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Weathering continuum along the Changjiang River – East China Sea Transect

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As one of the largest rivers in the world, the Changjiang (Yangtze River) originates in the highest Tibetan Plateau and delivers a huge amount of weathering materials to the East China Sea, significantly affecting the sedimentary system and marine ecosystem health of the marginal sea and west Pacific as well. In this regard, the Changjiang – East China Sea continuum can be treated as one of the Earth's largest, most dynamic, and most diverse source-to-sink systems.

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 understanding of weathering processes along this land-ocean continuum benefits from the cross-disciplinary studies of material cycling and environmental changes from land to sea across different temporal scales. Over the last decade we organized several field campaigns and open cruises to the Changjiang catchment and East China Sea, aiming to investigate the source-to-sink processes of dissolved and particulate loads along the river-estuary-shelf transect. We reveal the dominant control of temperature on catchment weathering on orbital and sub-orbital scales, and highlight the importance of seafloor boundary exchange (submarine weathering and reverse weathering) in the estuary and shelf sea in determining the oceanic cycling of Be, Li, K and other key elements.