DEEP CRUSTAL STRUCTURE ALONG THE PROFILE BETWEEN SYOWA AND MIZUHO STATIONS, EAST ANTARCTICA, REVEALED BY EXPLOSION SEISMIC EXPERIMENTS

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Abstract: From 1979 to 1981, explosion seismic experiments were carried out by the 20th, 21st and 22nd Japanese Antarctic Research Expeditions in the vicinity of Syowa Station and in the northern Mizuho Plateau in East Antarctica. The biggest explosion was fired in the sea near Syowa Station and 27 temporal seismic observation stations were set up along a 300 km long profile from Syowa to Mizuho Stations. In addition to this, two big explosions in ice holes were fired near Mizuho Station and near the middle point on the profile.

The apparent *P*-wave velocity in the upper crust varies from 6.0 km/s to 6.4 km/s, suggesting a gradual increase of the *P*-wave velocity with depth. Apparent velocities of 6.9 km/s for P^* and 7.9 km/s for P_n were observed from the biggest shot near Syowa Station. From these travel times, the crustal structure in the northern Mizuho Plateau was determined, and the depths of the Conrad and the Moho discontinuities were obtained as about 30 km and about 40 km, respectively.

Comparing our results with those in Dronning Maud Land (in the vicinity of Novolazarevskaya Station of USSR), East Antarctica, velocity values are nearly the same, but the thickness of the lower crust in the northern Mizuho Plateau is about a half of that in Dronning Maud Land.

(Received April 4, 1983)