

Low-frequency acoustic transmissions under sea ice as measured in the Beaufort Sea

The Journal of the Acoustical Society of America **144**, 1665 (2018);
<https://doi.org/10.1121/1.5067422>

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Abstract

A tomography array was deployed in the Beaufort Sea for a year beginning in late summer 2016 during the Office of Naval Research sponsored project called the *Canada Basin Acoustic Propagation Experiment* (CANAPE.) This talk will look in detail at the propagation characteristics of broadband sound transmitted at 250 Hz over 108 km to 285 km ranges as measured on a 60 element vertical line array. Over the year, the heat content and vertical stratification of the ocean change as heat is gained and lost to the atmosphere and as the momentum transfer from the wind mixes the upper layers. The changes in heat content and stratification over the year affects the travel-time of the sound as well as its fluctuations. Examples will be shown of each. Sea-ice roughness adds scattering loss as the ice thickness increases. Thus, the seasonal ice-cover modulates the transmission loss of the acoustic paths. The losses on deep turning paths are different from the sound trapped in the surface duct. The ambient noise level also changes as the seasons progress