GEI Consultants, Inc., Winchester, MA |
| 1999, Summer | Streams Manager, Conservation Department, Town of Burlington, MA |

Publications

- **Brennan, C.E.**, H. Blanchard and K. Fennel (in prep), Putting temperature and oxygen thresholds of marine animals in context of environmental change: A regional perspective for the Scotian Shelf and Gulf of St. Lawrence.
- **Brennan, C.E.**, L. Bianucci and K. Fennel (in press), Sensitivity of northwestern North Atlantic shelf circulation to surface and boundary forcing: A regional model assessment, *Atmosphere-Ocean*.
- Bagniewski, W., K.J. Meissner, L. Menviel and **C.E. Brennan** (2015), Quantification of factors impacting seawater and calcite $\delta^{18}\text{O}$ during Heinrich stadials 1 and 4. *Paleoceanography*, 30(7), pp. 895-911. doi: 10.1002/2014PA002751.
- **Brennan, C.E.**, K.J. Meissner, M. Eby, C. Hillaire-Marcel and A.J. Weaver (2013), Impact of sea ice variability on the oxygen isotope content of seawater under glacial and interglacial conditions, *Paleoceanography*, 28(3), pp. 388-400, doi: 10.1002/palo.20036.
- **Brennan, C.E.**, A.J. Weaver, M. Eby, and K.J. Meissner (2012), Modelling oxygen isotopes in the University of Victoria Earth System Climate Model for preindustrial and Last Glacial Maximum conditions, *Atmosphere-Ocean*, 50, 4, pp. 447-465, doi:10.1080/07055900.2012.707611.
- **Brennan, C.E.** (2012), Modelling oxygen isotopes in the UVic Earth System Climate Model under preindustrial and Last Glacial Maximum conditions: investigating the impact of glacial-interglacial sea ice variability on seawater $\delta^{18}\text{O}$. PhD Thesis, University of Victoria, Victoria.
- **Brennan, C.E.**, R.J. Matear, and K. Keller (2008), Measuring oxygen observations to improve the detection capabilities of an ocean circulation observation array, *Journal of Geophysical Research – Oceans*, 113, C02019, doi:10.1029/2007JC004113.
- **Brennan, C.E.** (2006), Using oceanic oxygen trends to improve climate change detection. Masters Thesis, The Pennsylvania State University, University Park. 49 p.

Oral Presentations

- **Brennan, C.E.**, L. Bianucci and K. Fennel (2014), Sensitivity of northwestern North Atlantic shelf circulation to surface and boundary forcing: a regional model assessment, presented at Physical Oceanography and Meteorology Seminar Series (POMSS), Dalhousie University, Halifax, NS, (Sept. 4), and Bedford Institute of Oceanography (BIO) Seminar Series (Sept. 12).
- **Brennan, C.E.**, L. Bianucci and K. Fennel (2014), Sensitivity of northwestern North Atlantic shelf circulation to surface and boundary forcing: a regional model assessment, 6th International Workshop on Modeling the Ocean (IWMO), June 23- 27, 2014, Halifax, NS.
- **Brennan, C.E.**, H. Blanchard and K. Fennel (2014), Putting oxygen and temperature thresholds of marine animals in context of environmental change: a regional perspective for the Scotian Shelf and Gulf of St. Lawrence, The 46th International Liege Colloquium: Low oxygen environments in marine, estuarine and fresh waters, May 5-9, 2014, Liege, Belgium.
- Bianucci, L., K. Fennel, **C.E. Brennan** and H. Blanshard (2014), Oxygen thresholds of marine animals on the Scotian Shelf in the context of environmental change, Ocean

Tracking Network (OTN) Symposium, June 3, 2014, Ottawa, ON.

