Geophysical Research Abstracts
Vol. 14, EGU2012-4609, 2012
EGU General Assembly 2012

The influence of manmade noise and geomagnetic fluctuations on seismo-magnetic signatures

G. Prattes (1), K. Schwingenschuh (1), H.U. Eichelberger (1), W. Magnes (1), G. Berghofer (1), M. Stachel (1), B. Besser (1), D. Wolbang (2), M. Vellante (3), U. Villante (3), and P. Nenovski (4)

(1) Space Research Institute, Graz, Austria (gustav.prattes@oeaw.ac.at), (2) Institute of Physics, IGAM, KF University Graz, Graz, Austria, (3) Dipartimento di Fisica, University of L'Aquila, L'Aquila, Italy, (4) Geophysical Institute, Sofia, Bulgaria

In the frame of the South European Geomagnetic Array (SEGMA) chain we investigate the magnetic background with the scientific goal to identify and characterise seismo-magnetic signals. Therefore it is mandatory to differentiate between exogenic (atmospheric / ionospheric / magnetospheric) and endogenic (lithospheric) sources of magnetic variations together with instrumental behaviour.
The SEGMA chain consists of five stations spread over mid- and south Europe, data are continuously provided for the last 10 years. The experience has shown that the signal-to-noise ratio of the individual stations depends both on location and time where manmade noise sources have to be considered carefully.
Beside the local environments at the SEGMA stations we are considering several geomagnetic indices, e.g. AP-, KP- and DST index.
In addition to various geomagnetic signals the possible seismic part of the variations has to be characterised. Reliable results are achieved through the multi-station SEGMA approach in combination with alternative datasets, e.g. from seismic and electromagnetic networks. Earthquake magnitude and distance to the sensors are the most important parameters, the ground conductivity profile is whenever possible, i.e. reliable measurements are available, considered.
Long term observations and station comparisons have shown the quality figure of each SEGMA station. The S/N of the L'Aquila station (Italy) was sufficiently high to detect magnetic variations related to the L'Aquila magnitude M=6.3 earthquake, April 6, 2009. In comparison no seismic signals were detected on the other SEGMA stations.
We conclude that possible seismic signals can be detected with the SEGMA multi-station network approach if the environmental conditions can be characterised.