

Seismic velocities in UHT metamorphic rocks from Napier Complex, Antarctica: Crustal structure and tectonics of Mizuho Plateau

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P-wave velocities (V_p) in ultra-high temperature granulite-facies rocks from the Archean Napier Complex were determined up to 1.0GPa from 25C to 400C. All rocks show a rapid increase of V_p at low pressure up to 0.4GPa and nearly constant V_p at higher pressure. The V_p values at 1.0GPa and 400C are, respectively, 7.17km/s for pyroxenite, 6.93km/s, 6.88km/s for mafic granulites and 6.17km/s for orthopyroxene felsic gneiss. The 6.95km/s lower crust lies at depth from 33 to 40km beneath the Mizuho Plateau. The V_p value of the lower crust is equivalent to that of mafic granulites, which are commonly understood to be meta-sills and exist in lower crust of Napier Complex. It suggests that the Archean Napier Complex lies beneath the early Paleozoic Lutzow-Holm Complex.