- **Brennan, C.E.**, H. Blanchard and K. Fennel (2014), Putting temperature and oxygen thresholds of marine animals in context of environmental change: A regional perspective for the Scotian Shelf and Gulf of St. Lawrence, 46th International Liege Colloquium on “Low oxygen environments in marine, estuarine and fresh waters”, May 5-9, 2014, Liege, Belgium.
- **Brennan, C.E.** (2014), Modelling oxygen isotopes in seawater: a global coupled atmosphere-ocean-land surface-sea ice model and the story of glacial-interglacial sea ice variability, presented at: Bedford Institute of Oceanography Seminar, March 14, 2014, Dartmouth, NS (March 14), and Dalhousie University Department of Oceanography Seminar, Halifax, NS. (April 22).
- **Brennan, C.E.**, A.J. Weaver, M. Eby and K.J. Meissner (2011), Sea ice variability on glacial-interglacial timescales and seawater $\delta^{18}\text{O}$, presented at: Antarctic Research Centre, Victoria University of Wellington, Wellington, New Zealand (July 19), Environmental Isotopes Conference, Cairns, Australia (July 12 –14), Climate Change Research Centre, University of New South Wales, Sydney, Australia (July 6), and International Union of Geophysics and Geodesy, Melbourne, Australia (June 28 – July 4).
- **Brennan, C.E.** (2010), Investigating paleoproxy uncertainty: Modeling oxygen isotope signatures of past ice-ocean interaction, School of Earth and Ocean Sciences Graduate Student Workshop, Victoria, BC.
- **Brennan, C.E.**, R.J. Matear, and K. Keller (2007), Measuring oxygen concentrations improves the detection capabilities of an ocean circulation observation array, Canadian Meteorological and Oceanographic Society Congress, St. John’s, NL.

Poster Presentations

- **Brennan, C.E.**, L. Bianucci and K. Fennel (2014), Sensitivity of northwestern North Atlantic shelf circulation to surface and boundary forcing: A regional model assessment, EGU 2014 General Assembly, Abstract EGU2014-3863, April 27-May 2, 2014, Vienna, Austria.
- **Brennan, C.E.**, H. Blanchard and K. Fennel (2014), Putting temperature and oxygen thresholds of marine animals in context of environmental change: A regional perspective for the Scotian Shelf and Gulf of St. Lawrence, EGU 2014 General Assembly, Abstract EGU2014-3883, April 27-May 2, 2014, Vienna, Austria.
- Bianucci, L., K. Fennel, **C.E. Brennan**, and H. Blanchard (2013), Oxygen on the Scotian Shelf: dynamics, critical habitat, and climate change, Ocean Tracking Network Workshop, Halifax, NS.
- **Brennan, C.E.**, A.J. Weaver, M. Eby, and K.J. Meissner (2011), Variable sea ice contributions to seawater $\delta^{18}\text{O}$ on glacial-interglacial timescales, Abstract PP21A-1762, 2011 Fall Meeting, American Geophysical Union, San Francisco, CA.
- **Brennan, C.E.**, A.J. Weaver, M. Eby, and K.J. Meissner (2011), Modeling shifts in seawater $\delta^{18}\text{O}$ due to glacial- interglacial sea ice variability, Canadian Meteorological and Oceanographic Society Congress (CMOS), Victoria, BC.
- **Brennan, C.E.**, A.J. Weaver, M. Eby, and K.J. Meissner (2011), Modeling shifts in seawater $\delta^{18}\text{O}$ due to glacial- interglacial sea ice variability, The Arctic Workshop,

Montreal, QC.

- **Brennan, C.E.**, A.J. Weaver, M. Eby, and K.J. Meissner (2009), Modelling isotopic signatures of cryospheric variability, Past Global Changes Young Scientist Meeting (PAGES YSM), Corvallis, OR.
- **Brennan, C.E.**, K.J. Meissner, and A.J. Weaver (2008), Investigating the impact of sea ice production rates on deepwater oxygen isotopic variability in an earth system climate model, Urbino Summer School for Paleoclimatology Workshop (USSP), Urbino, Italy.
- **Brennan, C.E.**, K.J. Meissner, M. Eby, and A.J. Weaver (2008), Investigating deepwater oxygen isotope variability in an earth system climate model, Canadian Meteorological and Oceanographic Society Congress: Water, Weather and Climate: Science Informing Decisions, Kelowna, BC.
- **Brennan, C.E.**, R.J. Matear, and K. Keller (2006), Detecting Changes in the North Atlantic Meridional Overturning Circulation Using Oxygen Trends, American Geophysical Union Ocean Sciences Meeting, Abstract OS15D-04, Honolulu, HI.

