

## Study on internal structure and surface environment of the Earth, by broadband seismic deployments, East Antarctica

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Broadband seismic array deployments have been carried out from 1996 on the coastal outcrops in the Lutzow-Holm Bay Region (LHB), East Antarctica. The recorded teleseismic and local seismic signals have sufficient quality for the various analyses to clarify the dynamics and heterogeneous structure of the crust and upper mantle. Conventional passive source studies such as receiver functions and shear wave splitting were carried out; indicating heterogeneous structure from the north to the south along the coast in LHB. Data obtained may be applied not only to lithospheric studies, but to study of the Earth's deep interior by integration with large span arrays from Eastern Dronning Maud Land. The broadband array deployments in LHB could make effective contributions to the Global Alliance of Regional Networks; GARNET, principle international Antarctic Array programs, together with POLER observation NETWORK; POLENET during IPY 2007-2008.

Several kinds of natural signals were recorded by a seismic experiment on the continental ice sheet in Eastern Dronning Maud Land during the 2002 austral summer. They include not only tectonic earthquakes, but also ice related phenomena possibly involving recent global climate change. The recorded signals are classified into (1) a teleseismic event, (2) local ice-quakes and (3) an unidentified event (X-phases). Interestingly, the frequency content at 2.0 Hz is small in the waveforms recorded by stations in middle part of the seismic profile. On the other hand, 5.0 Hz and 1.5 Hz components are large at these stations which are above a valley in topography at the interface between the ice sheet and topmost crust. The abrupt change of topography in the valley might cause both the anomalous frequency content and travel times. The estimated origin of the unidentified event might be an intraplate earthquake or possibly a large ice-quake around East Antarctica.