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# The GEORIFT 2013 wide-angle seismic profile, along Pripyat-Dnieper-Donets Basin

Vitaliy Starostenko (1), Tomasz Janik (2), Tamara Yegorova (1), Wojciech Czuba (2), Piotr Sroda (2), Dmytro Lysynchuk (1), Roman Aizberg (3), Radim Garetsky (3), German Karataev (3), Yaroslav Gribik (3), Lliudmyla Farfuliak (1), Katerina Kolomiyets (1), Victor Omelchenko (1), Dmytro Gryn (1), Aleksander Guterch (2), Kari Komminaho (4), Olga Legostaeva (1), Hans Thybo (5), Timo Tiira (4), and Anatoly Tolkunov (6)

(1) Institute of Geophysics, National Academy of Sciences of Ukraine, Kiev, Ukraine, (2) Institute of Geophysics, Polish Academy of Sciences, Warsaw, Poland, (3) Institute for Nature Management, National Academy of Sciences of Belarus, Minsk, Belarus, (4) Department of Geosciences and Geography, Institute of Seismology, University of Helsinki, Finland, (5) Department of Geography and Geology, University of Copenhagen, Denmark, (6) State Geophysical Enterprise "Ukrgeofizika", Kiev, Ukraine

The GEORIFT 2013 deep seismic sounding (DSS) experiment was carried in August 2013 on territory of Belarus and Ukraine in wide international co-operation. The aim of the work is to study basin architecture and the deep structure of the Pripyat-Dnieper-Donets Basin (PDDB), which is the deepest and best studied Palaeozoic rift basin in Europe. The PDDB locates in the southern part of the East European Craton (EEC) and crosses in NW direction the Sarmatia, the southernmost of three major segments forming the EEC. The long PDDB was formed by Late Devonian rifting in the arch of the ancient Sarmatian shield. During the Late Devonian, rifting, associated with domal basement uplift and magmatism, was widespread in the EEC from the PDDB rift basin in the south to Eastern Barents Sea in the north.

The GEORIFT 2013 runs in NW-SE direction along the PDDB and crosses the Pripyat Trough and Dnieper Graben separated by Bragin uplift of the basement. The total profile length was 675 km: 315 km on the Belarusian territory and 360 km in Ukraine. The field acquisition included 14 shot points (charge 600-1000 kg of TNT), and 309 recording stations every ∼2.2 km. The data quality of the data was good, with visible first arrivals even up to 670 km. We present final model of the structure to the depth of 80 km. Ray-tracing forward modelling (SEIS83 package) was used for the modelling of the seismic data. The thickness of the sedimentary layer ($V_p < 6.0$ km/s) changes along the profile from 1-4 km in the NW, through ∼5 km in the central part, to 10-13 km in the SE part of the profile. In ∼330-530 km distance range, an updoming of the lower crust (with Vp of ∼7.1 km/s) to ∼25 km depth is observed. Large variations in the internal structure of the crust and the Moho topography were detected. The depth of the Moho varies from ∼47 km in the northwestern part of the model, to 40 km in central part, and to ∼38 km in the southeastern part of the profile. The sub-Moho velocities are ∼8.25 km/s. Second, near-horizontal mantle discontinuity was found in the northwestern part of the profile at the depth of 50-47 km. It dips to the depth of ∼60 km at distances of 360-405 km, similarly as on crossing EUROBRIDGE'97 profile (Thybo et al., 2003). In the central part of the profile (distances 180-330 km and 300–480 km) two reflectors were found in the lower lithosphere at depths of about 62 km and 75 km, respectively.