

## **EARLY PROTEROZOIC TECTONICS IN WESTERN LAURENTIA: AN ISOTOPIC STUDY OF GRANITOIDS FROM THE TALTSON MAGMATIC ZONE**

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The Taltson Magmatic Zone (TMZ) comprises the southern part of the Taltson – Thelon orogenic belt, one of the major Paleoproterozoic orogenic belts of western Laurentia. The TMZ is dominated by earlier ~1.99-1.97 Ga I-type and later 1.95-1.93 Ga S-type suites of granitoids. The existing tectonic model for the belt involves a two-stage process; an early stage involving subduction of oceanic crust beneath a continental margin and a later stage involving collision of formerly separated crustal blocks. We tested this model by comparing the large geochemical and isotopic database available for the TMZ with a variety of possible Phanerozoic analogues. The comparison revealed that the early granitoid suite of the TMZ lacks the mantle signature that is apparent in granitoids found in continental margin arc settings. Instead, both early and late suite granitoids appear to be derived exclusively from crustal source rocks. Similar Phanerozoic granitoids are found in the distant hinterlands of convergent plate margins. We propose that the TMZ formed in this type of setting. Modern-day examples are found in the mountain belts of central Asia such as the Tian Shan, which are a product of the continent-continent collision but are many hundreds of kilometers away from the plate margin. The critical feature of these belts that make them an appealing analogue for the Taltson magmatic zone is that there is no subduction zone directly associated with their formation. Our model implies that the Taltson magmatic zone does not mark the location of the plate boundary of western Laurentia at ca. 2.0 Ga. Instead, the crustal blocks flanking the belt either formed as a single entity in the Archean or formed separately but achieved their present configuration before 2.0 Ga.