

## Provenance of quartz of sediments along the Yangtze River drainage Provenance of quartz of sediments along the Yangtze River drainage

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ESR is an analytical technique to estimate the amount of oxygen vacancy in quartz formed by natural radiation, whose amount shows positive correlation with the age of the host rock (Toyoda, 1992), whereas the Crystallinity Index [CI] of quartz has information on the physical condition of its formation (Murata and Norman, 1976). These two parameters give us information on the age and the rock type of its host rock characteristics.

The Yangtze River is the longest and largest river originates from the Tibetan Plateau, which has played a significant role in sedimentation and biogeochemical cycle in the drainage area, which is strongly influenced by East Asian summer monsoon. The provenance of the Yangtze River-derived sediments and its impact on the drainage and marginal seas have drawn our attention. Seven samples were collected from the bed of the mainstream and major tributaries along the Yangtze River drainages. Four samples were recovered from the rivers Lasa River, Nianchu River, Yarlung Zangbo River, which all located in the Tibet Plateau. Ten samples were collected from Yangtze River Delta. We extracted the two size fractions (<16 $\mu$ m, 16-63 $\mu$ m) separated from sediments and analysed ESR signal intensity of E1 center of quartz, and CI.

Our preliminary result revealed that ESR signal intensity values of the River located in the Tibet Plateau are around <0.6, indicating young detrital source. ESR signal intensity values are around <1.5 in the upper and middle Yangtze, suggesting average source age of Mesozoic. The ESR signal intensity values become 4 to 6 in the lower Yangtze, suggesting average source age of Palaeozoic to late Proterozoic. Therefore, the above results of ESR signal intensity show an increasing trend to the downstream along the main stream of the Yangtze River. ESR signal intensity values are different from each other in the Yangtze River Delta, which is around 4-12. Since ESR signal intensity values of Yangtze River are 4 to 6 in the lower Yangtze whereas the values become high (6.8 to 17.9) in the downstream of Dongting Lake (Yoshida, 2010). That means the provenance of the Yangtze River Delta sediments is not just main stream of Low Yangtze. Some major branches draining into the main stream or Dongting Lake drainage could impact on the Yangtze River Delta.

Keywords: Yangtze River drainage, ESR, CI