Science Outreach

- **“OCEA1000 Guest Lecturer: Conversations with Ocean Scientists”**, discussed paleoclimate modelling research and communication of paleoclimate science to Dalhousie University undergraduates in Oceanography 1000 (OCEA1000), Halifax, NS (2014).
- **“Fishermen’s Forum 2014: Conversations on Climate Change”**, invited panelist on panel discussion: ‘How does climate change affect the fisheries?’, Port Hawkesbury, NS (2014).
- **“Dalhousie Post-doctoral Fellows Research Day”**, presented a 3-minute (speed) research talk, Halifax, NS (2014).
- **“Ride the Urban Coast: EAC Oceans Week Bike Ride”**, organized coastal-themed bike ride and discussion as part of Oceans Week and HRM Bike Week, Halifax, NS (2014).
- **“Seacology Kayak: Climate Change and the Oceans”**, led Seacology Kayak Tour (via East Coast Outfitters), Lower Prospect, NS (2013-2014).
- **“Halifax Blue Drinks”**, helped coordinate launch of the Halifax chapter of this monthly social gathering to meet and discuss marine and water-themed issues, Halifax, NS (2013).
- **“Oceans Week”**, chaired Oceans Week Subcommittee, Ecology Action Centre, organized weeklong oceans-themed events open to the public: *screening of ‘Sushi: the Global Catch’ documentary followed by discussion, intertidal ecology and scavenger hunt field trip for middle-school students, Yoga by the Sea, coastal hike, Seacology Kayak, Blue Drinks, and surfing lesson*, Halifax, NS (2013).
- **“Marine Conservation Issues”**, presented booth to high school students at ‘Ocean Science Symposium’ with Let’s Talk Science on behalf of the Ecology Action Centre, Halifax, NS (2013).
- **“Impact Crater Events”**, presented to Fourth Grade classes visiting the UVic Climate Lab, Victoria, BC (2007–2012).
- **“Modelling the Earth’s Climate”**, presented to middle-school students attending Science Venture Summer Camp, Victoria, BC (2009).
- **“Earth Scientist in Academia, aka Climate Modeler”**, presented at Glenlyon Norfolk

School Career Day, Victoria, BC (2009).

- “*Global Warming and Climate Change: Evidence, Impacts, and Solutions*”, presented to Journey Middle School, Sooke, BC (2008).
- “*Weather and Climate*”, presented to Fourth Grade classrooms, Victoria, BC (2008).

Professional Memberships

- American Geophysical Union (2005–Present)
- Geological Society of America (2008–Present)
- Canadian Meteorological and Oceanographic Society (2008–Present)

Awards

- Best Oral Presentation, School of Earth and Ocean Sciences Graduate Student Workshop (2010)
- University of Victoria Graphic Office Interiors Scholarship Award (2009)
- University of Victoria Pacific Century Graduate Scholarship (2007/2008 and 2008/2009)
- Canadian Consortium for Ocean Drilling (CCOD) Scholarship (2008)

Science Community Volunteer

- Co-Chair, Marine Action Committee, Ecology Action Centre, Halifax, NS (2013–Present)
- Campus Representative (2014) and Secretary (2013), Dalhousie Post-Doctoral Society, Halifax, NS
- Manuscript referee, *Biogeosciences Discussions*, *Climate of the Past*, *Journal of Climate*, *Journal of Geophysical Research - Biogeosciences*