

Evolution of Igneous Activities in South Korea: Implications for the Tectonic Evolution of East Asia

SUNG-TACK KWON

Department of Earth System Sciences, Yonsei University, Seoul, Korea

Our understanding of the geology of South Korea has increased greatly by the efforts of dedicated geologists during the past 20 years. This review is based on such efforts. South Korea witnessed two important periods of igneous activity, which is as represented by Paleoproterozoic and Mesozoic felsic intrusives, although scattered minor igneous events of diverse composition are recognized from Archean to Quaternary. The Paleoproterozoic plutons occur mostly in the basement rocks of the Gyeonggi and Yeongnam massifs, and have intrusive ages of 2.4 to 1.7 Ga for the former and 2.4 to 1.8 Ga for the latter. Near the end of the igneous activities, the Precambrian terranes experienced intensive metamorphism (upper amphibolite to granulite facies) at ~ 1.9 to 1.8 Ga, which is probably related to a collision event. Apparently the two massifs share similar geologic history during the Paleoproterozoic time. The Mesozoic granitoids intrude all tectonic provinces of South Korea, and show a trimodal pattern of intrusive age. The Triassic plutons appear to be closely associated with the Permo-Triassic collision event between Sino-Korean and Yangzte cratons, whereas the Jurassic and Cretaceous-early Tertiary ones seem to have formed in a continental arc setting by subduction of old Pacific-side plates. The Permo-Triassic collision event apparently affected the Precambrian terranes as well. Several changes in tectonic environment with significant magmatic quiescence can be noticed from Mesozoic to Quaternary. We now begin to understand the geological complexity of South Korea. I will discuss how the geologic history of South Korea fits or misfits with the known tectonic evolution of East Asia.