



Preliminary results of receiver function analyses at three sites across the Bransfield Strait, Antarctica

C. Martínez Arévalo, F. Mancilla, J. Almendros, J. L. Aznarte, and G. Alguacil
Universidad de Granada, Instituto Andaluz de Geofísica, Granada, Spain (alm@iag.ugr.es)

In February 2008, in the framework of the International Polar Year 2008-2009 under grant POL2006-08663 of the Spanish Ministry of Education, we deployed three broadband seismometers at points forming a N-S profile across the Bransfield Strait, Antarctica, in the region between the South Shetland Islands and the Antarctic Peninsula. This region is very interesting from a tectonic point of view, due to the opening of the rift of the Bransfield and the presence of the South Shetland microplate. For logistic reasons, our instruments were located in the vicinity of the Antarctic bases Juan Carlos I (Livingston Island), Gabriel de Castilla (Deception Island), and Primavera (Antarctic Peninsula). Each seismic station consisted of a broad-band, three-component electrodynamic seismometer equipped with a 24-bit data acquisition system. The energy was provided by wind generators and solar panels connected to a battery bank, a combination that has been able to provide enough power at all sites, even during the Antarctic winter. All components were designed to function under the extreme conditions of the Antarctic weather. The main objective of this experiment was to use receiver function techniques on teleseism data to investigate the structure of the crust under the sites, in order to compare with other studies and shed light on the structure and tectonics of the region. During this past year, we have recorded several tens of teleseisms at distances appropriate for receiver function analyses. Preliminary results will add information on critical issues regarding the structure of the Bransfield Strait region. Although the Earth models obtained will contain extra information, we are specially interested in the determination of the depth of the Moho at each site, a controversial point in this area. These results will be compared with estimates obtained by different techniques. We are also interested in the determination of the vertical extent of the magma chamber recently imaged by high-resolution seismic tomography under Deception Island volcano.