Compilation of micropaleontological data from the northern Canadian Cordillera, British Columbia and Yukon

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Front Cover:
A typical outcrop of well-bedded grey chert with orange argillaceous interbeds in the Atlin area (about 10 km northwest of Surprise Lake). **Photo by Mitch Mihalynuk.**

Back Cover:
Well-bedded, white-weathering chert containing abundant radiolaria that are visible at the outcrop scale. Radiolaria recovered were poor to moderately preserved and identified as species of late Carnian to middle Norian age (Late Triassic). This site is near the BC-YT border ~10 km northwest of Gladys Lake, 2 km southwest of Laidlaw Lake. **Photo by Mich Mihalynuk.**

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Abstract

New micropaleontological age data presented herein are from radiolarian chert samples collected from northwestern British Columbia and adjacent southern Yukon. In combination with unpublished and published sources, these data aid tectonic analysis by constraining the ages of ophiolites, mélanges, and other oceanic sequences, as well as widespread marine deposits that postdate terrane amalgamation.

Keywords: Radiolaria, fossil age, geochronology, ribbon chert, Atlin terrane, Cache Creek terrane, Sentinel subterrane, Lincoln complex, Kedahda Formation, Shonektaw Formation, Nakina suite, Jurassic, Triassic, Permian, ophiolite, tectonic accretion, Cordilleran geoscience

1. Introduction

Data included herein (BCGS_GF2026-05.zip) are from samples collected for micropaleontological age determinations from northwestern British Columbia and adjacent southern Yukon (Fig. 1) in the traditional territories of the Taku River Tlingit First Nation, Carcross-Tagish First Nation, Teslin Tlingit Council, and Tahltan Nation. Samples are from published (Cordey et al., 1991; Mihalynuk, 1999; Cordey, 2020; Cordey et al., 2024; Cordey et al., 2025; Mihalynuk et al., 2003a, b; Mihalynuk et al., 2004; Zagorevski et al., 2026), and unpublished sources (Fig. 2), and are mostly from Cache Creek and Atlin terranes (Zagorevski et al., 2021). This compilation serves as a data repository to support terrane interpretations presented by Zagorevski et al. (2026).

2. Structure of the data compilation

We present a compilation of micropaleontological in a flat spreadsheet structure. **Record** field identifies the order in which samples were added. **Sample** records the sample number provided by the collectors. For geographic coordinates, we either compiled directly from published and unpublished compilations or transformed compiled UTM coordinates. For some samples collected before about 2000 and reported with geographic coordinates, it is unclear if proper transformations were applied (i.e., UTM NAD27 vs. UTM NAD83 to geographic). Thus, these samples may be mislocated by as much as 200 m in the central portion of the compilation area, mostly along the N-S direction. Different sources in this compilation provide different levels of information. As a result, not all samples have complete fields for **Lithology**, **Unit**, **Field Notes**, **Lab results and observations**, **Preservation**, **and Comments (biochronology)**. **Report#** refers to the source of the data, **Curation number** is the internal Geological Survey of Canada identification although not all samples were assigned a curation number. The **Radiolarian/conodont taxa or features** field details information available at the time of this compilation. Some groups of samples only recorded a single taxon due to the source data structure. **Biochronology age** is the age that was specified in the compiled reports. **Age_Lower**, **Age_Upper** and related calculated fields **Age_mid**, **Age_plus**, **Age_minus** stem from the conversion of the Biochronology age to a numeric scale using the International Chronostratigraphic Chart (Cohen et al., 2025). For example, "Early Permian, Sakmarian-Kungurian" biochronology age is converted to the base of the Sakmarian stage (293.52 ±0.17 Ma) and to the top of the Kungurian stage (274.4 ±0.4 Ma). For more complex ages such as Late Carnian to Middle Norian, we have assumed that Late/Early designations indicate that the age range of the stage is split in half, and in cases where Middle is specified, that stage age range is split into three. This provides a conservative approach towards precision of the biostratigraphic age. As such, base of the Late Carnian (i.e., 232 Ma), is numerically halfway between the base (ca. 237 Ma) and the top (227.3 Ma) of the Carnian stage. Whereas the top of the Middle Norian stage (ca. 213 Ma) is numerically two thirds between the base of Norian (ca. 227.3 Ma) and the top of Norian (~205.7 Ma). This approach is only an approximation because, for example, the Norian substages do not likely encompass equal time periods and middle-lower Norian boundary is ca. 224.5 Ma (Orchard et al., 2025). The numerical conversion to Age_mid, Age_plus, Age_minus facilitates plotting, including using geochronology-based tools (e.g., Vermeesch, 2018) for

