

REVIEW OF PERMAFROST MEASUREMENTS OBTAINED EASTWARD OF ANTARCTIC PENINSULA

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A review and discussion about thicknesses and electrical resistivities of permafrost in Seymour, James Ross and Robertson island zones next to Antarctic Peninsula was made. From 1979 to 1996, at least eight geophysical campaigns were carried out in these zones where magnetotelluric, gravimetric, magnetic, seismic and vertical electric soundings were performed. An active layer of 0.6 to 2.0 m thickness with a resistivity of 320 to 800 Ohm m, and permafrost of 30 to 200 m divided in two layers of 5 to 200 Ohm m and 50 to 2000 Ohm m respectively were determined in Seymour island by electrical soundings (Schlumberger-Wenner). A very conductive layer of 28 Siemens was also put in evidence below the permafrost by magnetotelluric soundings. Electrical soundings in northwestern region of James Ross gave 0.8 to 1.10 m with 30-280 Ohm m for the active layer and 2.5 to 44 m with 1000 - 4000 Ohm m for the permafrost. Magnetotelluric soundings in the same region gave evidence of a conductive layer with a conductivity of 20 to 350 Siemens below the permafrost approximately between 10 to 200 m thickness with 0.34 to 0.80 Ohm m. Other magnetotelluric soundings performed in the region of Robertson island and the near Larsen ice shelf - a region where sixteen nunataks are present (Foca nunataks) - let to estimate a conductivity of 52 Siemens for snow + glacier ice + possible permafrost in Robertson. It was also estimated 840, 60 and 168 Siemens for glacier ice + sea water near Larsen and Pedersen nunataks (on Larsen shelf) and Cape Fair weather. Analysis of these measurements, their dispersion, and the possible distortive effects produced in soundings by geological context were made.