Science & Technology

Bubbles make the impact of climate change on glaciers healthy # ASA181 – So watt up?

jameslyon • 1 week ago

Melting accelerates the loss of ice in tidal glaciers, releasing pressurized bubbles

Reports and minutes

American Acoustical Society

Image: As the world's temperature rises, tidal glaciers release, melt, and recede air trapped in glaciers. Scientists can listen to the release of air and potentially use sound to help measure the impact of climate change on the ice sheet. See more
Credits: JOHNSON, VISHNU, and DEANE

Seattle, December 3, 2021 — As global temperatures rise, tidal glaciers recede and melt, releasing air trapped in ice. Scientists can listen to the release of air and potentially use sound to help measure the impact of climate change on drift ice.

At the 181st Acoustical Society of America, which will be held from November 29th to December. 3. Hayden Johnson of the University of California, San Diego explains how sound can be used to estimate the melting of glaciers caused by climate change. The talk "Spatial Changes in Sound Fields Due to Submarine Melting in Glacier Bay" will take place on Friday, December 3, at 11:45 am at Hyatt Regency Seattle.

Hari Vishnu of the National University of Singapore, Grant Deane of the Scripps Institution of Oceanography, and their research team investigated the melting of glacier ice, which emits acoustically different pressurized underwater bubbles.

The ice trapped under the glacier surface becomes a mixture of compressed bubbles and ice that increases pressure during long passages to the glacier terminus. Glacier ice holds ancient bubbles that can reach pressures of up to 20 atmospheres and produces a detectable sound when released as the ice melts.

"We have observed that as the water temperature rises, the sound intensity produced by the melting ends tends to increase," Dean said. "This makes sense because we expect warmer water to dissolve the end points faster, release bubbles more quickly into the ocean, and produce more sound."

The team discovered that the fluctuations in acoustic melting did not follow a uniform trend as the recording array moved further from the glacier.

In addition, the acoustic intensities of different glaciers were concentrated at different levels. These observations show that the shape of the glacier-sea interface, the temperature and salt composition of the underwater sound channels, and the presence of floating ice affect recorded acoustic measurements.

Their experiments will enable monitoring of the impact of climate change on glaciers.

"Recording the sound of the water from the melting end opens the door to long-term acoustic monitoring of ice loss and how it relates to water temperature." Dean says. "The final game here is to establish a long-term recording station for underwater sounds around glaciers such as Greenland and Svalbard to monitor glacier stability over time."

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—————— More meeting information ——————

Convenient link

Main meeting website: https://acousticalsociety.org/asa-meetings/
Technical program: https://eventpilotadmin.com/web/planner.php?id=ASAFALL21
Press room: http://acoustics.org/world-wide-press-room/
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