RESULTS FROM THE URBAN SEISMOLOGY (URS) PROJECT IN BUCHAREST, ROMANIA

S.F. Balan¹, J. Bartlakowski², T. Diehl²,³, T. Forbriger², J. Groos², B. Jaskolla², L. Rehor², J.R.R. Ritter², O. Sèbe²,⁴, H. Sudhaus²,³, F. Wenzel², J. Ziehm²

¹ National Institute for Earth Physics, Bucharest-Măgurele, Romania
² Geophysical Institute, Universität Karlsruhe (TH), Germany,
³ Institute of Geophysics, ETH Zürich, Switzerland
⁴ CEA-DASE-LDG, Bruyères-le-châtel, France

corresponding author: joachim.ritter@gpi.uka.de

Bucharest, the capital of Romania with about 2.5 million inhabitants, is frequently struck by intense, damaging earthquakes (1940, 1977, 1986 & 1990). Within the framework of the Collaborative Research Centre 461 (CRC 461) "Strong Earthquakes - A Challenge for Geosciences and Civil Engineering" and the "Romanian Group for Strong Earthquakes" seismic wavefields were recorded continuously in Bucharest with broadband instruments for 9 months. During this URban Seismology (URS) project the KArlsruhe BroadBand Array (KABBA) with 32 mobile broadband stations was installed in the city centre and the periphery of Bucharest between October 2003 and August 2004. The aims of the field project are on one hand the recording of local, regional and teleseismic earthquakes and on the other hand the continuous acquisition of urban seismic noise. These data should serve as basis for comprehensive studies of the subsurface of Bucharest and the properties of the seismic wavefield in a major city.

The analysis of recordings from regional intermediate-depth Vrancea earthquakes provides information on the properties of the related seismic wavefields, amplitude variations across the network, crustal structure from receiver functions and transfer functions of a ten-story tower building in Măgurele. Teleseismic waves were used to study low-frequency amplitude variations as well as lithospheric structure from receiver functions and Love wave dispersion. Ambient seismic noise is analysed for site effects using the horizontal-over-vertical spectral ratio as well as to characterise the noise sources and their temporal behaviour.