Geophysical Research Abstracts
Vol. 20, EGU2018-12824, 2018
EGU General Assembly 2018

The influence of 3D velocity model on regional moment tensors in a subduction zone setting

Mike Lindner and Andreas Rietbrock
Karlsruhe Institute of Technology, Geophysical Institute, Department of Physics, Germany (mike.lindner@kit.edu)

Regional seismic moment tensors (RMTs) are often used in subduction zone setting to infer the location of the subduction zone interface. They provide a unique opportunity to study the corresponding mechanisms, the underlying stress field and are also needed as an input to full waveform inversion schemes to image the physical properties of the Earth. In this study, we investigate the influence of a 3D velocity model on RMTs using the program package pycmt3d. Firstly, we investigate the stability of pycmt3d on a chosen starting mechanism. Green‘s functions are simulated using specfem3D in a homogeneous model and a double couple source. Partial derivatives in respect to the source parameters (6 moment tensor components, location and depth) as needed by pycmt3d are calculated numerically. Our preliminary tests indicate the robustness of the underlying linearized inversion technique. First tests are conducted using a grid search of varying fault angles (dip, strike, rake) with sampling steps of 5 degrees from a constant starting model. Results for the influence of a typical subduction zone velocity model on RMT solutions will be also discussed.