

Stanford



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Bio

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Antarctic ice sheet, both of which have exhibited significant mass loss over the past few decades. If the two ice sheets were to fully collapse, they could be responsible for up to 15m of global sea level rise (roughly equal parts from both). This sea level rise would not only pose serious problems for coastal settlements, but cause serious changes to ecosystems, and could profoundly alter the Earth's ocean circulation.

Current estimates of the mass balance for ice sheets are based primarily on satellite data. This data has become more accurate and more available than ever before, since the 1990s. While estimates can be provided by satellite data, satellites are limited by virtue of the fact that they can only evaluate the surface of the ice shelf. Recent research has shown that a significant amount of the mass loss from the West Antarctic ice sheet is happening underwater, along grounding lines, where deep waters, warmed by global warming, enter the area underneath the ice shelf, and melt the shelves from the bottom. This not only results in mass loss directly, but increases calving of glaciers into the ocean, further accelerating their loss. This melting, below the surface of the ice shelves, cannot be estimated by satellites.

To get a better understanding of the impact of warmer deep waters on glacial retreat in Western Antarctica, we need to measure the melt more directly. Using highly precise measurements of salinity and isotopic composition of seawater in coastal regions of Western Antarctica, we can estimate the amount of glacial meltwater present in the oceanic adjacent to ice sheets. Gaining a greater understanding of the rates and locations of West Antarctic melting will be crucial to developing our understanding of future sea level rise, and other wider impacts.

HONORS AND AWARDS

- Certificate for Outstanding Mentoring, Stanford University (2018)

EDUCATION AND CERTIFICATIONS

- MPhil, University of Cambridge , Engineering for Sustainable Development (2012)
- BEng, Griffith University , Environmental Engineering (2011)