

Researchers reveal changes in water of Canadian arctic

June 24 2020



Crew members deploy equipment onto the ice from a Canadian icebreaker, CCGS Louis S. St. Laurent, in the Arctic Ocean. Credit: Gary Morgan, Canadian Coast Guard

Melting of Arctic ice due to climate change has exposed more sea surface to an atmosphere with higher concentrations of carbon dioxide. Scientists have long suspected this trend would raise CO₂ in Arctic

Ocean water.

Now University of Montana researcher Michael DeGrandpre and his patented [sensors](#) have helped an international team determine that, indeed, CO₂ levels are rising in water across wide swaths of the Arctic Ocean's Canada Basin. However, some areas have exhibited slower increases, suggesting other processes—such as biological uptake of CO₂—have counteracted expected increases.

The work was published this month in the journal *Nature Climate Change*.

DeGrandpre is a UM chemistry professor, and in 2015 he and the company he founded, Sunburst Sensors, won two coveted XPRIZE awards for developing inexpensive, durable sensors to better understand ocean acidification. Sunburst Sensor technology also was used in this recent study for a CO₂ measurement system placed on board a Canadian icebreaker, the CCGS Louis S. St. Laurent.

DeGrandpre said ocean measurements are taken while the icebreaker is underway, sometimes crashing through ice one to two meters thick. DeGrandpre and UM research associate Cory Beatty have participated in these research cruises since 2012 with support from the National Science Foundation Office of Polar Programs.



University of Montana chemistry Professor Michael DeGrandpre poses with a research buoy deployed through the ice in the Canada Basin of the Arctic Ocean.

Credit: Jeff O'Brien, Woods Hole Oceanographic Institution

"Because of the inaccessibility of the Arctic and the typically harsh work conditions, we really need a world-class icebreaker to access these areas," DeGrandpre said. "It also has given us a high-quality, consistent dataset, which really helped with this latest study. Most Arctic CO₂ datasets are from infrequent cruises that do not visit the same locations year to year."

He said the new study combines sporadic data dating back to 1994 with the more-frequent data they have collected since 2012. DeGrandpre said their consistent dataset will only improve, as NSF recently awarded them an \$890,000 grant to continue the icebreaker project through 2023.

Provided by University of Montana

Citation: Researchers reveal changes in water of Canadian arctic (2020, June 24) retrieved 24 April 2024 from <https://phys.org/news/2020-06-reveal-canadian-arctic.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.