

Temporal and spatial distribution patterns and crust - mantle interaction processes in the Mesozoic magmatic - metallogenic belt along the Yangtz River, Anhui Province

DU, Y. China University of Geosciences, Beijing, China

Temporal and spatial distribution patterns of magmatic rocks in the Mesozoic magmatic - metallogenic belt along the Yangtz River, Anhui are used to determine and discuss the crust - mantle interaction processes. The magmatic rocks are high - K calc - alkalic (KCA) and high - Na alkalic - calc intrusive rocks (NAC) in the central part of the belt and grade to calc - alkalic granitoids (CAG) and A - type granites (AG) in the southern and northern parts of the belt. Samples from the KCA and CAG yield Rb - Sr isochron ages of 137 ~ 140Ma with $(^{87}\text{Sr} / ^{86}\text{Sr})_0 = 0.7060 \sim 0.7101$, while those from the NAC and AG yield the ages of 120 ~ 129Ma with $(^{87}\text{Sr} / ^{86}\text{Sr})_0 = 0.7047 \sim 0.7077$.

The Sr isotope ratios, Cr / Th ratios (1.4 ~ 3.1) and initial epsilon (Nd) values (-16.6 ~ -6.3) for the KCA and CAG are consistent with magma derivation from old metamorphic basement rocks through a two - stage process of mantle - derived magma underplating caused by primary lithosphere extension and subsequent partial melting. On the basis of Sr isotope data, Cr / Th ratios (3.4 ~ 13.8) and initial epsilon (Nd) values (-7.7 ~ +1.4), the NAC and AG are considered to be formed through syntexis that resulted from further lithosphere extension followed by mantle - derived magma underplating on a large scale.