

CONCEPT OF “DEEPEST KARST CAVES”

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In article the short analysis of the concept "cave" and "the deepest cave" is given. Considering caves as the complete geographical phenomenon, as their minimum sizes the underground space is accepted by the available to the person, filled air or water provided that value of depth [length] is on much big, than diameter of an entrance.

In the mining industry morphometric classification of underground objects held a firm place. In article criteria deep and over deep mines on mining are specified. Categories of the deepest artificial mines are carried out by the principle of complexity of engineering arrangement, mountain conditions, the applied methods of mining and functioning of mines. In allocation of category of the deepest natural karst caves except a complex geological structure, other principles applicable in mining don't approach.

Today from hundreds of thousands of known caves only 1600 are longer 3000 meters and about 1000 have depth over 300 meters. In world practice these parameters are accepted as the lower limits for "large caves". As a result of wide-ranging speleological studies of the last decades and accumulation of big databases on many karst regions of the World, opening of new deep karst cavities, there was a possibility of application of statistical methods. The carried-out statistical analysis of morphometric indicators of karst cavities of the massif Arabica allowed to determine threshold criteria for deep and the deepest caves of the considered region by a mean square deviation [σ]. Caves which morphometric indicators exceed depth of 851 meter [three-sigmovy threshold], we can

carry to the geographical phenomena which aren't keeping within in it is general statistical data. The conditional threshold accepted by us for allocation of the deepest caves in 1000 meters is reasonable not only from the point of view of geomorphological anomaly, but also from a position of mathematical statistics. On the massif Arabica 6 caves to the answering these criteria are located.

Kruber's cave, having overcome 8σ a limit showed that it is an element of more global planetary statistical system. At data processing on caves less than 300 meters which are in a deep interval application of three – a sigmovy limit is low-informative. We define caves of "considerable", "small" and "the smallest" depth relying on world experience and using one-sigmovy threshold.

Theoretical justification of the concepts "deep" and "the deepest cave" is given.

The karst caves, morphometric indicators which overcame three-sigmovy threshold possess qualitatively new morphological, genetic, microclimatic, sedimentological and other features of underground spaces and the karst massifs accomodating them.

The way of allocation of "large" and "the largest" karst caves potentially contains possibility of detection of special characteristics of cave systems which will demand change in techniques of the first exploration , the description and tactics of research of this class of caves.

Keywords: *The deepest cave, karst, Krubera cave, massif Arabica, statistical analysis*

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