



"13 BB star" – broadband seismic array at the edge of East European Craton in Poland

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"13 BB star" is a dense array of 13 Reftek 151-120 broadband seismometers located in unpopulated forests in northern Poland – just on the edge of East European Craton. The shape of array was designed as a "star" with one central station and 12 stations located on two circles (radius of about 30 and 60 km) around it. This geometry allows us to study seismic waves (in particular surface waves) incoming from all azimuths.

Our "13 BB star" array stations are self powered (solar panels and batteries), equipped with local storage system and on-line transmission of seismic and auxiliary data using 2G and 3G cellular network. We also developed on-line application for monitoring array status (transmission, connections, power, temperature, etc.) and on-line data visualization. Main advantages of our array are: 1) 120s broadband seismometers recording with 100Hz sampling, 2) density of array – distances between neighboring stations does not exceed 30 km, 3) station placement in underground wells, 4) stations located in forests far (usually 2-3 km) from industries, roads, villages and other human activity. "13 BB star" started operating in July 2013 and since that time recorded several local, regional, and teleseismic events proving good array functionality. The scientific aim of the "13 BB star" project is development of a quantitative model of the lithosphere-asthenosphere-structure in the marginal zone of the East European Craton in northern Poland. New acquired data will be analyzed using integrated seismic methods, which will yield images of lithosphere-asthenosphere system hitherto unknown for this area. The knowledge of detailed structure of the cratonic lithosphere-asthenosphere system is crucial for the better understanding of the regional, as well as global mantle dynamics and evolution of the Earth's interior. This work was supported by NCN-grant DEC 2011/02/A/ST10/00284.