geoconvention
Calgary • Canada • May 12-14 2025

Updates to the Neoproterozoic and Cambrian chronostratigraphy of the southern Canadian Cordillera

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Summary

Recent geochronology studies have continued to refine our understanding of age of the Windermere Supergroup and overlying strata. Previous age control on the Windermere Supergroup relied on correlations to northern Canadian Cordillera where there was more radiometric age control. As more strata from the southern Canadian Cordillera have been dated recently, our chrono- and tectono-stratigraphic correlations continue to be advanced. Here, we present age updates as they will be incorporated into the 2027 Atlas of the Western Canada Sedimentary Basin.

Novel/Additive Information

An age of ca. 670 Ma for the Irene volcanics (Hadlari et al., 2024) combined with detrital zircon populations from overlying strata (Hadlari et al., 2021; Madronich et al., accepted paper) indicate the Windermere rift-to-drift transition occurred ca. 660-650 Ma. The upper Windermere Horsethief Creek, Miette, and Kaza groups comprise a late Cryogenian to Ediacaran passive margin succession, younger than successions in the northern Cordillera. Strata within the Caribou Group, long considered a part of the Windermere Supergroup, have yielded Cambrian radiometric dates (not yet published). Maximum depositional ages from the upper Hamill Group, Fish Lake Volcanics, and lower Gog Group (Madronich et al., 2025 and unpublished dates) provide new constraints on the timing of late Ediacaran to early Cambrian rift tectonism and initiation of the Paleozoic passive margin.

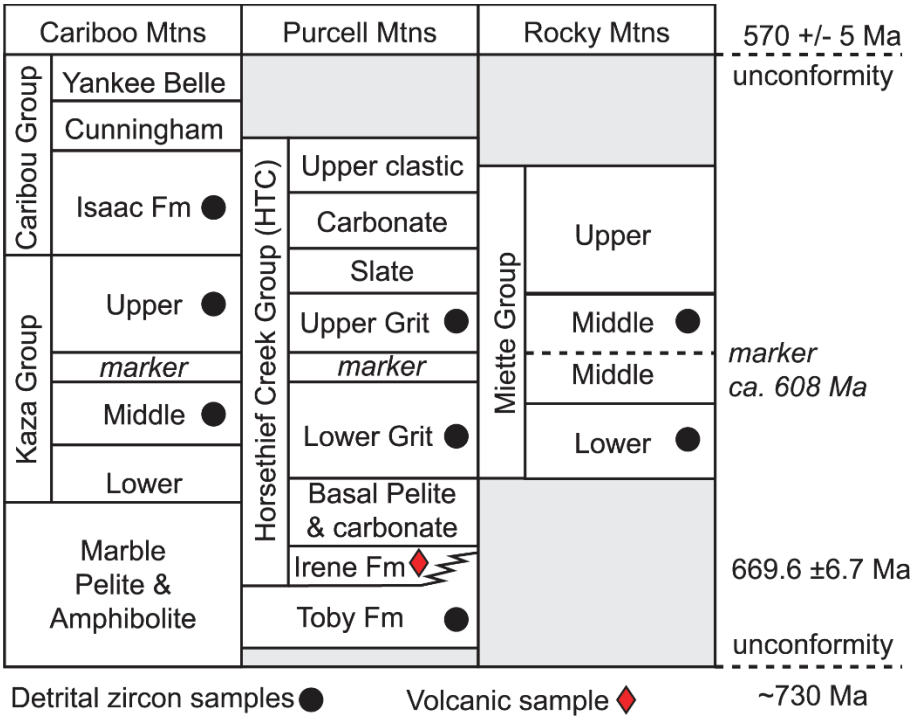

Figure 1: Stratigraphy of the Windermere Supergroup in the southern Canadian Cordillera (after Smith et al. 2014, and references therein). Detrital zircon samples are from Hadlari et al. (2021). Volcanic sample is from Hadlari et al. (2024)

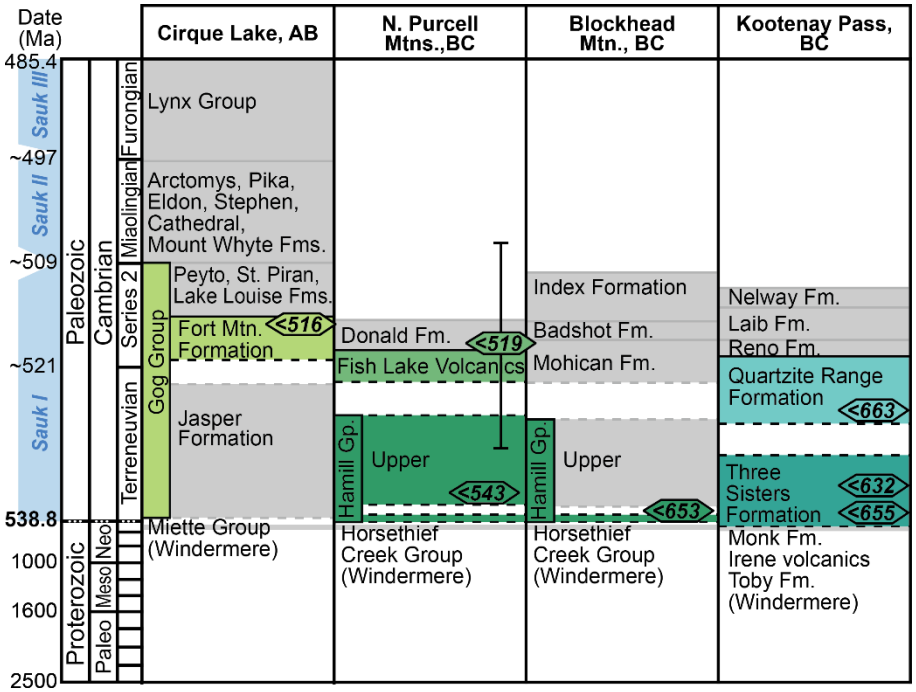

Figure 2: Cambrian stratigraphy and detrital zircon maximum depositional ages from Madronich et al. (2025) and references therein.

Acknowledgements

Irene volcanics U-Pbs dates were curated by N.M. Rayner at Geological Survey of Canada's SHRIMP Laboratory by N.M. Rayner. U-Pb LA-ICP-MS measurements were obtained at the University of Calgary Geo- and Thermochronology Lab (formerly, the Centre for Applied Tectonics and Thermochronology) in collaboration with W.A. Matthews. We thank K. Root and T. Poulton for their contributions to these recent works. This work was made possible by extensive mapping of Neoproterozoic and Cambrian strata completed by J.D. Aitken, F. Hein, M. McMechan, G. Ross, T. Kubli, H. Lickorish, P. Desjardins, R. Price, P. Simony, M. Warren, and many others.

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