Geophysical Research Abstracts
Vol. 21, EGU2019-3006, 2019
EGU General Assembly 2019

Variations of Methane Concentration and its Implication: a Case Study in Shawan Karst Cave, Southwest China

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Methane is one of the most important greenhouse gases. A large number of monitoring and simulating studies have been carried on global methane and uncertainties still exist in source-sink relationship and fluxes among different reservoirs. Recent studies [1, 2] indicate that subterranean environments (include caves, fractures, et al.) distributed widely in karst zone are important sinks of atmospheric methane. Studies of cave environmental and methane concentration have been conducted during September to October, 2016 in Shawan Cave, SW China. CH4 concentrations vary from 0.05-0.30ppm, which is one order of magnitude lower than those in atmosphere. Mechanisms of methane sink are thought to be microbial oxidation[1] and physiochemical oxidation[3], but little is known about their effectiveness. Also, the size of cave air methane pool and its impacts on karst ecosystem are unclear. Therefore, it is necessary to catch up with scientific studies on consumption mechanisms and methane reservoirs of karst caves. Meanwhile, studies on methane fluxes of atmosphere, soil and cave in karst ecosystems are fundamental in revealing the influences of karst subterranean atmosphere on regional methane cycle.

References

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