

Petrogenesis of Early Cretaceous adakitic granites and episodic crustal growth in the Kitakami belt, Japan

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Early Cretaceous igneous rocks in the Kitakami belt are characterized by the coexistence of adakitic rocks and calc-alkaline rocks. Adakitic rocks occur in central part of zoned plutons in the North Kitakami belt, and surrounded by calc-alkaline granites in marginal part. Petrochemical evidence indicates that the adakitic granites can be derived by direct partial melting of subducted oceanic crust leaving eclogitic restite. The petrochemical characteristics of the calc-alkaline granites of marginal part suggest that calc-alkaline magmas were formed by reactions between ascending adakitic melt and wall rocks of wedge mantle and lower crust. Concludingly, adakitic magmatism played a major role on the Lower Cretaceous igneous activity and episodic crustal growth in the Northeast Japan.