Professor Brett Walker joins the Department of Earth System Science

Professor Brett Walker studies the marine carbon cycle and marine biogeochemistry.

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Walker and his team will bring extensive expertise in oceanography and isotope studies and discover potential marine solutions to regulate climate change.

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University of Ottawa

This year, Brett D. Walker joined the UC Irvine School of Physical Sciences Department of Earth System Science as an associate professor. Walker’s research centers on marine and environmental geochemistry, with an emphasis on the carbon cycle and the critical role of dissolved organic molecules (DOM) in regulating Earth’s climate. By exploring the potential of DOM as a tool for long-term carbon storage in the ocean, his work aims to uncover innovative solutions to mitigate the impacts of climate change. "Marine organic matter is one of Earth’s largest actively cycling reservoirs of organic carbon and nitrogen," said Walker, who earned his Ph.D. in Ocean Sciences from the University of California, Santa Cruz studying the isotopic composition of organic matter in marine systems. After completing his Ph.D., Walker was a postdoctoral scholar at UC Irvine's Keck Carbon Cycle Accelerator Mass Spectrometry Lab, where he worked on the high-precision radiocarbon analysis of seawater DOM. He later became an Assistant Professor and Tier II Canada Research Chair in Accelerator Mass Spectrometry and Marine Biogeochemistry at the University of Ottawa where he helped lead the André E. Lalonde AMS facility – one of Canada’s 19 Major Scientific Initiatives. Now, back at UC Irvine, Walker and his team use isotope techniques,alongside novel analytical chemistry techniques to investigate the cycling and transformation of the ocean's major carbon and nitrogen reservoirs. “We are interested in which DOM molecules are either rapidly cycled or which persist for very long periods in the ocean,” said Walker, whose research group aims to deepen our understanding of the marine carbon cycle, moderating climate on modern to millennial timescales and how this knowledge can help inform our prediction of future climate scenarios.

This article was written by Ph.D. student Lurui Niu from the UC Irvine Department of Earth System Science. Niu is a 2024-2025 UC Irvine School of Physical Sciences Science Communication Fellow.

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