

MODERN DATA ON THE GEOLOGICAL STRUCTURE OF ILYINTSI ASTROBLEME – IMPORTANT GEOLOGICAL AND ARCHAEOLOGICAL MEMORIAL IN UKRAINE. A.Valter, A.I. Pisansky, Institute of Applied Phys. Acad. of Sci. of Ukraine, dep.50. Av. Nauki, 46, apt.201, Kiev-03028, Ukraine; avalter@iop.kiev.ua

Introduction. The outcrops of Ilyintsi astrobleme impactites known since 1851 are the geological and cultural memorial in Ukraine of national significance.

The impact nature of this structure was identified in 1973 and the first simplified geological map was published in 1975 [see reviews in 2,3]. The astrobleme is sheard near 400 m.

Since the IIIrd century AD, for about one thousand years, glass poor suevites from the Ilyintsi outcrops have been worked out for producing hand millstones [4,5].

The artefact from the deer antler [6] found in the ancient quarry contributes to data revealing the commercial connections in Kievan Russia at that time [7].

This paper presents new results on the Ilyintsi astrobleme geology.

Methods, results and discussion. In 1953-1984 the structure was the object of the geological survey and prospecting for Ni, U, nonferrous metals, diamonds, etc. by core drilling. We collected 3040 samples from 76 drill-holes with a full description of the whole core.

We examined this collection and all the geophysical data. The 2D-distribution of different types of rocks over the Pre-Cenozoic area and across the cut were constructed taking into account the relief. The 2D-image was obtained by digitization of the data using the original software and GIMP graphics (fig.1).

The Ilyintsi astrobleme is usually considered to be a structure elongated in the NW-SE direction with the degree of ellipticity 1,4 -1,5 as illustrated in [2,8,9].

The results obtained (fig. 1) show the structure ellipticity to be considerably less: $1,17 \pm 0,02$ with E-W elongation.

In the case of circular approximation the average diameter of the suevite cover is $4,8 \pm 0,1$ km (inner circle in fig. 1). The outer circle ($d=6,1$ km) reflects the spread of the autigenic breccia and relicts of the crater sediments.

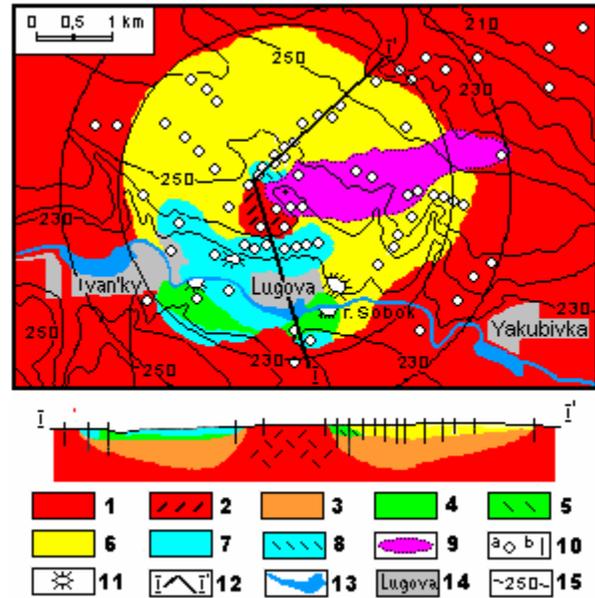


Fig. 1. Simplified map and cut across Ilyintsi astrobleme (coordinates of the center: $49^{\circ}07'N$; $29^{\circ}07'E$)

1 – Basement granitoids; 2 – Bracciated granitoids of Central uplift; 3 – Impact breccia, partly allogenic; 4 – Massive glassy impactites (tagamites by V.L. Masaitis); 5 – region of impactite glassy dykes in suevites (in the cut); 6 – Glassy poor suevites; 7 – The area (in the map) of tagamite layer spreading under the glassy poor and glassy rich suevites; 8 – The area (at the map) of tagamite veins spreading in suevites; 9 – The relicts of crater sediments (S_2-D_1); 10 – Drill holes; a – in the cut; b – in the map; 11 – Outcrops; 12 – The cut line; 13 – The Sobok river and ponds; 14 – Villages; 15 – The horizontal lines above the sea level.

References: [1] Tarasenko V.E. (1898) About the effusive rock from Lipovetz district of Kiev province. Kiev, 15p. [2] Gurov E.P. et al. (1997) *Meteoritics & Planet. Sci.*, 33, 1317-1333. [3] Valter A.A. et al. (2000). *Proc. CAMMAC-99.Vinnytsa*, 1999, 367-380 (in Russian). [4] Havl'uk P.I (1973) *Archaeology (Kiev)*, 9, 34-40 (in Ukrainian). [5] Klimovsky S.I., Gurov E.P (2001) <http://arheology.kiev.ua/journal/>(in Russian). [6] Valter A. (2009) *Vernadsky-Brown Microsymposium 50. Abstract m50_56*. [7] Valter A., Pisanski A.I. (2010) *LPS XXXXI*, Abstract #1069. [8] Danilin A.N. In: *Masaitis et al. Geology of astroblemes. Leningrad, 1980, 321p. 37-44* (in Russian). [9] Gurov E.P. et al. (2006) *Geological Journal (Ukraine)*, N4, p.105-116 (in Russian).