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harmonic tremors and their origins from cryosphere dynamics in the Lützow-Holm Bay, East Antarctica

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Characteristics of seismic tremors in April 2015 were investigated at Syowa Station, in the Lützow-Holm Bay (LHB), East Antarctica. To examine the relationship between surface environment in a particular cryosphere variation, MODIS satellite images were utilized for comparison with the tremor events. Since a large volume of sea ice was discharged in April 2015, along with large icebergs passed through the northern edge of the fast sea ice of LHB, it was supposed to detect seismic tremors involving cryosphere dynamics in the region. Throughout the month, a total number of 49 tremor events were identified (Kanao et al., 2017). The majority of the events had a duration of over 15 minutes, which were divided into both tremors and ice shocks. Cryospheric sources recorded by seismic tremors were classified by their origins. In particular, strong amplitude tremors with harmonic overtones (Tanaka et al., 2019) were assumed to have occurred independently from meteorological condition. The most plausible candidate of the origins could be collisions between the bottom of drifting icebergs with the top of seabed sediments/crystalline rocks in places where the northern edges of continental shelf of LHB. Here the depths of the ocean floor can be less than 300 m from mean the sea level.

Promotional text

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