

Geophysics methods application in order to determine the crustal structure at Antarctic Active Margin

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Geophysical measurements were carried out in the West coast of the Antarctic Peninsula, Bransfield Strait, South Shetland Islands and South Shetland Trench, by Brazilian Antarctic Program during the summers of 1987 and 1988. The present work, using a continued seismic, gravity and magnetometry data profile crossing the area, intends to present a two-dimensional model of the general crust structure that can contribute to the understanding of the complex geology verified in the studied area. By this model, the Moho discontinuity would lie at a depth of 14.5km below the axis of the Bransfield trough, 22km below South Shetland Islands and 10km below deep ocean. The dip of Drake plate at South Shetland Trench, is 22°. The model proposed here was compared with other models presented in the same region and with models of other regions with similar tectonic history. The recent seismic activities, the anomalous behavior presented by Moho depth below Bransfield Basin axis and the compressional processes identified in the accretionary prism and trench show how difficult is the knowledge of the geological history of this area. The recent tectonic in the region, identifies a distensional behavior in the Bransfield Basin, suggesting its continued opening, counter-balanced by compressional processes in the South Shetland Trench and in accretionary prism.