

- [23] 王鹏,尚英男,沈立成,等. 青藏高原淡水湖泊水化学组成特征及其演化[J]. 环境科学, 2013,34(3):874-881. (WANG Peng, SHANG Yingnan, SHEN Licheng, et al. Characteristics and evolution of hydrochemical compositions of freshwater lake in Tibetan Plateau[J]. Environmental Science, 2013,34(3):874-881. (in Chinese))
- [24] 罗进,安艳玲,吴起鑫,等. 赤水河中下游冬季河水化学空间分布特征分析[J]. 地球与环境, 2014,42(3):297-305. (LUO Jin, AN Yanling, WU Qixin, et al. Spatial distribution of surface water chemical components in the middle and lower reaches of the Chishui River basin[J]. Earth and Environment, 2014,42(3):297-305. (in Chinese))
- [25] 胡春华,周文斌,夏思奇. 鄱阳湖流域水化学主离子特征及其来源分析[J]. 环境化学, 2011,30(9):1620-1626. (HU Chunhua, ZHOU Wenbin, XIA Qixin. Characteristics of major ions and the influence factors in Poyang Lake catchment [J]. Environmental Chemistry, 2011,30(9):1620-1626. (in Chinese))
- [26] 李丽娟,李海滨,王娟. 澜沧江水文与水环境特征及其时空分异[J]. 地理科学, 2002,22(1):49-56. (LI Lijuan, LI Haibin, WANG Juan. Analysis on hydrological and water quality characterand their spatial and temporal distribution in Lancangjiang River [J]. Scientia Geographica Sinica, 2002,22(1):49-56. (in Chinese))

Characteristics and Origin of Major Ions in River Water in the Lijiang River Basin

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Abstract: Through collecting water samples in the Lijiang River basin from September 2016 to June 2017, the main ions were analyzed. The control mechanism, sources and temporal and spatial variation characteristics of major ions in water chemistry of the Lijiang River basin were found. The results show that the pH value of the Lijiang River basin is between 6.89 and 7.79, with an average value of 7.34. The range of EC ranged from 70.6 to 385.5 $\mu\text{S} \cdot \text{cm}^{-1}$, with an average value of 228 $\mu\text{S} \cdot \text{cm}^{-1}$. The range of TDS varies from 49.42 to 203.19 $\text{mg} \cdot \text{L}^{-1}$, with an average value of 112.35 $\text{mg} \cdot \text{L}^{-1}$. The concentration order of anion and cation is $\text{HCO}_3^- > \text{SO}_4^{2-} > \text{NO}_3^- > \text{Cl}^-$ and $\text{Ca}^{2+} > \text{Mg}^{2+} > \text{Na}^+ > \text{K}^+$, indicating that HCO_3^- -Ca water is the main type. The variation characteristics of Ca^{2+} , Mg^{2+} and HCO_3^- are similar, showing the characteristics of high middle reaches and low upper and lower reaches. The concentrations of Cl^- , Na^+ and K^+ in the middle and lower reaches are higher than those in the upstream. Seasonal differences in the concentration of ions in the dry season are generally greater than in the rainy season. Ion source analysis shows that Ca^{2+} , Mg^{2+} and HCO_3^- are mainly derived from the weathering of carbonate rocks. Na^+ , K^+ and Cl^- are derived from the weathering of rocks, circulating salts also contribute a little to them. NO_3^- and SO_4^{2-} are also mainly derived from weathering and dissolution of rocks.

Key words: Lijiang River basin; hydrochemistry; ion; carbonate rocks; spatio-temporal variation

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