

An effort to utilize the infrasound monitoring network data for understanding surface environment of Antarctica

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Characteristic features of infrasound waves observed in the Antarctic reflect the physical interaction between the surface environment along the continental margin and the surrounding Southern Ocean. In April 2008, infrasound observation started at the Japanese main station; Syowa (SYO; 69.0S, 39.6E), in the Lützow–Holm Bay (LHB) of East Antarctica, as one of the projects of the International Polar Year (IPY2007-2008). In austral summer in 2013 and 2014, several field stations by infrasound sensors were established along the eastern coast of LHB. In particular, two infrasound arrays with different diameters were deployed on the outcrop site at SYO as well as the second array on the continental ice sheet near the eastern coast of LHB. The infrasound arrays clearly detected temporal variations in frequency content and propagation direction during this period. Until now, by using the array configuration deployed at the LHB and other sites, moreover, identification of infrasound sources was tried to detect identical events. A number of infrasound sources were identified, many located north of the arrays. Many of the events had a predominant frequency content of a few Hz, higher than microbaroms from the ocean. Many of the sources were assumed to be cryoseismic origins; the ice-quakes associated with calving of glaciers, discharge of sea-ice, collision between sea-ice and icebergs around the LHB. Continuous measurements of infrasound in the Antarctic may serve as a proxy for monitoring the regional surface environment in terms of climate change at high southern latitudes.

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