Lithium isotope composition of the dissolved and suspended loads of the Changjiang River

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The stable isotopes of lithium provide information on chemical weathering processes and the balance of primary silicate rock dissolution to secondary mineral formation. We surveyed lithium isotopic compositions of dissolved and suspended loads of Changjiang River and its main tributaries, with purposes of better understanding lithium isotope behavior during weathering process, and deciphering the effects of weathering intensity and rock types on Li content and isotopic composition of river water.

The Li contents and isotope compositions (δ^7Li) of the studied river waters rang from 150nmol/L to 4570nmol/L and from +7.6‰ to +28.1‰, respectively. The δ^7Li values are comparable with, while the Li contents of the Changjiang River water are signigicantly higher than those of the world rivers, such as Congo, Amazon, Mississppi and Himalayan rivers. The Li contents of river water decrease, while the δ^7Li values increase from upper to lower reaches of Changjiang River. The variations of Li content and δ^7Li value of the river water can be mainly described in terms of mixing of two componeants originated from evaporate dissolution and silicate weathering.

The δ^7Li values of the suspended matter are relatively constant, ranging from -4.7‰ to +0.7‰, as ompared with the change of the δ^7Li values of the dissolved load. The fractionation of Li isotope composition between the dissolved and susppended loads increases from the upper to lower reaches of Changjiang River, and with increasing of δ^7Li values of the river water. The isotopic fractionation of lithium between the dissolved and suspended loads is mainly controlled by the weathering of bedrocks, and also affected by other factors such as absorption of secondary minerals.

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Ailaoshan Ophiolite Belt, Yunnan Province, southwestern China: SSZ type or MORS type?

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The Ailaoshan Ophiolite Belt (AOB) is located within the Ailaoshan Fault belt, Yunnan province, SW China. Previous studies have suggested that the AOB is MORS type (Zhang *et al*. 2008). However, this traditional view fails to account for the data reported here.

In Shuanggou, Maoheshan, Laojinshan and westert Mojiang, we recognized for the first time the HMAs (boninites), which include dominant basaltic andesites and minor andesites. Geochemically, the AOB HMAs are sub-alkaline,, with Mg numbers >0.6, FeO*/MgO: 0.66-1.18 (total Fe), MgO = 8-15 wt% (only one is 7.42), are low-Fe calc-alkaline, and LT-, MT-HMAs, similar to those of the present-day HMAs from Chichijima, Japan. Apart from the HMAs, we also identify the characters of plagioclase granites within the AOB. These rocks are silica-rich (SiO_2 > 73 wt%), sub-alkaline. With higher Mg number of 0.39-0.66, lower K_2O, low FeO*/MgO, and belonging to low-K CA and low-Fe CA series rather than TH series of mid-oceanic ridge. Importantly, these plagioclase granites are C series of SSZ rather than A or AC series of mid-ocean ridge in SiO_2-(Na_2O+K_2O-CaO) diagram showing Peacock's alkali-lime index (Pearce, 1984).

Taken together, the existence of HMAs and the characters of plagioclase granites suggest that the AOB is likely formed in a SSZ setting rather than a mid-ocean ridge setting.

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