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Title: MESOZOIC COLLISION, ACCRETION, AND TRANSLATION OF OCEANIC TERRANES IN THE BLUE MOUNTAINS PROVINCE OF NE OREGON: NEW INSIGHTS FROM THE STRATIGRAPHIC RECORD

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Abstract: Ongoing study of sedimentary rocks in the Blue Mountains Province (BMP) of NE Oregon provides new insights into the history of Mesozoic collision, accretion, and translation of oceanic terranes in this region. Paleozoic and Mesozoic rocks include two Triassic magmatic arcs (Wallowa and Olds Ferry terranes), an intervening oceanic plate and subduction complex (Baker terrane), and a thick Triassic-Jurassic sedimentary overlap assemblage previously known as the "Izee terrane". Late Triassic chert-clast conglomerates in strata of the Wallowa and Olds Ferry terranes record growth of a large thrust belt in the Baker terrane and deposition in marine basins on opposite flanks of the thrust belt. In the southern Wallowa Mts., stratigraphic architecture, detrital-zircon ages, trace-element geochemistry, and Sm-Nd isotopes track changes in basin geometry and provenance related to Late Triassic growth of the Baker terrane thrust belt. In the Izee area, an angular unconformity and overlying thick section record deep subsidence of Baker terrane crust beneath a large Jurassic marine basin. Triassic and Jurassic rocks are deformed by Late Jurassic contractile folds and faults, and are intruded by 145-135 Ma

subduction-related plutons. In the Michell inlier, mid-Cretaceous marine strata rest on older rocks of the Baker terrane and locally were influenced by growth of an intra-basinal anticline formed by N-S shortening. Recent paleomagnetic study of the Mitchell area provides evidence for 1760 ± 460 km (1200 ± 460 km using an ad-hoc 5º inclination error) of post-93 Ma northward translation. This is consistent with a tectonic reconstruction that places the BMP at the latitude of Nevada prior to 150 Ma (Wyld and Wright, 2001), but is greater in magnitude.

Based on compilation of existing and new data, we propose a tectonic model for the BMP that includes: (1) Middle Triassic subduction and arc magmatism; (2) Late Triassic collision between accretionary wedges of the Wallowa and Olds Ferry arcs, and growth of flexural basins on both flanks of the Baker terrane thrust belt; (3) Jurassic Papua New Guinea-style collision between the amalgamated BMP terranes and western North America, and growth of a large marine collisional basin; (4) Latest Jurassic thrusting, shortening, and accretion of the BMP terranes to North America; (5) Earliest Cretaceous tectonic reorganization that established an Andean-type margin, initiated subduction of the Farallon plate, and created the Ochoco-Hornbrook forearc basin; and (6) post-mid Cretaceous northward translation of the BMP via strike-slip offset in the western Idaho shear zone and possibly other faults. This analysis suggests that collisional tectonics played a major role in Triassic - Jurassic mountain building, crustal growth, and basin development in the western U.S. Cordillera. It also highlights the likely importance but continued poor understanding of Mesozoic translation of terranes along the Cordilleran margin.