

UNDERWATER TRAVEL

ACOUSTICS AND AIR BUBBLES COULD HELP RESEARCHERS MONITOR MELTING GLACIERS



JOANA BARTLEY DECEMBER 4, 2021



Image credits: Hari Vishnu.

As temperatures continue to rise, glaciers continue to melt – it's a given. However, tracking exactly how and when glaciers melt is a whole new problem, and it has been a difficult one for years. But a team of researchers may have a solution.

Hari Vishnu, from the National University of Singapore, Grant Deane, from the Scripps Institute of Oceanography, and their research team have found that melting ice releases distinct pressurized bubbles that can be detected acoustically.

"In tidal glacial bays such as the ones we studied in Svalbard, the ice lost by the glacier is mainly due

to submarine melting and glacier calving,” Vishnu told ZME Science. “The underwater soundscape in a frequency band of 1 to 3 kHz is dominated by the sound of the submarine melting of glacial ice and the subsequent release of pressurized bubbles within that ice.”

The air trapped under the glacier creates more and more pressure, retaining air bubbles that can reach pressures of up to 20 atmospheres of pressure; when the ice melts, these bubbles are released and produce detectable sounds.

The main idea is that a faster fusion creates a faster release of bubbles, and therefore more sound.

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“So we’re aiming to reverse that sound to try to get some information on the rate of ice melt. Sound cues have been used in the past to estimate the amount of ice lost due to calving as well, and now we are focusing our efforts on the other component, which is submarine melt.

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the glaciers around Greenland and Svalbard to monitor their ice loss and stability. But there are challenges in getting to a point where we can do it on such a large scale with precision and using a system that can operate autonomously, and the results we have reported are a first step towards that stage.”

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If confirmed (the study has not yet been published in a peer-reviewed journal), this remote sensing method could be an important method not only in terms of climate change, but also in reducing the risk to boats. to move in glacial areas.

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“There is sometimes ice calving from the glacier terminus, which means there is a possibility that ice could fall on your head or back up under your boat if you try to approach the area around the terminus. A monitoring method capable of evaluating the loss of ice from a distance is therefore necessary”, concludes Vishnu.

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The results were presented at the 181st meeting of the Acoustical Society of America, which will be held from November 29 to December 31. 3, Hayden Johnson.

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