



Introducing the Ice Snake

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Long-term measurements of sea ice thickness and drift are a component of global climate monitoring, and short-term measurement campaigns can provide data for models and understanding of physical processes in the polar waters. Point measurements have often supported physical modelling and estimations based on satellite data, and are used for ship routing through sea ice and design of offshore structures. Direct drilling through sea ice has traditionally been the main way to estimate its thickness. Ice thickness can also be observed visually from ships breaking through sea ice. The Ice Snake is a new low-cost, expendable instrument that is being developed for improving ice thickness measurements at fixed locations over long periods after deployment from aircraft or a ships. Deployment of this instrument can partly be based on ad hoc opportunities similar to drifting buoys in the ocean. Data are transmitted via satellite communication. This approach can also provide near real-time, cost-effective measurements of atmospheric surface pressure inside and close to the sea ice field. Measurements of air pressure near the marginal ice zone can contribute to improved forecasting of polar low pressure and local wind systems. The same time a moored standard meteorological buoy cannot easily operate close to a spatially variable sea ice border, as it can easily become fixed to the ice.