

**Shajahan N, Halliday WD, Dawson J, Maksagak I, Weese K, Melling H, Niemi A, Vagle S, Williams B, Insley SJ** (2024) Opportunistic ship source level measurements in the western Canadian Arctic. *Journal of the Acoustical Society of America* 155: 3807-3821.

### **What is the research about?**

- Increases in ship traffic due to climate change will cause increases in anthropogenic noise in the Arctic.
- Studies focusing on the measurement of ship noise are needed to improve our understanding of the exposure of anthropogenic noise from shipping on the Arctic ecosystem.

### **What we did:**

- We developed a methodology to estimate the source level of ships opportunistically using long-term passive acoustic data collected from the western Canadian Arctic.
- We used acoustic data, ship tracks from satellite and a sound propagation model to calculate the source level.
- The measured source levels were then compared with already available source level models.

### **What we found:**

- Our analysis found that the JOMOPANS-ECHO source level model is the best to predict ship noise in the Arctic.
- We also found that the existing source level models does not adequately represent certain class of vessels travelling in the Arctic.

### **Our recommendations:**

- Further analysis using more opportunistic source level measurements are required for a detailed statistical analysis.
- Continuous monitoring of ship noise using multiple hydrophones following international ship noise measurement standards are needed in the Arctic.

### **Why is the research relevant to the Inuvialuit people?**

- Marine mammals are an important food source for communities living the Canadian Arctic.

- Accurate measurements of ship generated noise are necessary to map underwater noise and quantify shipping's impact on the Arctic marine life.

### Was the community involved?

- Yes. The acoustic data collected in this study was from six locations in the Canadian Arctic. The Hunters and Trappers Committees in all these locations were involved in the data collection and in planning for the locations of the offshore locations.

### Key result

This figure shows the difference between measured source levels for individual vessels from the existing source level models J-E (JOMOPANS-ECHO) and R-B (RANDI-Breeding).

