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from glaciers in Greenland and its relation to climate change

Inaudible sound, i.e., infrasound, is generated by glacial run-off and during calving events. Such sounds can be continuously monitored with microbarometer arrays. Changes in the rate of events can be retrieved with a resolution of a few seconds. Applying array processing techniques enables the identification of individual glaciers over ranges of tens of kilometers. We concentrated on the remote region around Quanaq in northwestern Greenland and found coherent infrasound of at least five glaciers over a period of 16 years. Knowledge on the dynamical behavior of these remote glaciers is rare, but important for sea level rise. Here we use the novel technique involving passive infrasound measurements to show that remote land and sea terminating glaciers behave differently in terms of their temporal behavior seasons and years. Strong fluctuations in infrasonic activity are found over time. Increased activity over the years of the land-terminated glacier is retrieved and also diurnal variations through a spectral analysis. We anticipate that monitoring glacial infrasound can contribute to a better understanding of the behavior of remote glaciers in the future, as the glacial dynamics can be passively observed on a fine temporal scale.

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