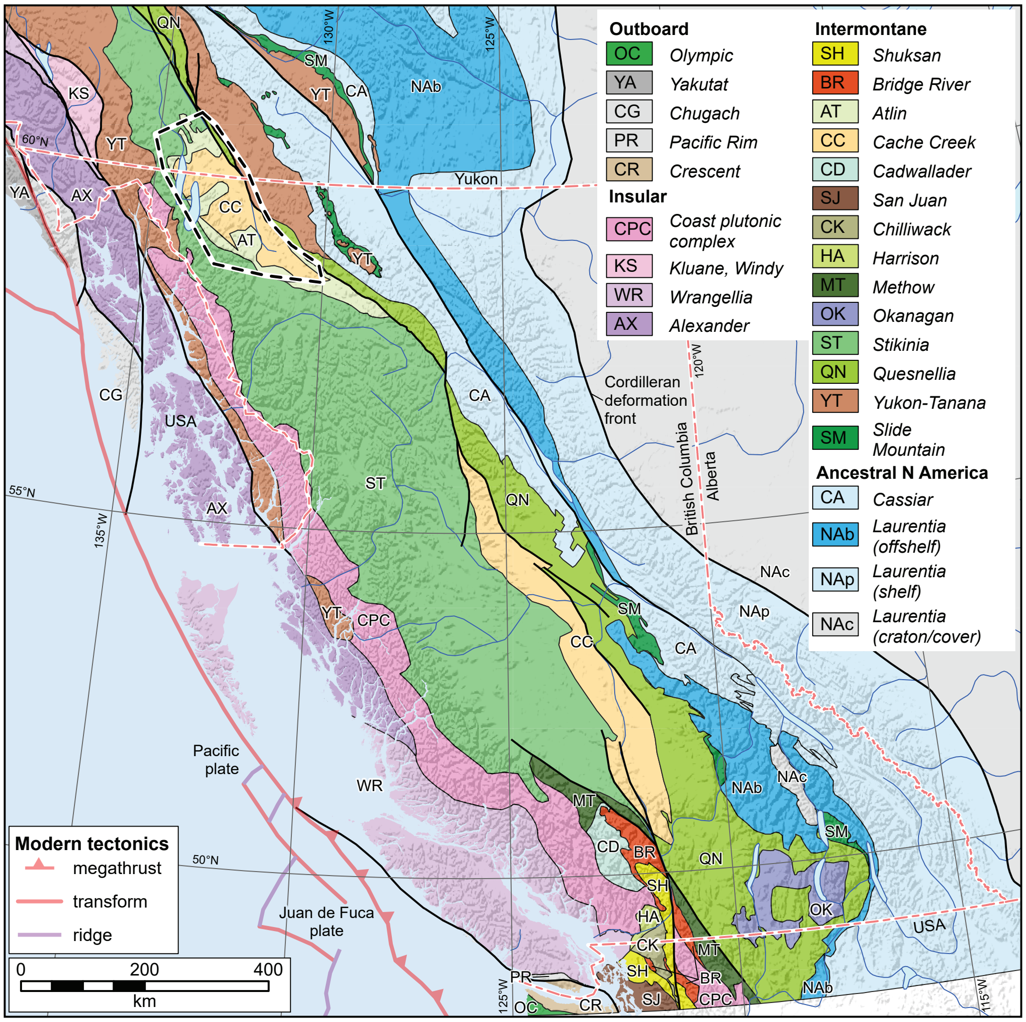

Fig. 1. Location of study area. Terranes after Colpron (2020) and Zagorevski et al. (2021).

