

# Effects of Cave Environmental Condition on Drip-water Hydrogeochemical Characteristics

YUNCHAO ZHOU AND SHIJIE WANG

Institute of Geochemistry, Chinese Academy of Sciences,  
Guiyang, China 550002 (zhouyunchao@21cn.com,

\*Corresponding author: sjwang@ms.gyig.ac.cn)

Speleothems contain large amount information of earth paleoenvironment change. Multi-proxies, supported by a series of hypothesis, have been used to interpret paleoenvironment change of karst. However, the records of speleothems are seldom coincident within the same cave and contradictive results have been reported. To clarify high resolution, short time scale information urged to reduce noise. Understanding hydrogeochemical processes happening in cave roof can contribute to interpret paleoenvironment change.

Cave systems were monitored in Jiangjun Cave in Anshun county of Guizhou province, China, lasted for a year. NaCl was adopted to trace sources of cave drip water, time scales of drip water responding to precipitation, and processes of water dynamics in the cave. 4 drip points were monitored. The result shows that time scale of drip-water responding to rainfall was very quick (0~9 days). Drip water chemical components were directly originated from soil and greatly affected by the soil thickness. The thinner soil was; the less substances water dissolved. Water passed more quickly, which decreased the possibility of dilution happening in drip water, simultaneously, increased the contribution of rock to drip compositions. Different sources of water affected drip water dynamic process, which led to piston flow for JJD-1#, and increased drip ratio and water head pressure for JJD-2# as well while water was of much quantity. The process of rock dissolution and calcite precipitation mainly controlled elements variations of 4 drip waters while water transported in the route and acted with soil and rock. Consequently, as an important karst environmental factor, soil decides and controls drip compositions of cave drip waters, which means more attentions must be paid to soil in future study.

## Acknowledgements

This work was jointly funded by the National Key Basic Research and Development Program (Grant No. 2006CB403200), International Partnership Project and the Key Knowledge Innovation Project of Chinese Academy of Sciences, and the National Natural Science Foundation of China (Grant No. 40672112).