18-3 - AGE AND PROVENANCE OF CRETACEOUS TO PALEOCENE CLASTIC ROCKS OF THE YAKUTAT GROUP IN GLACIER BAY NATIONAL PARK, ALASKA

Thursday, May 18, 2023

8:00 AM - 6:00 PM

Cargo Room (The Whitney Peak Hotel)

Booth No. 16

Abstract

The Upper Cretaceous to Paleocene Yakutat Group contains a flysch unit and a mélange unit with an unknown source terrane. The provenance of detrital zircons may be the key to understanding the age of clastic units, their source terrane, and correlative rocks along the margin. Two samples were collected from remote and difficult to access areas in Glacier Bay National Park, and these samples can be compared to samples from Harlequin Lake, Russell Fiord, and Yakutat Bay to the north. We dated detrital zircons using standard LA-ICPMS methodology. A sample of Yakutat Group flysch (YGf) from the Grand Plateau Glacier is from quartzofeldspathic turbidites adjacent to the Grand Plateau pluton. It has an MDA of ~66 Ma (Maastrichtian-Paleocene), and the grain-age distribution is dominated by a broad mid-Cretaceous population with ages from ~91 to ~114 Ma, it also has a Jurrassic component at ~166. A unique attribute of this sample is that 23% of the zircons are Precambrian with a bimodal population at ~1397 Ma and ~1702 Ma. A sample of sandstone from the Yakutat Group mélange (YGm) from Lituya Bay, was collected from an assemblage of dark lithic sandstones interbedded with basalt, and dark-gray bedded chert. This sample has an MDA of ~108 (Albian), and its grain-age distribution is dominated (88%) by Jurassic dates ranging from ~156 to ~188 Ma. Both samples can be correlated to similar dated units in the area in and around Yakutat Bay. The YGf sample is correlative to the primary zircon facies common to arkosic rocks in both the Yakutat Group flysch and mélange, which we refer to as the Russell zircon facies, with an MDA range from 61-72 Ma, and distinctive Precambrian populations. The YGm sample is more complicated, but it appears to belong to the Shelter Cove zircon facies, dominated by mid-Cretaceous lithic sandstones that occur only in the mélange. The Yakutat terrane has been translated along the margin of the Cordillera, and candidate correlative rocks are to the south. We are intrigued that similar facies with similar grain-age distributions occur in the Western Mélange Belt in the North Cascades foothills in WA. We evaluate the correlation and connection between the Yakutat and the WMB and post Paleocene translation of part of this once contiguous unit.

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