

**RECONNAISSANCE SURVEY OF A POSSIBLE METEORITE IMPACT CRATER IN CENTRAL TIBET**

F. Yin<sup>1</sup>, Z. Liao<sup>2</sup>. <sup>1</sup>Department of Geology, Hunan University of Science and Technology, Xiangtan 411201, China. E-mail: fengite@hotmail.com. <sup>2</sup>College of Resources and Environmental Science, Chongqing University, Chongqing 400044, China.

**Introduction:** So far, more than 190 meteorite impact craters have been confirmed on the Earth. Nevertheless, only one meteorite impact crater is located in China, i.e., Xiuyan crater [1]. China has the third largest territory on the Earth, and there must be many impact craters that have not been found. Many researchers tried their best to explore new meteorite impact craters in China in the past few years, but with no success [2-4]. According to the satellite images, Schmieder et al. [5] suggested that there may be a meteorite impact crater (Shialzu crater) in central Tibet of China. Recently, we took a field trip to this place to confirm whether it is a meteorite impact crater.

**Results:** The Shialzu crater is located at 31°59'39"N, 85°9'15"E and exhibits a near-circular outline (Fig.1a). It is a simple bowl-shaped crater with a diameter of 30 m and a depth of 8 m. The crater rim is flat (Fig.1b). The base-ment is Quaternary fluvial sediments and consists of loosely accumulated gravels with diameters < 8 cm and sands. The gravels are well psephicity and good gradation. Bedding can be observed in the upper part of the crater inner wall and it is not disturbed.

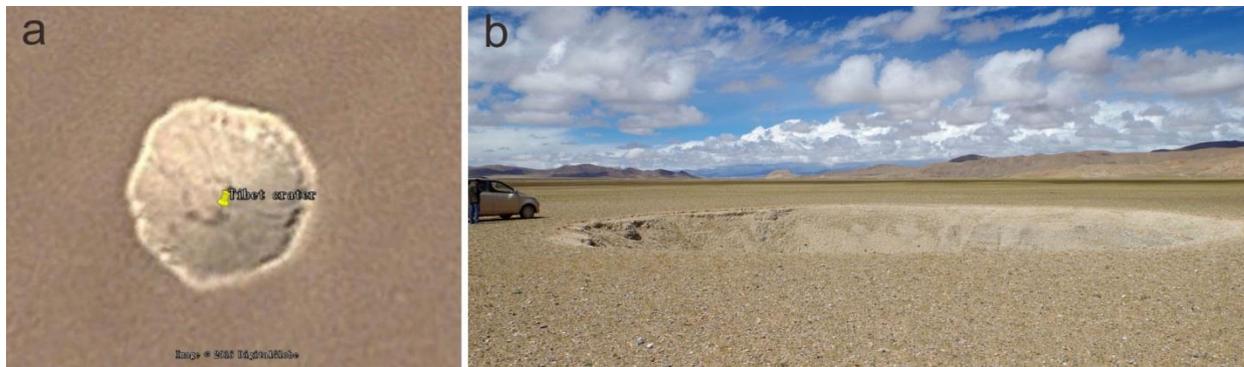


Fig.1. a) Satellite image of the crater (Google Earth image). b) A panoramic view of the crater.

**Discussion:** We think that the Shialzu crater is not a meteorite impact crater. The evidences are as follow: (1) the crater rim is flat, whereas the simple meteorite impact crater always has an uplifted rim [6]; (2) no impact ejecta or impact breccia are observed beyond the rim; (3) bedding in the upper part of the crater inner wall is not disturbed. Considering the facts that the altitude of this region is ~4540 m and there are glaciers on the surrounding mountains, we deduce that the crater is a kettle hole. A dead ice was separated from glaciers and then was buried into the fluvial sediments. When the ice melted, the fluvial sediments collapsed into a crater. The morphology of the Shialzu crater bears resemblance to that of small simple impact craters on Mars [5]. Therefore some small craters located on fluvial sediments on Mars may be not meteorite impact origin.

**Acknowledgements:** This work was supported by National Natural Science Foundation of China (41503062) and Natural Science Foundation of Hunan Province (2016JJ6039). Thanks for Schmieder's suggestions of the origin of the Shialzu crater.

**References:** [1] Chen M. et al. (2010) *Chinese Science Bulletin* 55:1777-1781. [2] Wang H. et al. (2009) *Journal of China Universities* 15:437-444. [3] Xu X. et al. (2017) *Meteoritics & Planetary Science* 52:1822-1842. [4] Xiao Z. et al. (2018) *Geomorphology* 306:128-140. [5] Schmieder et al. (2012) *75th Annual Meteoritical Society Meeting*, Abstract #5006. [6] French et al. 2010. *Earth-Science Reviews* 98:123-170.