163-2 - Booth No. 125: STRATIGRAPHIC AND STRUCTURAL CHARACTERIZATION OF THE EOCENE BLUE MOUNTAIN UNIT, OLYMPIC PENINSULA, WA: IMPLICATIONS FOR BASIN FORMATION AND VOLCANISM FOLLOWING SILETZIA'S ACCRETION

Tuesday, October 12, 2021

9:00 AM - 1:00 PM

Exhibit Hall A (Oregon Convention Center)

Booth No. 125

Abstract

During the Eocene, a ridge-centered oceanic plateau (Siletzia) accreted to the margin of North America at the latitude of Washington and Oregon. Accretion of Siletzia had a remarkable impact on the regional geology and set the stage for the formation of the modern Cascadia arc. The terrane rapidly subsided following its accretion generating a regional basin and a thick section of Cenozoic sedimentary strata. These basin deposits are exposed along the margins of the Olympic Peninsula. Recent U-Pb zircon geochronologic data demonstrate that the Blue Mountain Unit (BMU), a continentally derived turbidite sequence originally thought to be interbedded with basalts at the base of the Siletzia terrane, is, in fact, younger than (<45 Ma) and thrust under Siletzia (56-48 Ma). The Lower Elwha fault on the northern Olympic Peninsula, and its enigmatic southern continuation, is the most likely structure along which the BMU was juxtaposed with Siletzia. In the Dungeness Forks area, this fault places the BMU and interbedded lower Crescent formation under basalts of the upper Crescent formation, which is part of the Siletzia plateau. This implies that the BMU and at least part of the lower Crescent Formation represent a distinct period of sedimentation and volcanism that is <45 Ma. To help understand these units, our analyses include new detailed geologic mapping, measured stratigraphic sections, and lithofacies characterization of the Blue Mountain Unit and interbedded volcanic rocks on Tyler Peak of the Dungeness Forks area. We discuss how these sedimentary and volcanic rocks fit into the regional tectonic history during the time period between accretion of Siletzia and establishment of the Cascadia arc.

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