

GEOLOGICAL AND GEOPHYSICAL STUDIES OF THE PRIPYAT-DNIEPR-DONETS BASIN AND DONBAS FOLDBELT: IMPLICATIONS FOR INTRA-CRATONIC RIFTING AND THE PHANEROZOIC HISTORY OF EUROPE

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The Pripjat-Dniepr-Donets Basin (PDDB) is a Late Palaeozoic extensional basin of the Eastern European Platform (EEP) in Belarus/Ukraine/Russia that has been inverted in its south-easternmost part into the Donbas Foldbelt (DF). The maximum thickness of sediments reaches 19 km, including 12 km of Carboniferous post-rift sediments. The geophysical and geological features of the PDDB are presented and discussed thematically in terms of (i) the Late Devonian rifting mechanism; (ii) Carboniferous-Early Permian basin development and tectonic setting; (iii) mechanism(s) of Early Permian uplift and unconformity development on the EEP; and (iv) the formation of the DF and its relationship with Tethyan tectonics. Studies of magmatic rocks, crustal structure, and subsidence indicate mantle plume activity during rifting. Rifting processes may have compositionally changed the cratonic lithosphere in the vicinity of the PDDB. A series of (trans)extensional or tensional tectonic events affected the PDDB during its post-rift Carboniferous-Early Permian development. Deformation intensity at this time increases towards the south-east into the DF. The structural style of post-rift deformation contradicts regional tectonic scenarios in which the Carboniferous-Early Permian is a time of consolidation of the Scythian Orogen along the nearby southern margin of the East European Craton. Conversely, the main phases of compressional tectonics that formed the DF were Cimmerian (latest Triassic-earliest Jurassic) and, especially, Eo-Alpine (latest Cretaceous-earliest Tertiary) rather than Hercynian/Uralian (Early Permian).