Geophysical Research Abstracts, Vol. 7, 02976, 2005 SRef-ID: 1607-7962/gra/EGU05-A-02976 © European Geosciences Union 2005



The role of reference models in seismology and mineral physics

B.L.N. Kennett

Research School of Earth Sciences, The Australian National University (brian.kennett@anu.edu.au)

Reference models of one class or another play a major role in the interpretation of seismological and mineral physics information. They are essential to the characterization of seismic sources through hypocenter and source mechanism. They also are used to try to pin down the mineral state and thermal configuration of the mantle by matching seismic properties with results from mineral physics. In this context, simple assumptions for a seismic model may have profound implications for subsequent interpretation. Reference models also frequently appear in model construction and display for 3-D structure, both through the description of residuals and the regularization of models. Because of the multiple roles, different classes of reference models have emerged with similar but not mutually consistent properties. For seismological purposes a model of seismic wavespeeds and density is sufficient, but an alternative that is more directly useful in a mineral physics context is to work with the elastic moduli and density. Parametric representations of both moduli and density avoid the direct imposition of specific character on the seismic wavespeed distribution and can more readily incorporate constraints from experimental studies.