

Sedimentary Geochemical Evolution from Upper Proterozoic to Triassic in the Southwest Yangtze Massif

Yu, B. China University of Geosciences, Beijing 100083, China.

The systematic study of trace element and REE geochemistry of mudstone and siliceous rocks deposited in the basin and lower slope environments from Upper Proterozoic to Triassic in the southwest Yangtze Massif shows that there are three abnormal geochemical horizons, the Lower Cambrian, the Upper Devonian and the Upper Permian – Lower Triassic, in which occur lower Th/Sc, Th/U ratios, higher Cr, Ni, Co etc. mafic elements contents, the chondrite-normalized REE patterns of mudstone with relatively steep HREE slopes (relatively high $(\text{Tb/Yb})_N$ ratios, between 1.48 and 2) and no or slightly negative Eu anomalies (high Eu/Eu^* ratios, between 0.79 and 0.89). the NASC-normalized REE patterns of siliceous rocks with the HREE enrichment (the $(\text{La/Yb})_N$ ratios are less than 1), a little Eu positive anomalies and Ce depletion beside high abundance of As, Se, Sb and Ba elements. Because of the alternate occurrence of three abnormal geochemical horizons, three geochemical cycles in the geological history are distinguished and they are corresponding to the geotectonic ones in this area. The abnormal geochemical horizons correspond to the pull-apart stages of geotectonic cycles and to a series of geological events, such as hydrothermal sedimentary events, anoxic events, extinct events of living things and so on. The metallogenic mineralization in this area is also concentrated in these three horizons. That so many events occur in the geochemical abnormal horizons at the same time indicates that these geochemical anomalies are the particular stages of the earth evolution.