

Chemical weathering of Qinghai-Tibet Plateau: Geochemical study of Jinsha Jiang, Lancang Jiang, and Nu Jiang river water, China

CONG-QIANG LIU, ZHI-QI ZHAO, FAXIANG TAO AND SI-LIANG LI

State Key Laboratory of Environmental Geochemistry,
Institute of Geochemistry, Chinese Academy of Sciences,
Guiyang 550002, China (liucongqiang@vip.skleg.cn,
zrzhaozhiqi@163.com, taofaxiang@mail.gyig.ac.cn,
lisiliang@vip.skleg.cn)

Studying weathering of the Himalaya and Qinghai-Tibet Plateau is the key to verify the uplift-weathering hypothesis of Raymo and Rubbing (1992) that the Cenozoic cooling of climate was caused by enhanced chemical weathering and consumption of atmospheric CO₂ in the mountainous regions of the world. We have carried out a geochemical study of river waters collected from three stations at Jinsha Jiang (the upper reach of the Changjiang), Lancang Jiang (Mekong), Nu Jiang (Salween) draining the Qinghai-Tibet Plateau. The major ion composition, ⁸⁷Sr/⁸⁶Sr of dissolved Sr, δ¹³C of dissolved inorganic carbon, and δ³⁴S of sulphate of waters permit us to discuss the chemical weathering of the Earth's surface of the Qinghai-Tibet Plateau and its controlling factors.

The variations in major ion composition, ⁸⁷Sr/⁸⁶Sr, δ¹³C, and δ³⁴S value of the three rivers are significantly large, and related to the geological and geographical features of the catchments. Among these rivers, Jinsha Jiang has chemical composition characterized by high Na and Cl ion contents, low ⁸⁷Sr/⁸⁶Sr ratios, largely influenced by weathering of sedimentary rocks and evaporite. Chemical weathering rates (CO₂ uptake rate by silicate weathering) of these rivers are estimated to be 180~260×10³ mol/km²/year, which are among the values estimated by previous studies of other large rivers draining Himalaya-Tibet Plateau.

The geologic implication of the SHRIMP U-Pb ages of two granites near Abagong iron deposit, Altay, Xinjiang, NW China

FENG LIU, JINGWEN MAO AND FUQUAN YANG

Institute of Mineral Resources, CAGS, Beijing, 100037, China
(lf128743@163.com)

Two gneissoid granites which crop out near Abagong iron deposit are located 25Km southeast to Altay city, Xinjiang, NW China. One occurs as batholithic granite and its southern side is contiguous to the volcanic strata in Devonian Kangbutiebao formation. The other occurs as a small typhon situated within the Kangbutiebao formation. These gneissoid granites were previously considered intruding in the Kangbutiebao formation.

In this study, the high precise SHRIMP zircon U-Pb age we got of 462±3.6 Ma for the gneissoid granite from the batholithic granite is very different from the whole rock Rb-Sr age Zhang [1] obtained of 344 Ma for the northern sample to the pluton and the zircon U-Pb age Wang [2] mensurated of 375 Ma for the sample from the northeast to the pluton. It reveals that this batholithic granite is a multiple intrusion and the collision orogeny in the area begun at least early-middle Caledonia. the SHRIMP zircon U-Pb age we got of 457.8±3.1 Ma for the typhoon is consistent with the first pluton relative to error. It indicates that the intrusion of two plutons took place in synemplacement and two plutons compose a total pluton in the deep of earth crust. The older age of two plutons than that of the Kangbutiebao formation shows that there isn't intrusion contact between the plutons and the Kangbutiebao formation and the volcanic strata cover on the plutons. In addition, there isn't genetic relationship between the plutons and Abagong iron deposit occurs in the volcanic strata.

This research was jointly supported by funds from the National Science Foundation of China (No. 40672065) and Foundation program (No.K0811) and National "305" Project (No2006BAB07B02-01).

[1] Zhang *et al.* (1996) *Evolution & minerogenic series of Erqis*, Structural Belt. Scientific Publishing House, Beijing, 205pp. [2] Tao Wang *et al.* (2006) *Journal of Geology* **114**, 735-751.