

Chemostratigraphy of Late Proterozoic carbonate units in the northern Selwyn basin, east-central Yukon, Canada

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The stratigraphic relationships between Proterozoic successions on opposite sides of the Dawson thrust in central Yukon, Canada, have previously been ambiguous, but recent mapping suggests correlation of the Hyland Group (Selwyn basin) with upper parts of the Neoproterozoic Windermere Supergroup (Yukon block). In order to test this stratigraphic correlation, a focus has been placed on the sedimentological, petrographic and chemostratigraphic characteristics of two carbonate markers in the Selwyn basin for comparison with well-studied strata of the Windermere Supergroup. The $\delta^{13}\text{C}_{\text{carb}}$ chemostratigraphic data from these carbonate strata support correlation of the lower carbonate marker (part of the Yusezyu Formation of the Selwyn basin) with the Gametrail Formation and the upper marker (Algae Formation of the Selwyn basin) with the Risky Formation of the Windermere Supergroup. The $\delta^{13}\text{C}_{\text{carb}}$ values in the Yusezyu Formation carbonate define a clear trend from $\sim -13\text{‰}$ (VPDB) at the base to $\sim 0\text{‰}$ at the top of this unit. This $\delta^{13}\text{C}_{\text{carb}}$ excursion has been correlated with the Ediacaran Shuram/Wonoka Anomaly, which is documented globally in rocks deposited $\sim 580\text{--}560$ Ma. Preliminary $\delta^{13}\text{C}_{\text{carb}}$ data from the Algae Formation record subtle oscillations between -0.7 and 5.6‰ , which is broadly similar to previously published results from the Risky Formation. The large negative excursion documented at the top of the Risky Formation in some platformal sections has not been identified in basinal strata of the Algae Formation. The stratigraphic relationships substantiated by these correlations suggest that deposition of the Hyland Group and final rifting of the NW Laurentian margin took place during the late Ediacaran.