

Key Elements Cycling in the Changjiang – Estuary – Shelf Transect and its environmental indications

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As the largest river in Asia, the Changjiang (Yangtze River) delivers a huge amount of natural weathering materials and anthropogenic pollutants to the eastern continental margin, significantly affecting the sedimentary system, water environment quality and ecosystem health of the marginal sea. The rapid climate change and intense human activities from the Holocene to the Anthropocene have dominated the source-sink process of the Changjiang-borne materials. The study of material cycling and environmental effects from the Changjiang River basin to the estuary and shelf sea will promote the cross-disciplinary studies of continental margins, deepen the understanding of the key elements cycling in the ocean, and provide basic data for the Changjiang River protection and marine sustainable development strategies. Over the last years we organized several field campaigns and open cruises to the Changjiang catchment and East China Sea, which aims to investigate the source-to-sink processes of dissolved and particulate loads from the river to marginal sea, and the key element cycling processes along the river-estuary-shelf transect. We explore the effects of seafloor boundary exchange and reverse weathering on the propagation and preservation of continental weathering signals (e.g. CIA, WIP, Sr-Nd-Li-Mg isotopes) from land to the sea. In particular, the influence of provenance, hydrodynamic sorting and recycling effects on these sediment-based weathering proxies will be discussed.