



First magnetotelluric results from the active volcanic Deception Island (South Shetland Islands, Antarctic Peninsula)

A. Pedrera (1), A. Ruiz-Constán (1), N Heredia (2), and J Galindo-Zaldívar (1)

(1) Universidad de Granada, Geodinámica, Granada, Spain (pedrera@ugr.es, aconstan@ugr.es, jgalindo@ugr.es), (2) Instituto Geológico y Minero, IGME, Oviedo, Spain (n.heredia@igme.es)

The magnetotelluric method (MT) has been broadly tested as a powerful tool to image the subsurface structures, particularly obtaining good results in active volcanic regions. Geothermal anomalies, sometimes related to magmatic chambers, are common in these active volcanic settings. These structures are easily detected with the MT resistivity models. The survey consisted in 7 soundings carried out in the volcanic Deception Island, which is located at the SW end of the South Shetland Islands, near the northern border of the Bransfield back arc basin. The Deception Island is an important active volcano with at least 6 historical eruptions and continuous seismicity. Periods from 0.001 s to 100 s were inverted along two parallel NW-SE 2D models allow identifying two main conductor bodies (0.5-5 Ohm m). A shallow conductor extends from the surface up to 1 km depth and is associated with the outcropping volcanic rocks that are saturated in sea water. A second conductor, with resistivity in general decreasing northwards, is located below 4 km and could correspond with the position of a magmatic chamber and its associated hot fluids related to the present-day seismic activity. This chamber reaches shallow levels below the volcanic edifice corresponding to the latest eruption that occurred in 1970.