

Broadband seismic deployments in East Antarctica: IPY contribution to monitoring the Earth's interiors

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Abstract

"Deployment of broadband seismic stations on the Antarctica continent" is an ambitious project to improve the spatial resolution of seismic data across the Antarctic Plate and surrounding regions. Several international collaborative programs for the purpose of geomonitoring were conducted in Antarctica during the International Polar Year (IPY) 2007-2008. The Antarctica's Gamburtsev Province (AGAP; IPY #147), the Gamburtsev Mountain SEISMic experiment (GAMSEIS), a part of AGAP, and the Polar Earth Observing Network (POLENET; IPY #185) were major contributions in establishing a geophysical network in Antarctica. The AGAP/GAMSEIS project was an internationally coordinated deployment of more than 30 broadband seismographs over the crest of the Gamburtsev Mountains (Dome-A), Dome-C and Dome-F area. The investigations provide detailed information on crustal thickness and mantle structure; provide key constraints on the origin of the Gamburtsev Mountains; and more broadly on the structure and evolution of the East Antarctic craton and subglacial environment. From GAMSEIS and POLENET data obtained, local and regional seismic signals associated with ice movements, oceanic loading, and local meteorological variations were recorded together with a significant number of teleseismic events. In this chapter, in addition to the Earth's interiors, we will demonstrate some of the remarkable seismic signals detected during IPY that illustrate the capabilities of broadband seismometers to study the sub-glacial environment, particularly at the margins of Antarctica. Additionally, the AGAP and POLENET stations have an important role in the Federation of Digital Seismographic Network (FDSN) in southern high latitude.

Keywords

Broadband seismology; International Polar Year; East Antarctica; Global network; Deep interiors

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References

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
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