The Speculation of Reason CO₂ Change on Chongqing Xueyu Karst Cave

MO Xue
Southwest University, Beibei, Chongqing 400715

With the continuously increase of atmosphere CO₂ which results in global warming, the Earth’s carbon cycle is more concerned now. The Earth’s carbon cycle not only restricts the varieties of CO₂ concentration but also be affected by geological processes[1]. CO₂ as one of trace gases in the atmosphere, is a main form of carbon. Therefore the researches about how the geological processes influence carbon cycle are substantial meaningful. There are many studies about carbon cycle mainly through the analysis of chemical reactions of carbon in water and carbonate rocks and impact of atmosphere CO₂ on plants formerly[3-7]. However there are less studies on influences of geological structures on the chemical reactions of water-rock in karst region. Rock fracture experiments have demonstrated that the carbonate rock would product a large amount of CO₂ after the rock fractured[2]. Because of the fault activities can make carbonate in the fracture zones release a lot of CO₂, hence it would appear abnormal in the rock fracture districts. It’s in favor of fractures development in the stress concentration position[8-9]. Tectonic fissure controlled by fracture develop follow the strike of fracture, so that the developed caves have obvious directivity. Xueyu karst cave is located on the left bank of Dragon River which is a tributary of the Yangtze River. Although the CO₂ concentration shows the seasonal variation, the amount of it is larger than that of caves of the same condition. The predecessors study indicated that it is mainly effected by the natural factors other than anthropogenic influences[10]. The buried fault offer platforms on making the water react with carbonate sharply and adequately. Therefore the microstructures of host carbonate rock can constrain the variation of cave CO₂. The study will choose the areas existing buried faults and adequate fractures. In order to investigate whether there are signs of existing buried fault, the cave radon content will be measured, which is a relatively simple method of all over the geophysical exploration to look for buried geological structures[11-14].

Generally the radon concentration is not high in limestone areas[15], but they always can concentrate in the karst caves and karst fractures where they develop well. In this study the radon concentration in water, atmosphere and soil will be observed to look for radon abnormal regions. The rock mineral will be checked using the microscope to get some rock mineral evidences to demonstrated whether the research area exists buried fracture or not.

Key words: CO₂ change, Buried faults, Radon measure, Rock mineral, Karst cave

References


