Seismogram construction to fit the recorded B032593C earthquake, Japan on observation station BFO, Germany

---

Abstrak

In this research the model of earth layers between earthquake's epicenter in Hokkaido Japan and observation station in Black Forest of Observatory (BFO), Germany is investigated. The earth model is 1-D that represents the average speed model. The earth model is obtained by seismogram comparison between data and synthetic seismogram in time domain and three components simultaneously. Synthetic Seismogram is calculated with the Green's function of the Earth by MINor Integration (GEMINI) program, where program's input is initially the earth model IASPEI91, PREMAN and also the Centroid Moment Tensor (CMT) solution of the earthquake. A Butterworth low-pass filter with corner frequency of 20 mHz is imposed to measured and synthetic seismogram. On seismogram comparison we can find unsystematic discrepancies, covering the travel time and waveform of all wave phases, namely on P, S, SS wave and surface wave of Rayleigh and Love. Solution to the above mentioned discrepancies needs correction to the earth structure, that covering the change of earth crust thickness, the gradient of &#65533;?&#65533;h and value of zero order coefficient in &#65533;?&#65533;h and &#65533;?&#65533;v in upper mantle, to get the fitting on the surface wave of Love and Rayleigh. Further correction to accomplish the discrepancies on body waves is conducted on layers beneath upper mantle down to depth of 630 km, where a little change at speed model of P and S wave is carried out. The number of oscillation amount especially on Love wave is influenced by earth crust depth earth. Good fitting is obtained at phase and amplitude of Love wave, but also at amplitude of some body wave too. This effect is not yet been exploited for the determination of moment tensor.