

Ambient noise levels off the coast of Northern Labrador

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ABSTRACT: Ambient sound data was recorded over a 6 month period from October 2017 to March 2018 and a 15 month period from July 2019 to September 2020. This data was recorded at a depth of 500 m from a mooring at the northeastern edge of Saglek Bank off Northern Labrador. High biodiversity and limited shipping activity make this an area of interest. At the mooring location, tidally driven currents are driven to speeds of up to ~ 50 cm/s. The high current speeds result in a significant tilting of the mooring, with the instrument often indicating tilts in excess of 20 degrees. Further, the high speeds lead to mooring noise which corrupts the ambient sound data. We use current meter data to identify periods of reduced current speeds where sound data is not corrupted, thereby recovering a record of naturally occurring sounds. Tidal predictions are used to sort the acoustic data for periods where current speeds are unavailable. The reduced data set is used to explore noise levels in this area and obtain surface wind speed and rainfall rate estimates. Within the quiet periods of the sound recordings, whale calls are heard. In addition, the Phase and Amplitude Gradient Estimation method is applied in an oceanographic context to estimate acoustic intensity. The PAGE method employs phase unwrapping such that the vector intensity is estimated past the Nyquist limit, and the direction of the acoustic source is determined with increased accuracy.

ALL ARE WELCOME!