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# Petrogenesis of continental “adakites”

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The geochemical signatures of “adakites” (e.g. high $SiO_2$, high Sr/Y and La/Yb, Nb-Ta depletion, and lack of Eu anomaly) are usually attributed to high-pressure ($\geq$ 1.5 GPa) partial melting of mafic rocks, and accordingly the occurrence of adakitic magmas in continental settings is frequently used as an indicator for a thickened or foundered lower crust at the time of magma emplacement. These premises are built on experiments and modeling using a MORB-like source, but the probable source of continental “adakites” (i.e. continental lower crust) is compositionally different from MORB. To elucidate the effect of source inheritance and pressure on resultant melts, we carried out geochemical analyses and trace-element modeling on Jurassic adakitic rocks from the northern part of the North China Craton (NCC). The results show that these continental adakitic melts can be generated at depths less than 40 km, and their “adakitic” signature is most likely inherited from their source rocks. Such conclusions can be applied to the Mesozoic adakites from the interior of the North China Craton. Only the adakites from collisional orogens (i.e. Tibet, Dabie UHP belt) require crustal melting at depths greater than 50 km, consistent with collision-induced crustal thickening in these areas. This study therefore highlights the importance of source composition when defining the formation conditions of magmatic rocks in general, and in particular questions the common use of adakites as an indicator of specific geodynamic situations.