



Magnetotelluric monitoring experiment in TIPTEQ

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Part of TIPTEQ (From The Incoming Plate to Mega Thrust Earthquake Processes) is a combined seismic-magnetotelluric-geodetic monitoring network. In the first phase, which started in November 2004, a network of three stations was installed, aligned along an EW profile extending from the Atlantic Ocean to the volcanic arc. The overall goal is to detect transient events which are related to the subduction system by means of recording and imaging the local and regional seismicity distribution and the long-term variability of geomagnetic transfer functions. Synchronous recordings of GPS and seismic broadband data (periods up to hours) will allow us to examine a wide spectrum of earthquake styles: between seismic (sudden-onset) rupture and continuous or a-seismic slip. Here, we present first results of the long term magnetotelluric (MT) experiment. The data were recorded in a standard 5 component MT setup using fluxgate magnetometers and non-polarizing Ag AgCl electrodes. A preliminary single site processing of the data in 14 day intervals results in apparent resistivity and phase curves in a period range between 10s and 10000s which are generally repeatable for each station. The influence of noise is evident showing great variability between individual time segments and across the station network. Data quality can be improved considerably, however, with modern array processing techniques such as inter-station transfer functions and the remote reference method. An accurate estimation of local and inter-station transfer functions is prerequisite to delineate anomalous signals caused by temporal changes of the subsurface structure.