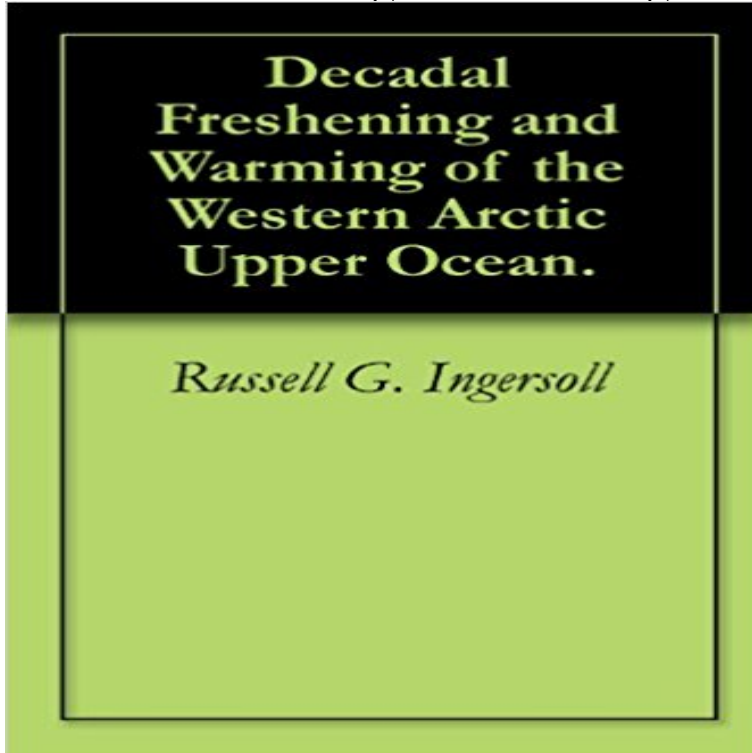


## Decadal Freshening and Warming of the Western Arctic Upper Ocean.



Upper-ocean freshness and heat content are important components of the coupled Arctic system, especially within the context on ongoing Arctic change. High resolution hydrographic profile data collected from Arctic research expeditions and autonomous systems are analyzed to generate a 30+ year record of upper-ocean fresh water content and heat content evolution. Vertical integrals of Heat Content (HC) and Fresh Water Content (FWC) are calculated in three layers: Surface(Sfc)-150m, Sfc-Mixed Layer Depth (MLD), and MLD-150m. Vertical averages of Departure From Freezing Point (DFFP), Salinity(z), and Temperature(z) are also calculated for all three layers. Spatial and temporal constraints allow for seasonal and regional signals to be separated from decadal trend signals. Sub-regions (Beaufort Shelf, Beaufort Gyre, and Trans-polar Drift) are chosen with respect to hydrographically uniform characteristics. In the Beaufort Gyre, Sfc-150m vertically averaged salinity decreases by  $-0.04$  psu/yr while FWC increases by  $+0.15$  m/yr, and HC rises by  $+3.8$  MJ/m<sup>2</sup>/yr. Mixed layer vs. Halocline trend separation (Sfc-MLD vs. MLD-150m) shows accumulation of FWC in both layers definitively, while the halocline hosts almost all of the accumulation of HC. The trends in FWC are consistent with the observed decline in Arctic sea ice cover.

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Beaufort Sea. Geophysical Research Tethered-Profilers Sample the Upper Arctic Ocean. EOS, Transactions of  
**Curriculum Vitae - Woods Hole Oceanographic Institution** track property changes of Antarctic Bottom Water (AABW). The largest property freshening, heating, or isopycnal heave suggests that the deep ocean stratification change is the result of both served warming in the upper 1000 m, the ocean volume . Along the western boundary, below 3500 m, decadal warming south **NSF Arctic Data Center Publications** TITLE AND SUBTITLE. Decadal Freshening and Warming of the Western Arctic Upper Ocean. 6. AUTHOR(S) Russell G. Ingersoll. 5. FUNDING NUMBERS. N/A. **Enhanced upper ocean stratification with climate change in the** Data from trans-western Arctic Ocean cruises show that ?arag Variability of the Intermediate Atlantic Water of the Arctic Ocean over Nov 25, 2016 Super typhoons (STYs), intense tropical cyclones of the western North Pacific, Hence, changes in upper-ocean stratification under global warming may . 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