



Propagation and multiple conversion scattering of seismic energy in the earth's crust

C. Sens-Schönfelder(1,2), L. Margerin(3,2), U. Wegler(4)

(1) Institut für Geophysik und Geologie, Universität Leipzig, Germany, (2) LGIT, Grenoble, France, (3) CEREGE, Aix en Provence, France, (4) SZGRF/BGR, Erlangen, Germany

Propagation of seismic energy in continental crust is influenced by two important factors. On the one hand small scale heterogeneities scatter seismic waves and build up the seismic coda observed in every seismogram. On the other hand the Moho poses a major discontinuity that reflects and converts seismic energy resulting in Lg-waves that are guided in the crust between the surface and the Moho.

Radiative transfer theory is a powerful tool for the calculation of energy propagation such a situation. We present Monte-Carlo simulations that solve the transport problem of elastic energy in a system that consists of a free surface an interface at depth and a scattering layer in between. Our simulations visualize the conversion of energy by scattering, the additional sources of conversion at the surface and the Moho and the trapping of energy in the scattering layer. We illustrate the gradual buildup of equipartition and the fading of the source radiation pattern in the coda.