南極・昭和基地における遠地地震検知率の長期変動と表層環境との関連

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Long-term detectability of teleseismic events and their relation to surface environment at Syowa Station, Antarctica

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Seismic phase identification of the teleseismic events at Syowa Station (SYO), Antarctica have been carried out since 1967 since the International Geophysical Year (1957-1958). From the development of telecommunication links between Antarctica, digital waveform data have been transmitted to the National Institute of Polar Research (NIPR) for utilization of phase identification. Arrival times of teleseismic phases have been reported to the International Seismological Centre (ISC), and published as the "JARE Data Reports" from NIPR. In this presentation, time variations for the detected teleseismic earthquakes are demonstrated over the last four decades in 1967-2010. Characteristics of the detected events, magnitude dependency, spatial distributions, seasonal variations, as well as the classification by focal depth are demonstrated. In addition to the increase in number for the occurrence of teleseismic events on the Earth, a technical advance in the observation system and station infrastructure, together with the improvement of procedure for reading seismic phases, could efficiently be combined to produce the increase in detection number in last few decades. Variations in teleseismic detectability for longer terms could also be associated with meteorological environment and the sea-ice spreading area around the continent. Recorded teleseismic and local seismic signals have sufficient quality for many analyses on dynamics and structure of the Earth's as viewed from Antarctica. In this presentation, a long-term detectability of the teleseismic events is presented in particular associated with the surface environmental variations that are characteristic in the Antarctic.