Geophysical Research Abstracts, Vol. 7, 08240, 2005 SRef-ID: 1607-7962/gra/EGU05-A-08240 © European Geosciences Union 2005



Two dimensional inversion of magnetotelluric data in SW Ireland: Preliminary results from Iapetus Suture zone

C.K. Rao (1,2), Max Moorkamp (1) and Alan G. Jones (1)

(1) Dublin Institute for Advanced studies, Dublin, Ireland, (2) On leave from Indian Institute of Geomagnetism, Navi Mumbai, India (ckrao@cp.dias.ie)

The Iapetus suture is a major Caledonian structural feature that dominates the geology of Ireland, Scotland and Newfoundland. It is a tectonic boundary resulting from the collision between the three plate configuration of Laurentia, the Baltic shield and Avalonia during the closure of the Iapetus ocean in late Silurian and early Devonian (400 my ago) times. A magnetotelluric survey (ISLE-MT) was undertaken in the SW of Ireland to study the electrical properties of the Iapetus tectonic boundary to asthenospheric depths to correlate with an ongoing teleseismic survey (ISLE). Data were collected at 22 stations with an approximate spacing of 20 km and with a frequency range of 320 – 0.0001 Hz using both broadband (BBMT) and long period (LMT) magnetotelluric systems. The data from both systems were processed using multiple remote-reference robust codes based on Jones and Jödicke (1984). Although the data quality of the estimated MT responses substantially improved in the high frequency range compared to single-site processing, the effects of electric cow fences on the data in the 1.0-1.2 Hz frequency band were not completely removed (see Moorkamp et al., this conference). The non-contaminated parts of the data set were analysed for local galvanic distortions using a multi-site and multi-frequency distortion decomposition code (McNeice and Jones, 2001). Geoelectric strike angles for low frequencies (1 - 0.0001 Hz) are observed as $75 \pm 5^{\circ}$ for the two western most profiles, and $52 \pm 5^{\circ}$ for the three eastern profiles, which are consistent with the local geological strike of the Iapetus suture. Two-dimensional inversions of the corrected responses from the uncontaminated data on the different profiles will be presented, together with initial interpretations