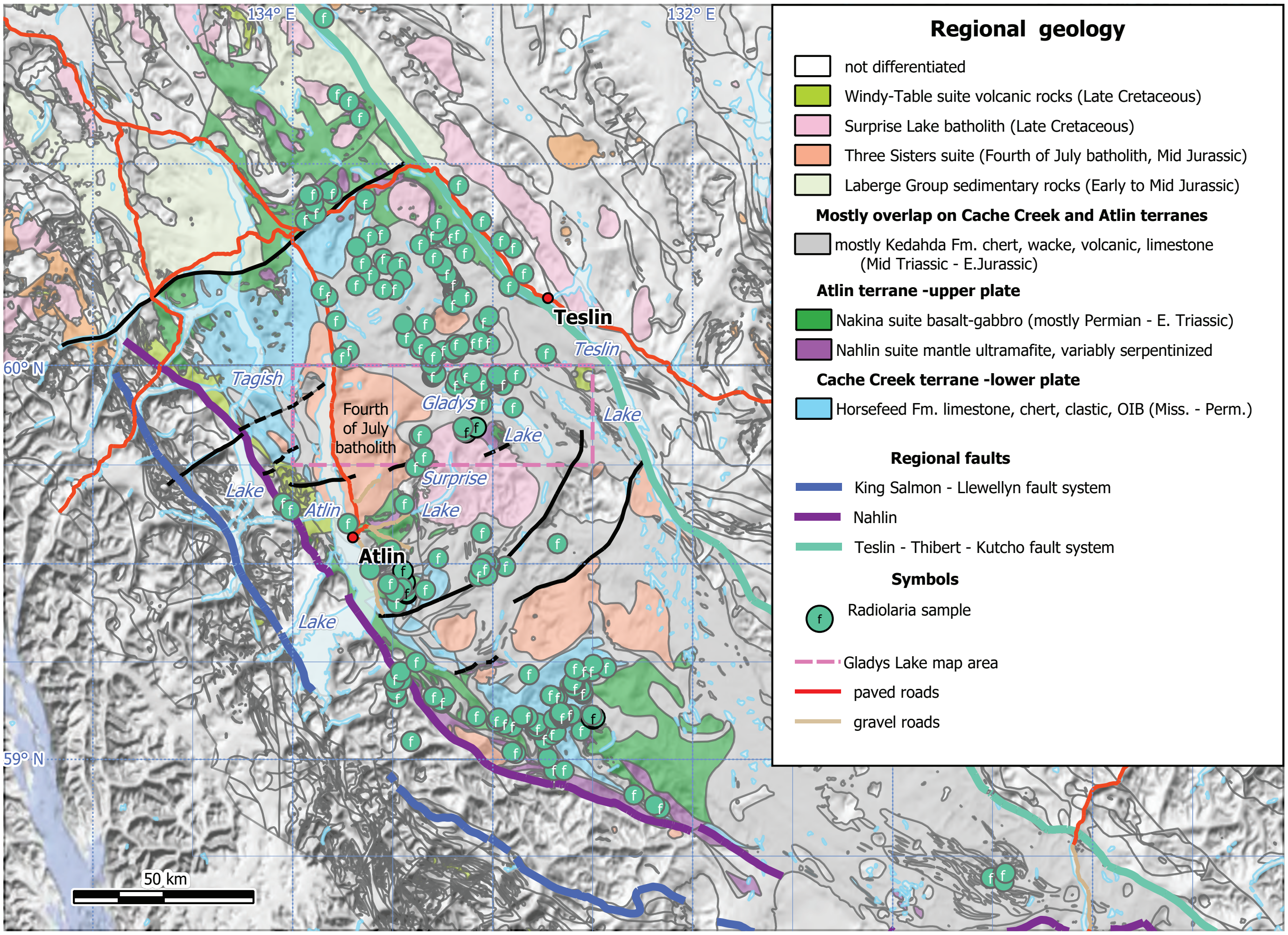

Fig. 2. Distribution of samples in this compilation.

probability and kernel density plots (Figure 3 in Zagorevski et al., 2026). Such plots should be treated as qualitative, because the errors assigned to the Age_plus and Age_minus do not have any statistical significance and thus cannot be compared with standard deviation errors of isotopic geochronometric data.

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