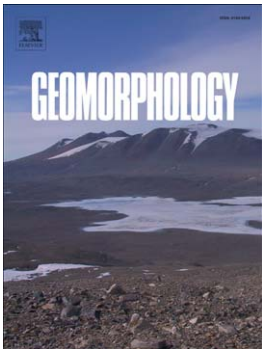

Geological constraints on cave development in the plateau-gorge karst of South China (Wulong, Chongqing)

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GEOLOGICAL CONSTRAINTS ON CAVE DEVELOPMENT IN THE PLATEAU-GORGE KARST OF SOUTH CHINA (WULONG, CHONGQING)

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Abstract: The Houping Tiankeng cluster is a part of the South China Karst UNESCO World Natural Heritage Site. Within the distinctive Wulong plateau-gorge karst, more than 200 km of cave passages have been documented to date. This paper focuses on detailed tectonic and morphological research on the Luo Shui Kong cave, enriched with U-series dating of speleothems and complemented by morphometric analysis of the San Wang Dong and Er Wang Dong caves. All of these caves exhibit three regional levels of cave development: 1) 1040–1020 m a.s.l.; 2) 900–840 m a.s.l.; and 3) 740–660 m a.s.l. The Houping Tiankeng area is a carbonate rock sequence several hundred meters thick, overlain by the less soluble Lower Ordovician strata, limiting recharge points to faults exposing underlying easily soluble formations. This leads to the domination of concentrated, high-volume inflow and thus results in caves of large volume in the plateau-gorge karst. Shafts connecting the surface with cave passages located underneath formed along faults, changing the hydrogeological pattern through karst water capture and remodeling of existing conduits, albeit mainly by increasing their overall dimensions rather than by deepening them. The most favorable structures for cave-level development are two sets of joints conjugated with gently inclined bedding. Since