Dissolved iron behavior in the estuarine waters; Irt and Esk River, west Cumbria, UK

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The aqueous geochemistry of the Ravenglass estuary and its feeding rivers (Irt and Esk) has been studied to assess if, where and when aqueous iron is lost from the river water and accumulates as part of the sediment in the estuary. The River Irt contains twice as much dissolved iron as the River Esk but all iron concentrations are much lower in the estuary samples than in the feeding rivers. Aqueous iron undergoes large-scale accumulation in the Ravenglass estuary. Iron concentrations are lowest at high tide at all sampling sites on the Ravenglass estuary. Iron concentrations are highest at low tide for the Irt arm of the estuary but are highest on the falling tide between high and low tide. Iron in estuary samples decrease rapidly as salinity increases with low iron in all estuary samples once salinity exceeds 5,000 mg/lit. Iron also decrease as pH increases. The loss of iron is presumably due to flocculation of colloidal iron oxides, hydroxides and iron-organic complexes. Fluvial aqueous iron does not behave conservatively on mixing with seawater; most iron is lost from the water column at an early stage of river water mixing with estuary water. The site of primary iron-loss from the water occurs towards the heads of estuaries but this site will move as a function of time within the tide cycle.

Geochemistry and significance of Carboniferous-Permian volcanic rocks in the western of Inner Mongolia, China

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The western region of Inner Mongolia located in the south rim of Central Asian Orogenic Belt[1], which belong to the key component of Tianshan-Xing'An Orogenic system. Carboniferous-Permian volcanic rocks are widespread in the area. However, at present, the study of petrogenesis and tectonic setting are weak relatively. Based on the regional geological survey, combined with the analysis of petrology and petrogeochemistry characteristics of Carboniferous-Permian volcanic rocks, the genesis of the rocks and tectonic setting have been discussed. It provides petrogeochemistry proofs for clarifying the properties of Carboniferous-Permian basin and palaeo-tectonic setting. The volcanic rocks in the area are intermediate-acidic volcanic rocks mainly and a small amount of basic volcanic rocks. The geochemistry characteristics of the basic volcanic rocks (Basalts, basaltic-andesite) show as follows. Most of the sample of the basic volcanic rocks belong to sub-alkaline series, a little are alkaline series. Mg# ranges from 0.29 to 0.86. The high field strength elements Nb, Ta and Ti are strong depletion. Light rare earth element (LREE) is mild richer than heavy rare earth element (HREE). (La/Yb)N ranges from 1.68 to 10.1. Eu anomalies is not obvious (δEu=0.64~1.08). REE distribution patterns are slightly right-inclined. Nb/U is generally low 1.35~9.78. Ti/V ranges from 20 to 100 (centralized in 50). εNd(t) is higher(+1.10~+6.35). Geochemistry comprehensive analysis indicate that Carboniferous-Permian volcanic rocks in the area show not only the signature of within plate setting as a whole, but also that of subduction zone. Synthesizing the regional geological characteristic and the research achievement in the neibouring area, we conclude that the Carboniferous-Permian magmatic activity in study area generated in within-plate rift valley setting, and probably related to mantle plume affair, with variable degrees of contamination of crust during magma ascending.

[1] Dobrestsov *et al*..(1995) *International Geology Review*, **37**,335–360.

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