Geophysical Research Abstracts, Vol. 8, 05506, 2006
SRef-ID: 1607-7962/gra/EGU06-A-05506

Evaluation of BURAR array performance in seismic monitoring of Romanian territory

D. Ghica

National Institute for Earth Physics, 12 Calugareni St., PO Box MG-2, 077125 Bucharest-Magurele, Romania, Tel.: +4021 493 01 17, Fax: +4021 493 00 52, e-mail: daniela@infp.ro

An array seismic monitoring system, BURAR (Bucovina Seismic Array), has been established since July 2002, in the Northern part of Romania, in a joint effort of the Air Force Technical Applications Center, USA, and the National Institute for Earth Physics (NIEP), Romania. This station is a 5 km aperture array, consisting of 10 seismic sensors (9 vertical short-period and one three-component broad band) located in boreholes. Presently, the seismic data are continuously recorded by the BURAR and transmitted in real-time to the Romanian National Data Centre, in Bucharest and to the National Data Center of USA, in Florida. Based on the BURAR seismic information gathered at National Data Centre, NIEP (ROM_NDC) in the August 2002 - December 2004 time interval, analysis and statistical assessments for Romanian territory monitoring with BURAR station were performed. Following the preliminary processing of data, several observations on the global performance of BURAR system were emphasized. The data investigation pointed out an excellent efficiency of the BURAR system mostly in detecting teleseismic and regional events. Moreover, a study of the local monitoring capability of the station was required in order to find the better method for including BURAR data in the location procedures based on the Romanian Real-Time Network information. A statistical analysis for the BURAR detection capability of the local Vrancea events was performed in terms of depth and magnitude for the year 2004. The high signal detection capability of the BURAR resulted, generally, in improving the location solutions for the Vrancea seismic events. The location solution accuracy is enhanced when adding BURAR recordings, especially in case of the low magnitude events (recorded by few stations). The location accuracy is increased, both in terms of constraining hypocenter depth and epicentral

coordinates. The analysis attests the BURAR system importance in NIEP efforts to elaborate the seismic bulletins. Furthermore, the specific procedures for array data processing (beamforming, f-k analysis) increase significantly the signal-to-noise ratio by summing up the coherent signals from the array components and ensure a better accuracy of the arrival times picking and phases characterization. The data collected and recorded by the BURAR monitoring seismic station are an important source of information regarding the local seismicity (mainly in the northern and western part of the Romanian territory).