NEW RESEARCH IN CAVE LEDENICA IN BUKOVI VRH ON VELEBIT MT IN CROATIAN DINARIC KARST

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Introduction

The first speleological research of Ledenica in Bukovi Vrh on Velebit Mt in Dinaric Karst in Croatia has been made at 22nd of August 1980. Leader of this study and exploration was Mladen Garasic with team members Zarko Supicic, Tomislav Marincic, Jadranka Pezic, and Berndt and Utte Hackler.

Survey and research show that cave Ledenica in Bukovi Vrh on Velebit Mt is situated at 1325 m a.s.l. (position is x= 4914,450 N; y=5542,440 E) and cave were formed in middle Triassic dolomites and limestones. It was much of ice in this 189 m long and 87 m deep cave (Fig.1.)

Some new and recent explorations (2013) show that thickness of ice there is more than 17 meters in the last cave chamber (45 x 25 m) (Fig.2.). Temperature of air in this cave chamber is -10 C.

Material and Methods

The ice body is convex, with a maximum thickness of 15–20 m and a volume more than 7000 m³. We used Ground penetrating radar (GPR)- Geoscaners Akula 9000 with different antennas for thickness determination. Three bore holes were made with diameter of 32 mm and total length of 7,5 meters (3 x 2,50 m). Tritium (H) method shows that age of ice is more than 50 years. Samples were also analyzed radio carbon dating 14C and with stable isotope analyses and U-series methods. The oldest part of ice in Ledenica Cave could be age about of 58,000 years.

Results and Discussion

The new data showed that age of this ice part is at bottom about 58,000 years old, and near of top of this ice part is about 560 years old (Fig.3). It means that this is the oldest and the most thick cave ice in Croatian part of Dinaric karst area. Some measurements of cave ice were made on Northern Velebit Mt. (Horvatincic, 1996; Jelinić et al., 2001; Kern et al., 2008, 2011) but not on Southern Velebit Mt. In this cave (Ledenica on Bukovi vrh) we have left some measuring instruments (for neotectonic movements and characteristics of air and ice). Notice: this part of Velebit Mt was filled with mines in last War (1991-1995). Please be careful and use professional guide to visit this wonderful cave (Fig.4, Fig.5).
References