ID: Type: **Oral**

to Glacier Infrasound in Northwestern Greenland

Inaudible sound, i.e., infrasound, is generated by glaciers while moving and cracking 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 sources over ranges of tens, in this case, to hundreds of kilometers. Here we show, that passively monitoring infrasound enables new insights in regional changes in the cryosphere under global warming. We concentrated on the region around Quanaq in northwestern Greenland and found coherent infrasound of at least five sources over a period of 12 years. It appeared that some glaciers show a reduction in activity, while others show a strong increase in infrasonic events over time. Diurnal variations in the activity of the glaciers is also retrieved through a spectral analysis, indicative for surface- meltwater induced basal sliding. Our results demonstrate the capacity of infrasonic monitoring as an independent proxy for changes in the cryosphere. We anticipate that monitoring glacial infrasound can contribute to a better understanding of the behavior of glaciers in the future, as phenomena can be passively resolved on a fine temporal scale.

Primary author: EVERS, Läslo (KNMI - Royal Netherlands Meteorological Institute)

Presenter: EVERS, Läslo (KNMI - Royal Netherlands Meteorological Institute)

Track Classification: Analysis of Sources and Scientific Applications