

Lithospheric and asthenospheric anisotropy: Lessons from Southern Africa and Joint Inversion of Seismic and Electromagnetic data for an Anisotropic Earth

Alan Jones, invited seminar, Geosciences Department, Montpellier University, 23rd April, 2010

Observations of anisotropy, when understood in terms of deformation processes, are critical to illuminating the dynamics of past and present tectonic processes - in particular how continents formed, stabilized and interacted with underlying mantle regions in the past, and how they do so today. Seismology and electromagnetic observations of anisotropy are essential if we are to understand the tectonic history of a region. Given the limitations of both sub-disciplines a more robust characterization of anisotropy is achieved by integrating complementary datasets. The seminar will focus on two aspects: one will be the qualitative comparison of anisotropy observed electrically and seismically in Southern Africa from the SASE and SAMTEX experiments, and will include a new model to explain SKS data. The other will be our development of a joint inversion process of seismic and electrical data for an anisotropic 1-D Earth structure.