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Theme
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Poster title (brief)
Autonomous Profiling Floats May Be Useful for Sustained Arctic Ocean Observations
Abstract - text box
Melting of the Greenland Ice Sheet represents a major uncertainty in projecting future rates of global sea level rise, a critial climate issue that will affect hundreds of millions of people in the 21st century and beyond. Much of the present uncertainty about future sea level rise is related to a lack of knowledge about how ocean warming will impact Greenland's marine-terminating glaciers. Since 2016, NASA’s Oceans Melting Greenland mission (OMG) has been making extensive measurements of ocean properties near Greenland glaciers using airborne expendable instruments (AXCTDs). Each summer, each of our ~250 AXCTDs provides a single vertical profile of ocean temperature and salinity in the ocean's upper 1000 meters. In 2017, we added airborne-deployable autonmous robotic ocean profiling floats (ALAMOs) to our instrument portfolio. ALAMOs are 10X more expensive than AXCTDs but have the potential to collect up to 200X more vertical profiles of ocean properties during their 1-2 year lifetimes. Importantly, ALAMOs continue to collect ocean data when

trapped beneath sea-ice which is normally only possible using expensive instrumented oceanographic moorings, ice-breaking vessels, or by lowering instruments through holes drilled in the sea-ice. Being far less expensive and easier to deploy over large areas than these alternatives, we propose that ALAMOs (or similar autonomous robots) should be considered as cost-effective additions to any long-term, sustained Arctic Ocean Observing System.