Detrital zircon U-Pb geochronology in the surface sediments of East China seas: Implication for provenance analysis and sediment mixing

X.T., HUANG[1*], J.Z. SONG[1], Y.L. LI[1], W.YUE[2], S.Y. YANG[1]

[1] State Key Laboratory of Marine Geology, Tongji University, Shanghai 200092, People's Republic of China(*correspondance:xiangtong@tongji.edu.cn)

[2] School of Geography, Geomatics and Planning, Jiangsu Normal University, Xuzhou 221116, People's Republic of China

Abstract

In perspective of source to sink processes, linking ocean sinks and terrestrial sources is the key to understand how sediments pass through sediment routing systems and partition in seas. With the rapid developments in micro-analytical techniques during the last two decades, detrital zircon geochronology has become the most popular and powerful method for provenance analysis. In this present, we report 23 zircon samples(dates=3270) in the surface sediments of the East China seas, including Bohai, Yellow Sea, East China Sea from north to south. When compared with zircon age distributions with those of eight potential fluvial sources (Yangtze, Yellow River etc.), our results suggest that provenance plays the first-order role in controlling zircon age composition in the seas. Moreover, under the influence of ocean currents and tides, the sediment mixing processes can dissipate the provenance signals greatly. We propose that the spatial variability of mixing coefficient can be treated as a proxy for relative sedimentation flux. This study on modern process sheds light on ancient mass influx reconstruction of sedimentary systems.