



Preceding work for estimating natural seismicity in the Korean Peninsula by using seismo-acoustic analysis

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Recent deployment of high-quality seismic stations in the Korean Peninsula had led to the detection of smaller events using routine seismic data processing. However, this ability to detect small events (more than three thousand events per year) causes an undesirable side effect that is, artificial blasts are also included in the events list. Such blast contamination is a major cause of error when estimating the seismicity of a region, especially where the seismic activity is weak or moderate such as in the Korean Peninsula. Thus, it is important to discriminate such artificial events from natural earthquakes, and must be preceded before other seismological researches. In order to discriminate man-made explosions from natural earthquakes, the Korea Institute of Geoscience and Mineral Resources, in conjunction with Southern Methodist University, USA, has been operating seismo-acoustic arrays detecting both seismic ground motions and low frequency atmospheric pressure perturbations. These arrays could observe distinct infrasonic signal as well as seismic signal generated from surface explosion. Observation of both signals made it possible to discriminate surface explosion, because small or moderate size natural earthquake is not sufficient to generate infrasound. Five years of seismo-acoustic data have been analyzed, and more than one thousand corresponding to about 10% of total seismic events have been discriminated and catalogued in our database. Almost all of them originated from well-known blasting sites and concentrated on certain regions. The seismo-acoustic analysis is proved as a definite method to discriminate surface explosion. The analysis will be continuously used for refining and estimating natural seismicity in the Korean Peninsula.