Dissolution and precipitation of carbonate is one mechanism regulating riverine CO2

SHILU WANG[1]

[1]The State Key Laboratory of Environmeantal Geochemistry, Chinese Academy of Sciences, Guiyang, Guizhou, 550081, P.R.China (wangshilu@vip.skleg.cn)

Rivers play important roles in the global carbon cycle by delivering a considerable amount of organic and inorganic carbon from land to ocean and emitting CO2 into the atmosphere. However, little is known about origins of river carbon and processes of production and emission of river CO2. In this study, we measured the concentrations and carbon isotope of dissolved inorganic carbon (DIC) and CO2 efflux in the river and the cascade reservoirs along the Lancangjiang River from the source at high altitude of the Tibet Plateau to the downstream. The results indicate that a substantial portion of CO2 in the river is produced by carbonate precipitation owing to supersaturation, meanwhile in certain waters, carbonate dissolution is one of mechanism of CO2 consumptions. Thus, it is concluded that precipitation and dissolution of carbonate is an important buffering mechanism to regulate CO2 concentration in rivers.