

## **Assembly of Rodinia Recorded in the Grenville Province, Canada**

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Despite generally severe modification during late Mesoproterozoic tectonism, the Grenville Province contains a long record of older events, crudely younging southeastward. Late Paleoproterozoic rocks related to Labradorian orogeny in the northeast, equivalent to Yavapai/Mazatzal orogeny in the southwest, represent additions of crust to Laurentia by 1.6 Ga. The record is lacking from 1.6 to 1.5 Ga. Between 1.5 and 1.35 Ga, plutonism and high-grade metamorphism in the southwestern Grenville Province are coeval with Pinwarian orogeny in the northeastern part, with volcanic arc rocks in the central part, and with predominantly felsic magmatism in the mid-continent. In the eastern Grenville Province, younger (1.35–1.25 Ga) continental sedimentary and peralkaline igneous rocks, developed on Labradorian crust, are roughly coeval with AMCG-type plutonism in the Grenville foreland. In the southwest, 1.3–1.23 Ga tholeiitic to calc-alkaline volcanic rocks and attendant TTG-type intrusions are interpreted to represent back-arc magmatism associated with a marginal basin, which was closed by 1.2 Ga, terminating the Elzevirian orogeny. After closure, episodes of further compression, punctuated by AMCG-type plutonism, continued until ca. 1.05 Ga in the southwest, 950 Ma in the east. Extensional events at ca. 1.03 Ga record unroofing of the thickened interior, with late-stage advance of the orogen into its foreland at ca. 1.0 Ga. The first indication of breakup of this part of Rodinia is recorded by local alkaline magmatism and emplacement of mafic dyke swarms at ca. 600 Ma.