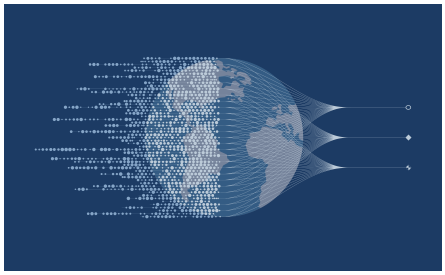

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and time variations of infrasound sources using arrays deployed in Lützow-Holm Bay, Antarctica

Time-space variations of infrasound source locations for three years, 2019-2021, were studied by using a combination of two local arrays in the Lützow-Holm Bay (LHB), Antarctica. The local arrays deployed at two coastal outcrops detected temporal variations in signal frequency content as well as propagating directions during these years. A large number of infrasound sources were detected with many located to the north and north-west directions from the arrays. These events were generated within the Southern Indian Ocean and the northern part of LHB with frequency-content of a few seconds; these “microbaroms” are believed to originate from oceanic swells. From austral summer to fall additional sources are determined to be located to the north-east. These sources might be related to the effects of katabatic winds across the continental coastal area. Furthermore, several impulsive events during the winter had higher predominant frequencies of a few Hz, higher than the microbaroms. Based on a comparison of source locations with sea-ice and glacier distribution from MODIS satellite images, these high-frequency sporadic sources may be cryo-seismic signals associated with cryosphere dynamics near the arrays. The results suggest that infrasound can be used to monitor surface environments in the coastal area of Antarctica.

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