Geophysical Research Abstracts
Vol. 13, EGU2011-12134, 2011
EGU General Assembly 2011


# Rayleigh wave dispersion analysis using seismic ambient noise data at amphibic networks

Andreas Schmidt and the Egelados Working Group Team
GMG, Ruhr-University Bochum, Germany (andreas.schmidt@ruhr-uni-bochum.de)

Seismic noise signals are independent of seismic event occurence and their appropriate magnitudes. Especially in quiet regions it is advantageous to use seismic noise cross correlation for the extraction of surface wave Green's function. The presented method basically consists of two processing steps: First, the cross correlation of continous records for two seismic stations at specified positions in a well-defined time interval. Then, stacking of the correlograms for sequenced intervals to increase the signal-to-noise ratio (SNR). The resulting wave train is equivalent to the surface wave Green's function corresponding to the ray path between the two stations. Consecutively, the dispersion analysis of resulting seismograms provides group velocity curves which give information about the crustal and uppermost mantle structure that cannot be obtained from earthquake data.
Using data of the EGELADOS project, seismic records of 65 three-component land stations (Guralp, Mark, STS-2) and 22 ocean bottom seismographs (OBS, only Hydrophone component) in a dense network during the period October 2005 to April 2007 (May 2006 to March 2007 in case of OBS) are available. The very special conditions of the Aegean region as an active seismic area limits the efficiency of the used method. Effects of seismic events have to be eliminated before cross correlating seismic noise to avoid the dominant corresponding correlation signal.
Furthermore, particular attention is paid to the determination and analysis of dispersive signals in case of OBS and hydrophones. Hydrophone seismograms show multiple signals of different velocities in narrow frequency bands. This significantly affects the determination of the particular Green's function. To find a statement about the availability of used equipment, Green's functions and their appropriate dispersion curves were compared with corresponding results for hydrophones and OBS from the NEAREST project (August 2007 - August 2008, Gulf of Cadiz).