Geophysical Research Abstracts
Vol. 18, EGU2016-3444-1, 2016
EGU General Assembly 2016

Deep Mantle Shear Wave Splitting in Isotropic Earth Models

Laura Parisi (1), Ana M.G. Ferreira (2), and Jeroen Ritsema (3)

(1) Division of Physical Science and Engineering, KAUST, Thuwal, Saudi Arabia, (2) Department of Earth Sciences, University College London, London, UK, (3) Department of Earth and Environmental Sciences, University of Michigan, Ann Arbor, Michigan, USA

It has been observed that vertically (SV) and horizontally (SH) polarised S waves crossing the lowermost mantle sometimes are split by a few seconds The splitting of such waves is often interpreted in terms of seismic anisotropy in the D" region. Here we investigate systematically the effects of elastic, anelastic, isotropic and anisotropic structure on shear-wave splitting, including 3-D variations in some of these physical properties. Taking advantage of accurate waveform modeling techniques such as Gemini and the Spectral Element Method we generate three-component theoretical waveforms in a wide set of 1-D and 3-D, isotropic and radially anisotropic earth models, accurate down to a wave period of T$\sim$5.6s. Our numerical simulations in isotropic earth models show that the contamination of S waves by other phases can generate an apparent splitting between SH and SV waves. Different scenarios of apparent lowermost mantle anisotropy are shown and discussed.