

Geochronology and Geochemistry of Early Mesozoic Magmatism in eastern NE China: Implications for the Initiation of Subduction of the Paleo-Pacific Plate beneath Eurasia

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Subduction of the Paleo-Pacific Plate beneath the Eurasian continent played an important role in the regional evolution, but the timing and extent of this event remain ambiguous. To address these issues, geochronological and geochemical studies have been carried out on Early Mesozoic igneous rocks in NE China. Zircon U–Pb age data indicate the occurrence of Early Mesozoic magmatic events in the Late Triassic (202~228 Ma) and Early Jurassic (183-185 Ma). The Late Triassic igneous rocks constitute a geochemically bimodal igneous rock association, implying a post-orogenic extensional environment related to the final late Permian–Early Triassic closure of the Paleo-Asian Ocean. The Early Jurassic igneous rocks are classified as calc-alkaline series; all these rocks are compositionally similar to arc-type igneous rocks. These calc-alkaline igneous rocks form a NE–SW-trending belt in NE Asia, perpendicular to the direction of Paleo-Pacific plate movement at that time. Such a magmatic configuration is best explained by continental arc magmatism along the continental margin and extensional magmatism in a back-arc setting, both triggered by initial subduction of the Paleo-Pacific Plate beneath Eurasia during the Late Triassic to Early Jurassic.

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