Distribution characteristics and influencing factors of rare metal mineral and related element in the surface sediments from the continental shelf of northwestern South China Sea

SHUZHUANG WU [1*], SHUHONG WANG[2], XUFENG ZHENG[3], WEN YAN[4]

[1] Key Laboratory of Marginal Sea Geology, South China Sea Institute of Oceanology, Chinese Academy of Sciences, Guangzhou 510301, China; (*correspondence: szwu@scsio.ac.cn

[2] Key Laboratory of Marginal Sea Geology, South China Sea Institute of Oceanology, Chinese Academy of Sciences, Guangzhou 510301, China. (wshds@scsio.ac.cn)

[3] Key Laboratory of Marginal Sea Geology, South China Sea Institute of Oceanology, Chinese Academy of Sciences, Guangzhou 510301, China. (zxflwh@gmail.com)

[4] Key Laboratory of Marginal Sea Geology, South China Sea Institute of Oceanology, Chinese Academy of Sciences, Guangzhou 510301, China. (wyan@scsio.ac.cn)

Rare metal minerals, grain size, sediment types and rare metal elements were analyzed for 273 surface sediment samples collected from the continental shelf of the northwestern South China Sea. The distribution characteristics and the main influencing factors of rare metal minerals are discussed in this study. The results reveal that the distribution of heavy minerals is mainly affected by provenance, sediment types and hydrodynamic conditions. The distribution of rare metal minerals cannot only be determined solely from that of the rare metal elements in sediments because there are big differences in their concentration distributions. Five regions rich in rare mineral (Shuidong Bay, the southern Pearl River estuary, between Shang/Xiachuang island and Hailing island, Zhangjiang bay and coastal southeastern of Hainan island) are distinguished on the basis of the distribution of rare metal minerals analysis of the sedimentary environment. These five regions are expected to become favorable areas for different rare metal placers because the major species of rare metal mineral are different in every region. The most abundant rare metal minerals in the study area are ilmenite, leucoxene and zircon.