

Temporal variation in Nd isotopic compositions of the Phanerozoic granitoids of Korea

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Nd isotopic compositions reported from the Phanerozoic granitoids of Korea reveal significant variations in Nd isotopic compositions and can be explained either by temporal trend or by regional differences. Among the three magmatic periods, first two periods during the Permian-Triassic and Jurassic seem to show variations from rather high ϵ Nd(t) values at the beginning to lower ϵ Nd(t) values during the later stages. Such trends probably reflect melting of the subducting oceanic crust and producing magma with higher proportion of depleted mantle derived materials during the early stage of subduction process, and subsequent magmas with greater proportion of old continental crust with progress of subduction. However, the Cretaceous-Paleogene period of active magmatism displays higher ϵ Nd(t) values during the advanced stage of the igneous activities, which is opposite to the previous active periods. The other explanation is that such differences in ϵ Nd(t) reflect regional differences, based on the observations that such high- ϵ Nd(t) granitoids distribute in the northeastern Gyeongbuk Province and Gyeongsang Basin. If this is the case, the regions with high ϵ Nd(t) values may have distinct crustal evolution histories, e.g. younger average age. The choice between the two hypothesis could be made through further studies.