



Shear-wave splitting measurements from teleseismic and active-source data across the Iapetus Suture Zone in Ireland: preliminary results

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The Iapetus Suture Zone is the most important Caledonian structural feature in Britain and Ireland. The suture represents a tectonic boundary resulting from the amalgamation in a three-plate configuration of Laurentia and Baltica with Avalonia during the closure of the Iapetus Ocean during late Silurian and early Devonian times (*ca* 400 Ma). To reveal the existence of possible anisotropy due to deformation fabrics within the suture zone, we are carrying out shear-wave splitting analyses on teleseismic data recorded by a temporary network of 23 stations (the ISLE experiment) over a 2 year period from November 2001, and on up to 10 years of recorded data from two permanent broadband stations in Ireland. More than 200 events, both shallow and deep focus earthquakes with epicentral distance from 90° - 130° and M_b above 6.0, have been selected from both the broadband data and pseudo-broadband data simulated from restituted short-period records (8 stations). Preliminary splitting results show a fast direction of about 73° with an average delay time of around 1.2 seconds. However, the azimuthal distribution of events has proved somewhat limited within the timeframe of the data collection. Studies of other converted shear phases, such as PKS or PpSmS, are being used to give additional constraint to the geometry of the anisotropic layer. The crustal contribution to the observed anisotropy is also being investigated using S-waves from existing onshore refraction data obtained during an earlier (VARNET) project. Preliminary results indicate that the crustal contribution is quite low.