Eric A. Mortenson
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Education/Employment

NOAA-AOML *May 2024 – present* *Miami, FL, USA*
Position: Research physical scientist
Research: I am working on a regional downscaled model of the NW Atlantic Ocean in order to assess risk to the Eastern coast of the US over the 21st century. The model, MOM6, will incorporate biogeochemistry and an ocean carbon system.

Oregon State University *Mar. 2022 – Feb. 2024* *Corvallis, OR, USA*
Position: Postdoctoral researcher in Earth System Modelling
Research: I worked on the coupling of the OSUVic Earth System Model to the Penn State Ice Sheet Model in order to look at the co-evolution of the Antarctic ice sheet and the circulation of the Southern Ocean, especially in terms of carbon sequestration, during the transition from the Last Glacial Maximum into the Holocene (from around 20,000 to 10,000 years before present).

Commonwealth Scientific and Industrial Research Organisation (CSIRO)
Jan. 2019 – Jan. 2022 *Hobart, TAS, Australia*
Position: Postdoctoral researcher in Biogeochemical Ocean Modelling
Research: I analyzed a 1/10°, eddy-resolving, near-global ocean forecasting biogeochemical model under RCP8.5 carbon-emission scenario, with a focus on the differences in the projected oceanic uptake of carbon and heat, both regionally and globally, over the 21st century. I published a study on global and regional analysis of the divergence in projected ocean uptake of heat and carbon, and I am now working on another study focusing on projected changes in the Southern Ocean carbon system due to dynamical and biogeochemical changes over the century.

University of Victoria *2013 – 2019* *Victoria, BC, Canada*
Degree earned: Ph.D. in Biogeochemical Oceanography
Research: I focused on modeling the exchange of carbon between the air, sea ice, and ocean in the marine Arctic. Processes represented include biological productivity (pelagic and in the bottom of the ice), the seasonal cycle of sea ice formation/melt, and air-sea exchange during the open-water season. I implemented the inorganic carbon system into both a 1D and 3D regional biogeochemical model of the Arctic Ocean, and assisted in the implementation of a pelagic and ice-associated ecosystem. I ran a set of experiments with the 3D Arctic regional model over the recent historical period of sea-ice loss and published a study on the analysis of this experiment.

Florida State University *2009-2012* *Tallahassee, FL, USA*
Degree earned: M.S. in Physical Oceanography
Research: In coastal oceanography, based on a 3-year time series of oceanographic observations (e.g., currents, salinity, temperature), I developed a box model to represent the processes forcing variability in the estuary.
I also participated in a 2-month CLIVAR research cruise (S4P) from McMurdo Base, Antarctica to the Western Antarctic Peninsula in the austral summer of 2011. I monitored the deployment of the main instrument assembly for about half of the 140 stations. For the trip I received the Antarctic Service Medal from US NSF.

Ohio University *2000-2002* *Athens, OH, USA*
Degree earned: M.S. in Nuclear Physics
Research: Nuclear theory, modeling of electron scattering experiments. This work led to a paper published in Journal of Physics G which I coauthored.

Hendrix College *1996-2000* *Conway, AR, USA*
Degree earned: B.S. in Physics
Research: Modeling of transverse effects in a nonlinear gain medium for laser optics analysis. I presented findings from this research at 2 conferences my senior year.

Conference Presentations (2018-present)

-Ocean Sciences Meeting Feb. 2024, New Orleans, USA
Poster title: *Modelling interactions between the Southern Ocean and Antarctic ice sheet*

-Gordon Research Conference Mar. 2023, Ventura, CA
Poster title: *Modelling interactions between the Southern Ocean and Antarctic ice sheet*

-JAMSTEC; visiting scientist lecture June 2022, Yokohama, Japan
Talk title: *Future changes to the Southern Ocean carbon sink and the key drivers*

-GOA-ON Webinar; invited talk July 2021, remote
Talk title: *Regional changes in Southern Ocean biogeochemistry due to projected carbon uptake*
Link to talk: https://youtu.be/-Uzy1wZnH4U

-Australia Meteorology and Oceanography Society Conference Feb. 2021, remote, Australia
Talk title: *The role of ocean circulation changes on carbon uptake in a changing climate*
I also served as chair for the session entitled: Marine biogeochemistry: past, present and future

-GOA-ON 5th International Symposium on the Ocean in a High-CO_2 World Sep. 2020, remote, Peru
Talk title: *Modeling the Arctic Ocean carbon system*
Link to talk: https://www.youtube.com/watch?v=Gu77up7FZ_U

-AGU Ocean Sciences Meeting Feb. 2020, San Diego, USA
Poster title: *Decoupling of projected oceanic uptake of carbon and heat in the 21st century in a high carbon emission pathway*

-4th annual Consortium for Ocean-Sea Ice Modelling in Australia workshop Sep. 2019, Canberra, Australia
Talk title: *Decoupling of carbon and heat uptake rates of the global ocean over the 21st century*

-Polar 2018: SCAR Open Science Conference June 2018, Davos, Switzerland
Talk title: *Progress in modelling coupled sympagic-pelagic ecosystems in the Canadian Arctic*

-IARC 5th International Symposium on Arctic Research Jan. 2018, Tokyo, Japan
Talk title: *A model approach to carbon exchange in the air, sea, and ice of the marine Arctic*

Peer-Reviewed Publications

-Mortenson, E., Lenton, A., Shadwick, E., Trull, T., Chamberlain, M., Zhang, X., Decoupling oceanic pathways of anthropogenic heat and carbon in the 21st century under climate change, 2021. Environ. Res. Lett. 16 124063. DOI: https://doi.org/10.1088/1748-9326/ac3d57

-Mortenson, E., Hayashida, H., Monahan, A. H., Shao, A., Sou, T., Steiner, N., Modelled impacts of sea ice exchange processes on Arctic Ocean carbon uptake and acidification (1980-2015), 2020. JGR:Oceans, 125. DOI: https://doi.org/10.1029/2019JC015782

-Hayashida, H. et al., CSIB v1: a sea-ice biogeochemical model for the NEMO community ocean modelling framework, 2019. Geosci. Model Dev., 12, DOI: https://doi.org/10.5194/gmd-12-1965-2019

-Abbatt, J. P. D. et al., New insights into aerosol and climate in the Arctic, 2019. Atm Chem and Phys Disc., Vol. 19, Issue 4, DOI: https://doi.org/10.5194/acp-19-2527-2019

-Mortenson, E., Steiner, N., Monahan, A.H., Miller, L.A., Geilfus, N.-X., Brown, K., A Model-Based Analysis of Physical and Biogeochemical Controls on Carbon Exchange in the Upper Water Column, Sea Ice, and Atmosphere in a Seasonally Ice-Covered Arctic Strait, 2018. JGR:Oceans, 123: 7529-7549, DOI: https://doi.org/10.1029/2018JC014376

-Mortenson, E., Brown, K., Geilfus, N.X., Miller, L.A., Monahan, A., Steiner, N., A model-based analysis of physical and biological controls on ice algal and pelagic primary production in Resolute Passage, 2017. Elementa Sci Anth, 5: 39, DOI: https://doi.org/10.1525/elementa.229

-Shukla, D., Phillips, D.R., Mortenson, E., Chiral potentials, perturbation theory, and the $^1S_0$ channel of NN scattering, 2008. Journal of Physics G: Nuclear and Particle Physics, Vol. 35, DOI: https://doi.org/10.1088/0954-3899/35/11/115009