MT SOUNDINGS IN SOUTH SHETLAND ISLANDS AND ANTARCTIC PENINSULA (ANTARCTICA): CONSTRAINTS TO THE CRUSTAL STRUCTURE OF THE BRANSFIELD STRAIT CONJUGATED CONTINENTAL MARGINS

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The South Shetland Block was separated from the Antarcic Peninsula during the opening of the Bransfield Strait since the Pliocene (about 3.3 Ma). The Bransfield basin is developed by the interaction of two tectonic processes that continue active up to Present: the back-arc extension related to the subduction of the former Phoenix plate oceanic crust along the South Shetland trench and the transtensional deformation associated to the western end of the sinistral Scotia-Antarctic plate boundary along the South Scotia Ridge fault zone. In this tectonic framework 12 MT broadband data (BBMT) were recorded along a NW-SE transect orthogonal to the Bransfield Strait, with Metronix ADU-06 equipments, during 2008 and 2009 International Polar Year field surveys. Due to the difficult access of the region and in order to compare the resisitivity crustal features, MT soundings were grouped in three sectors representing the different tectonic settings. In the South Shetland Block 4 MT soundings were located in Livinsgston Island (3 in Byers Peninsula and one in Hurd Peninsula) and suggest the presence of conductive Cretaceous to Cenozoic sedimentary and volcanic rocks above the resistive and heterogeneous metamorphic basement that outcrop in Hurd Peninsula. Southwards, 7 MT sounding were situated around the Quaternary volcanic caldera of Deception Island, formed on the fault system separating the South Shetland Block and the Bransfield basin. Conductive bodies highlight the location of the main magma chambers. Finally, in the Antarctic Peninsula northern margin a MT sounding was obtained in Isla Larga, near the O'Higgins base that constitutes one of the scarce islands of this region not covered by ice during the summer. This MT sounding suggest a 3D complex resistivity structure related to the metamorphic rocks intruded by basic dykes. These MT soundings may contribute to improve the scarce available data on the crustal structrure of this tectonically complex region.

Long period magnetotelluric data, deep structure, Betic Cordillera.

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