

Seismo-acoustic data analysis at I34MG-Mongolia (Songino)

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Abstract

The RCAG of Mongolia and DASE of France jointly designed, installed and operated both IMS Seismic and Infrasonic arrays southeast of Ulaanbaatar in Mongolia. We installed infrasound sensors to form a four-element triangular array with 1-3 km spacing and 10 seismic stations like type NORSAR with double circled array with radius of 1-3 km. Seismic stations are equipped with 9 vertical components short-period seismometers and one 3 components short and long period seismic sensors.

Joint analysis of the seismic and acoustic recordings are found to be particularly important in identifying and locating industrial blasting sources. From 2000 to 2001, we have compiled and analyzed seismo-acoustic signals from mine blasts. Several large mines routinely generate explosions that are detected both with seismic and infrasound sensors. The distances range between 40 to 500 km. The Baganuur coal mine, 180 km to the east of the array, regularly produces 5-10 seismic detections per week. The Erdenet copper mine which is 300 km west-north, every week at 06-07 UTM time, produces several explosions at the same time. The corresponding number of infrasound detections is found to be dependent on the season and the local winds. We also observed shooting noise in both seismic and infrasound stations from military training area.