

ABOUT THE SAME GEOLOGICAL AGE AND POSSIBLE SIMULTANEOUS FORMATION OF OBOLON' (UKRAINE) AND PUCHEZCH-KATUN' (RUSSIA) IMPACT STRUCTURES A. A. Valter¹, M.S.Maschak^{2, 1}

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Obolon' astrobleme (49°39'N and 32°55'E) is located on the left bank of Dnepr at interfluvium of rivers Sula and Horol within the Poltava area. In the geological relation it is the east slope of the Ukrainian board in Dneprovo-Donetsk basin. The crater depression has a little extended in the north-northwest direction form (fig.1). The sizes of outer depression in sedimentary cover (average thickness ~ 250 m), is ~ 21x17 km, and of more steep hollow in the crystal base (the depth more than 1 km in relation to its surface), ~ 14x11 km. The analysis of all geological and geophysical data has resulted authors [1] in the conclusion about a complex structure of astrobleme characterised by presence of some hollows of second order in the central and southern parts of the structure. On the basis of the stated facts and features of a geological sections of the structure opened with two deep holes, lithology of impact breccias, presence of signs of shock metamorphic features in minerals, geochemical features of impact rocks authors [1,2] had been draw a conclusion about formation of astrobleme as a result of meteorite falling under a small corner in the shallow sea.

Age of impact breccias of this crater formation is well dated by faunal stratigraphy. At the highest part of the thin layered primary crater deposits which period of formation is estimated no more, than in 1 million years after crater formation, the Bajocian ammonites were met. Above laying sea sediments with some elevated thickness are characterised by Bathonian ammonites fauna.

Puchezh-Katun' astrobleme (56°58'N and 43°43'E) is located the left coast of Volga river in ~ 75 km to the north from Nizhny Novgorod city, in the geological relation - in the central part of Russian platform, on a southeast board of Moscow syncline(fig.2). Diameter of structure ~80 km. Astrobleme has the central uplift (D~ 4 km) and a complex ring structure. It is one of the largest astroblemes of the Earth. The Paleogeographical analysis testifies that astrobleme formation has occurred on the accumulative plain inclined to the West with numerous lagoon's and lake's hollows. By the spores-pollen complexes of lowermost strata of infilling complex of crater are confidently dated as Bajocian [3]. Thus biostratigraphic dating of both structures coincides. The limits of Bajocian are: 167,7 - 164,7 Ma [5]. For K-Ar the datings of both structures are also close. For Obolon' it is 168±5[4]

Ma. We take into account two close results for heterogenetic impact glasses and omitted some greater meaning for Potassium feldspar glass: 172±5 Ma[4] in consideration of more possibility on this sample by ancient argon pollution. For Puchezh-Katun' astrobleme it is 167±3 Ma [6] although more great meaning exist [3].

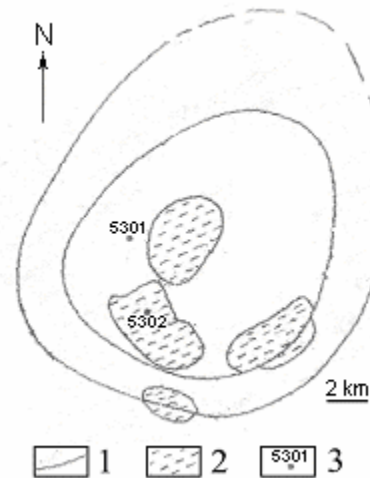


Fig.1. The scheme of Obolon' impact structure by [1] with simplifications. 1- contours of internal deep and external flat hollows; 2 - hollows of 2nd order; 3 - bore-holes and their numbers.

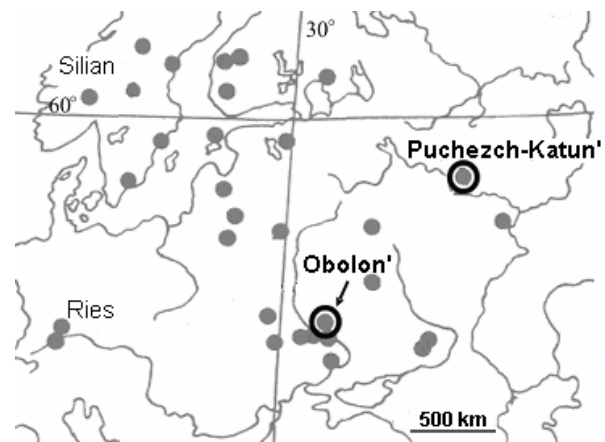


Fig.2. The scheme of a relative positioning of Obolon' and Puchezh-Katun' impact structures (by [3] with changes). By mugs other astroblemes of Central and Eastern Europe are shown. An arrow - a direction of elongation of Obolon' astrobleme.

The form of Obolen' structure (Fig.1)and poissonal relationship of both structures (fig.2) do not exclude Obolon' astrobleme formation by the fragment of Puchezh-Katunsky projectile. Thus, the more deep investigation of these impact structures and their ages may lead to important geological results. .

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