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Relations between of the Pleistocene glaciations and karstification processes on Velebit Mt. (Croatia)

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Velebit is the Dinaric karst mountain. It is located in Croatia and extends to a length of 145 km along the northern part of the eastern coast of the Adriatic Sea. The highest peak is 1757 m high. It is mostly made of well karstified carbonate rocks (limestone, dolomite and carbonate clastic rocks). Glaciation of this region has long attracted researchers. Studies have shown that a large part of the area was affected by the Pleistocene glaciation. These results have prompted questions about the impact of glaciation on the development of karst, especially underground karst formations - caves in this area. This work explores the impact of Pleistocene glaciations on karst development in the northern and central Velebit. Special emphasis is given to the research on the impact of glaciation on the development and morphology of caves, which is analyzed in few examples. The main methods used are geomorphological mapping and speleological research. Also, some sedimentological methods were used and 14C dating of the flowstone crust was provided. Studies on some sites are already well advanced while in some localities are only just begun. In the area of Jezera (Lakes in Croatian, northern part of the mountain) we noticed that the moraine material affects the appearance of the small occasional streams with cutting small torrents and surface erosion processes. In areas where the moraine cover is thinner or missing rekarstification of bedrock is visible, and occasional short streams sinking at contact zone of the moraine material and bedrock. In glacial valley Lomska duliba is the Ledena jama (Ice cave), 536 meters deep characterized by ice accumulation thicker than 50 m. During this study we have been mapped moraine forms along the valley and found that the same material plugs parts of the pit which led to its further dynamics. Great influence on the development of glaciation surface and underground karst forms was studied in Štirovača (middle Velebit area). Here is the 351 m long cave with lot of erosional remnants of the fluvioglacial deposits that were fully filed much of the known part of the cave. It is concluded that the Pleistocene glaciation had multiple effects on the development of karst in this area. Moraine deposits, relatively impermeable, promote local development of surface runoff and erosion. In this way, they temporarily slowing the process of karstification below, but because of the contact process they accelerated karstification along their edges. This material can also be accumulated in the caves, directly or after resedimentation as fluvioglacial material. In this way fills the underground channels and then reduce and hinder drainage function of these channels.