18-1 - U-PB ZIRCON GEOCHRONOLOGY AND LU-HF ISOTOPE STUDY OF THE SANAK-BARANOF BELT IN SOUTHEAST ALASKA: A FOCUS ON THE INTRUSIVE BODIES OF YAKOBI ISLAND, CHICHAGOF ISLAND, AND GLACIER BAY NATIONAL PARK

Thursday, May 18, 2023

8:00 AM - 6:00 PM

Cargo Room (The Whitney Peak Hotel)

Booth No. 14

Abstract

The Sanak-Baranof Belt (SBB) extends 2000 km along the southern Alaska margin and intrudes the Chugach Price William terrane (CPW), and may also intrude the Yakutat terrane. These plutons young west to east (63-47 Ma) and range in composition from gabbroic to granitic. Nine plutons from Yakobi Island, Chichagof Island, and Glacier Bay National Park were investigated using whole rock composition, U-Pb zircon geochronology, and Hf isotope data to determine their affiliation with the SBB. Six of the dated plutons studied intrude the CPW and three occur in the Yakutat block, which is east of the Fairweather fault and is thought to have been translated from the Pacific NW since the Eocene.

The plutons that intrude the CPW (east of the Fairweather fault) include the Granite Islands pluton (52.3 ± 0.5 Ma), Mirror Harbor pluton (51.6 ± 0.5 Ma), Lost Cove pluton (51.5 ± 0.4 Ma), Yakobi Island pluton (50.7 ± 0.5 Ma), Graves Harbor pluton (48.3 ± 0.5 Ma), and Squid Bay pluton (42.4 ± 0.4 Ma).

The Yakutat Block is intruded by the Grand Plateau Glacier pluton (48.9 ± 0.4), the Desolation Valley pluton (48.7 ± 0.4 Ma), and the Lituya Glacier stock (39.3 ± 0.4 Ma). One large (20 x 3 km) igneous body in the mélange of the Yakutat Group yielded a Jurassic age (194.4 ± 1.7 Ma) and is interpreted to be a megaclast.

εHf values for the CPW plutons range from +3.9 for the older plutons (e.g. Granite Islands pluton) to +13.6 for the younger plutons (e.g. Squid Bay pluton) and are similar to the εHf trends observed in the Crawfish Inlet pluton on Baranof Island. The two older plutons (ca. 50 Ma) that intrude the Yakutat Block yield εHf values of +3.2 (Grand Plateau Glacier) and +7.5 (Desolation Valley); the young Lituya stock yields +13.9. The Jurassic megaclast is also primitive, yielding +14.0. Collectively εHf from the SBB plutons along the Alaska margin show decreasing εHf values with decreasing age from 63-53 Ma and then increasing values from 53-47 Ma. Because the Yakutat block is thought to have been translated along the margin since the Eocene, a full analysis needs to consider similarities to coeval plutonic rocks in the Pacific Northwest.

Geological Society of America Abstracts with Programs. Vol. 55, No. 4, 2023
doi: 10.1130/abs/2023CD-387416

Author

F

Maya Feldberg-Bannatyne
Carleton College

Authors

D

Cameron Davidson
Carleton College

G

John I. Garver
Union College