Crustal S-velocity models beneath Antarctica inferred from Genetic Algorithm inversion for teleseismic receiver functions

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http://geotgx.nipr.ac.jp/~kanao/seismic_obs/

Seismic velocity models of the crust and the lithospheric mantle were investigated by teleseismic receiver functions inversion beneath the permanent stations at the continental margins in Antarctica.   In order to eliminate the starting model dependency, non-linear Genetic Algorithm (GA) was introduced in the time domain inversion of the radial receiver functions at each station.   Shear velocities of the stations belonging to FDSN are investigated in relation to the crustal evolution. The shear velocity model around MAW has a sharp Moho at 42 km depth that might have involved re-working of adjacent Archaean craton of the Napier Complex.   High velocities in the upper crust around SYO may have a relationship with surface geology of granulite facies metamorphic rocks.   Middle grade variations of the crustal velocities for DRV may have been caused by the Middle Proterozoic metamorphism.   Broadening low velocity zones recognized at VNDA about 30 km depth, which may be caused by the rift system of Trans Antarctic Mountains.   As for the Antarctic Peninsular, Moho was found at 34 km depth from PMSA.