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壶穴差异风化或风蚀作用成因质疑 [点此下载全文](#)

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摘要:

过去十年来发表了一系列关于中国东部第四纪冰川地貌的文章, 而关于壶穴成因的争论也通过各种媒介报道出来。笔者等建议壶穴仅仅用于表示快速旋转水流在基岩表面形成的近圆筒形的凹坑, 以口小肚大底平为典型形态特征, 而冰川融水冲蚀形成的壶穴则叫做冰川壶穴。近年来, 有些研究者将中国东部花岗岩山脊上的壶穴与差异风化和风蚀作用联系起来。笔者等分析了风化作用和风蚀作用的特点, 明确指出: 风化作用和风蚀作用并非壶穴形成的原因, 唯一可能的成因是快速的河水或冰川融水的旋转水流。因此, 在中国南方河床上发现的壶穴既可能是河流流水形成的, 也可能是第四纪山谷冰川融水造成的; 而中国北方花岗岩山脊上的壶穴只能是曾经覆盖其上的第四纪冰帽在冰川退缩期之冰川融水形成的。所以, 花岗岩山脊上的壶穴为冰川壶穴(即冰臼), 可以看作第四纪冰帽的标志。根据中国东部壶穴的分布特征推断: 中国东部之北方在第四纪末次冰盛期至少曾经存在着许多冰帽甚至大陆冰川, 而其南部边缘至少已经达到山东蒙山以南。

关键词: [壶穴](#) [差异风化](#) [风蚀](#) [冰川融水成因](#)

An Argument on the Genesis of Potholes Formed by Differential Weathering or Wind Deflation [Download Fulltext](#)

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Abstract:

In the past decade, a lot of papers related to the landform records of Quaternary glaciation in the east of China have been published and the controversies on the origin of potholes have been reported by many kinds of media. However, different authors used different names to describe the same kind of erosion landforms--potholes. Moreover, some researchers used the term pothole to describe different erosion landforms. This is not good for scholars to identify potholes and then reveal the past geological events. The authors of this paper analyzed the definition of pothole, and suggested that the term "pothole" can only be used to describe a smooth, roughly circular, bowl shaped or cylindrical hollow formed on the surface of bedrocks by fast whirling stream current or meltwater and that the pothole on the surface of bedrock with meltwater origin be called glacial pothole. Recently, some researchers related potholes found on the granite ridges in the east of China to differential weathering or wind erosion. The authors of this paper analyzed the characteristics of weathering and wind deflation, pointing that weathering and deflation are not the origins of potholes. The only possible origins of potholes are fast river currents or meltwater currents. Therefore, the potholes found on the bottoms of bedrock in the river channels in the south of China should have been formed by river currents or by the meltwater from the Quaternary valley glaciers, while the potholes found on the granite ridges in the north of China can only be formed by the meltwater from the Quaternary ice caps during the later stage of last glacial maximum. Thus, the potholes found in the granite ridges can be treated as the records of Quaternary ice caps. According to the distribution of potholes in the east of China, many ice caps or even continental glaciers should have existed in the north of east China during the late time of LGM, and the south margin of the glaciers should have extended at least to the south of Mount Mengshan, Shandong Province.

Keywords: [pothole](#) [differential weathering](#) [wind deflation](#) [meltwater origin](#)

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