

- EMSEV activity related to Earthquake Processes

Kyrgyzstan International Geophysical Centre (IGRC), located at Bishkek Research station and the Academy of Sciences (RAS) of Moscow are conducting active monitoring of underground electrical conductivity along the Kyrgyzstan range (42-43°N, 72-76°E) for more than thirty years. In particular, about 6 times a day, 600 A electric current is injected into the ground through a 4 km long electrical dipole. Residual electric signal can be received up to 70 km away. Observations show that (1) resistivity changes of a few per cent may be observed before EQs of magnitude above 4, (2) a reduction in overall seismicity appears to result when increased small magnitude EQs were induced by the current system, and (3) large injected currents generate an increase of low magnitude EQs during the days following injection.

In 2011, EMSEV and Bishkek Research station decided to focus more deeply on this experiment and on the natural and induced electromagnetic signals which may appear along the ridge.

During the Kick-off meeting held at the station on October 8 to 12, 2011, EMSEV and IGRC decided to (http://www.gdirc.ru/en/index.php?option=com_content&view=article&id=16:-emsev-&catid=1:latest-news&Itemid=50) focus research on several important topics: (1) detection of signals possibly related to tectonic activity, (2) independent evaluation of Seimo-Electric signals and comparison with results obtained in Greece, (3) triggering effects of electric current injection and magnetic storms, and (4) anisotropy of propagation of the electric signals through the faults system.

A 4-year agreement of cooperation between IGRC and EMSEV was signed in October 2011. Japanese and French passive EM stations (sampled at 100 Hz and 40 Hz, respectively) were installed at new field sites, 40 and 30 km away from the current system used by Kyrgyz colleagues. Since then, joint data processing systems are implemented.

The first data issued from the collaboration were shown at the 2012 EMSEV meeting. Huge amount of data are recorded, and, most importantly, signal to noise is good. Data are now being processed.

In March 2014, a workshop in Toulouse (France) will gather teams involved in the cooperation, and detail analysis will be performed. In June 2014, Japanese and French team will benefit from the international symposium on " PROBLEMS OF GEODYNAMICS AND GEOECOLOGY OF INTRACONTINENTAL OROGENS" at Bishkek Research station for upgrading the stations, and implementing new experiments. Results will be presented at the 2014-EMSEV international meeting. In March 2015, a new workshop will be held in Athens, and new results will be deliver at IUGG 2015 in Prague.

