



## **Surface wave synthetic data in heterogeneous regions**

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Regions with complex tectonic history show strong lateral heterogeneities which may cause multipathing and mode coupling. These two phenomena complicate the wave-trains and result in the fact that a considerable part of the surface wave data is discarded in classical tomographic studies. These data contain precious information about the structure and it would be important to try to exploit them better. This is especially true for short period surface waves which are crucial to improve the lateral resolution of regional tomographic models. In order to evaluate the complexity we can expect in the waveforms for heterogeneous regions and in the view of preparing new tomographic methods, we use a multiple scattering method for surface waves in 3D structures. With this method it is possible to examine the propagation of surface waves more realistically, by taking mode coupling and multipathing into account. We use a synthetic model of heterogeneities superimposed on the PREM reference model. We will present synthetic seismograms of fundamental and higher mode surface waves propagating in the heterogeneous model.