18-2 - STRATIGRAPHY AND PROVENANCE OF DETRITAL ZIRCONS IN THE SITKA GRAYWACKE FROM BARANOF, CHICHAGOF, YAKOBI, AND GLACIER BAY NATIONAL PARK IN THE FAIRWEATHER RANGE

Thursday, May 18, 2023

8:00 AM - 6:00 PM

Cargo Room (The Whitney Peak Hotel)

Booth No. 15

Abstract

The Sitka Graywacke is an Upper Cretaceous to Paleocene turbidite complex in Southeast Alaska that is part of the Chugach and Prince William terranes (CPW). The Sitka Graywacke consists of an older unit (mid-Cretaceous) and a younger unit (Campanian-Paleocene) with an uncertain affinity to each other and poorly understood provenance. U/Pb dating was conducted on 33 detrital zircon samples from the Sitka Graywacke on Baranof, Chichagof, Yakobi Islands, and the southern part of the Fairweather Range. This robust data set (n = 8690) provides new insight into the maximum depositional age (MDA), stratigraphic framework, and source terrane evolution. To analyze the stratigraphic framework, samples were grouped by MDA and the youngest population (P1), and we then evaluated seven age groups deposited ~95 to ~58 Ma. The old Sitka (MDA range of c. 81-95 Ma) is dominated by P1 at ~100 Ma, lesser populations in the Jurassic (150 and 195 Ma), and also ~350 Ma, ~440 Ma, and a sparse Precambrian (PC) population (0.8 %). Young Sitka (MDA range of c. 75-58 Ma) has P1 dominated by a moving peak from ~78 to ~67 Ma and lesser modes at 180-190 Ma, ~340 Ma, ~420 Ma, a minor PC population (2.7 %). We hypothesize that the old Sitka and the young Sitka have different source terranes, and that there may be no stratigraphic continuity between them. The grain-age distribution of the young Sitka is relatively uniform across the full age range of samples, and they are similar to correlative units in the CPW along the southern Alaskan margin, including the Valdez/Orca in Prince William Sound, the Kodiak Formation, and the Shumagin Formation. The grain-age distribution of the old Sitka is similar to the western facies of the Gravina, which has a depositional contact and clear alliance with the Insular terrane (here Wrangellia and Alexander). A population of grain ages in the old Sitka at ~440 Ma may hint at depositional proximity to the Alexander terrane. These data and observations may suggest that the mid-Cretaceous and older clastic sequences are part of the Insular terrane, and that there is a fundamental tectonic contact between old and young Sitka, which may have been accreted later.

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