中全新世云南寻甸地区气候演化与冷干事件的石笋记录

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作者	单位	E-mail
张会领	中国科学院南海海洋研究所边缘海地质重点实验室; 中国科学院研究生院; 广东海洋大学工程学院海洋工程系	zhanghuiling0375@126.com
蒲晓强	广东海洋大学海洋与气象学院海洋科学系	

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中文摘要:通过对云南寻甸XR1石笋进行TIMS-U系测年、氧碳同位素和沉积速率变化分析，重建了寻甸地区中全新世季风气候演化模式: (1)8.0～6.0 ka BP为温暖湿润期; (2)6.0～5.1 ka BP为气候突变期，温湿向冷干转变; (3)5.1～2.1 ka BP为气候恢复期，气候从冷干逐渐恢复到中全新世正常的气候水平。XR1石笋还揭示了该地区中全新世出现的四次冷干气候事件: 6.0～5.1 ka BP冷干事件相当于考古学上的仰韶中期的寒冷期，被Denton称为第二次小冰期; 4.7～4.5 ka BP气候事件是气候回暖过程中一次短暂的变冷事件; 3.1～2.5 ka BP间的降温事件在中国历史文献中被称为西周寒冷期，相当于北半球新冰期中的第三次新冰期。2.5～2.1 ka BP降温阶段相当于我国近5000年气候变化的第二次冷期。

中文关键词:XR1石笋 中全新世 氧碳同位素 西南季风

Stalagmite Records of Climate Change and Cold-Dry Events During the Middle Holocene in Xundian, Yunnan

Abstract:Based on age-dating of TIMS-U series and analyzing carbon and oxygen isotopes and deposition velocity on XR1 stalagmite from Xianren cave in Xundian, Yunnan, the authors revealed the monsoon climate change pattern during the middle Holocene in Xundian. The climate change in Xundian can be divided into three periods approximately: (1) 8.0～6.0kaBP was a warm and wet period; (2) 6.0~5.1ka BP was a climate change period, with climate changing from wet and warm to cold and dry; (3) 5.1~2.1kaBP was a climate recovering period, during which the climate changed from cold and dry to the average climate level of the Middle Holocene. The authors also detected four clod and dry climate events during the Middle Holocene in Xundian, which perfectly responded to the global change. The first climate event that lasted from 6.0 ka BP to 5.1ka BP corresponded to the cold period during the Middle Yangshao age in archaeology, and is also called the second little ice age by Denton. The second climate event whose age span was from 4.7kaBPto 4.5kaBP was a short cooling event during the climate recovering period. The third cooling event that lasted from 3.1kaBP to 2.5kaBP was called Xizhou Cold period in Chinese history, which was equivalent to the third new ice age in Northern Hemisphere. The cooling event during 2.5kaBP to 2.1kaBP corresponded to the second cold period during the past 5000 years' climate change in China.

keywords:XR1 stalagmite mid-Holocene oxygen-carbon isotope Southwest Monsoon