

# **Chemical weathering characteristic in the Yarlung Tsangpo River basin: Evidence from hydrochemical composition**

YA-NI YAN, JUN-WEN ZHANG AND ZHI-QI ZHAO

Chang'an University

Presenting Author: 2019027015@chd.edu.cn

The Tibetan Plateau (TP) is one of the most intensively chemical weathering regions in the world. However, studies on chemical weathering characteristics in this area are still limited, which hinders quantitative assessment of the contribution of TP chemical weathering on the global carbon cycle. Two series samples were conducted before and after the monsoon season to estimate the chemical weathering intensity, CO<sub>2</sub> consumption rates, and their controlling factors in the Yarlung Tsangpo River (YTR) basin based on hydrochemical composition. The results indicate that anthropogenic and atmospheric inputs to solutes of river water are minimal, and the highest contribution to total cations is carbonate dissolution, followed by evaporite dissolution and silicate weathering. As the particularity of geological and hydrological conditions in YTR basin, the ions composition of tributaries in middle reach such as Dogxung Tsangpo and Lhasa River are affected by hot spring significantly, especially before the monsoon season. Because the Na/Cl value of hot springs is generally greater than 1, the carbonate and silicate weathering rates in these sub-basins would be overestimated if hot spring input is ignored. The amount of atmospheric CO<sub>2</sub> consumption by chemical weathering in the YTR basin accounts for ~0.4% of global consumption on the only ~0.1% of the global land surface area. Climate and landform are predominant controlling factors to physical erosion rates, which further influence chemical weathering.