

Late Triassic tectonic setting of the Great Xing'an Mountains, northeast China

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Granites widespread throughout the Great Xing'an Mountains of northeast China formed during the Late Triassic and were emplaced some 30–40 Ma after the closure of the paleo-Asian ocean. These granites are I- and A-types, are peraluminous and high-K calc-alkaline, and define a trend through various tectonic setting fields in geochemical discrimination diagrams. This suggests that they formed during transition from compressional tectonism to a stable or extensional intraplate setting, although in fact these granites formed in post-orogenic to post-collisional tectonic settings.

Upper Triassic sediments in the Great Xing'an Mountains of NE China record an upward-fining depositional sequence that includes late-stage volcanic sediments. The basal part of the sequence consists of a proximally-derived molasse formation that is dominated by coarse clastic sediments that were deposited in a continental environment. These lower sediments record quick deposition of locally derived coarse material, have a high sandstone to gravel ratio, and are relatively immature. In contrast, the upper sediments within the sequence are fine grained, indicative of deposition in a stable depositional environment. These upper sediments plot in the stable craton field of a F–Qm–Lt diagram, whereas the lower coarser sediments plot in the transitional continental field. Furthermore, the upper sediments contain Late Triassic fossilized plants that are similar to flora found within contemporaneous sediments elsewhere in NE China. This is consistent with other evidence that suggests that orogenesis has ceased by the Late Triassic, leading to tectonic stability in the Great Xing'an Mountains.

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