LATE MESOZOIC TERRANE ACCRETION IN THE NORTHWESTERN U.S. CORDILLERA: IMPLICATIONS FOR COEVAL 'NON-COLLISIONAL' CONTRACTIONAL OROGENESIS

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SUMMARY
Integrated structural, geochronological, and metamorphic data provide a basis for synthesizing long-lived east-west shortening across the Cordilleran orogen [Fig. 1]. In the Riggins region of west-central Idaho, the north- to northeast-striking 25-km-wide Salmon River suture zone (SRSZ; Lund and Snee, 1988; Gray, 2013, Fig. 2) records Late Jurassic to Early Cretaceous (ca. 145 to 90 Ma) contractual deformation [Table 1]. Although aspects of structural style, degree of strain, and kinematics of deformation differ, temporally overlapping structures (ca. 140 to 90 Ma) occupy the SRSZ. Listric flexural-slip fault (IFS) of southeast Idaho, westernmost Montana, northeastern Nevada, and north-central Utah. With minor exception, east- to southeast-dipping symmetorphic fabrics (gyreology montage below) and associated strain localization (Popolocoups Fault; Rapid River Fault; Gray, 2011) of the SRSZ are attributable to high-angle collision of the Blue Mountain province [Serilkerto, 1984] with western Laurentia [Fig. 1]. In contrast, 'age-equivalent contractual structures of the SFRB are historically explained by 'non-collisional' ocean-continent plate convergence (e.g., Armstrong, 1986; Butchfield, 1989; see convergence vectors of Englebrecht et al., 2012, Fig. 3). Given the coeval nature of contraction in the SRSZ and SFRB, initial accretion of the Blue Mountain block coincided with, and possibly initiated, early thrusting in the SRSZ [44° to 49°N latitude?]. Continued east-west contraction across the arc—continent boundary [Cordilleran hinterland] and retroarc region east of the Idaho-batholith resulted in 200 km of cumulative shortening [DeCelles, 2006; Giorisi et al., 2009]. In this context, Jurassic-Cretaceous lateral accretion in the hinterland drove east-west-shortening deformation in upper-crustal sedimentary and volcanic rock of the SFRB. Accordingly, west- to west-northwest contractual evolution of the SFRB [i.e., major faults of the region] and associated mid-crustal metamorphic rocks [terranites fabrics in photos] evolved together with eastward-propagating supracrustal structures of the Sevier orogen. An alternative to non-collisional contractual orogenesis, this tectonic model implies a collision-related origin [initial stage of terrane accretion] and subsequent west-northwest contractual evolution of the SFRB.

REFERENCES

ACKNOWLEDGMENTS
The author thanks J. Lamaskin for inspiring this research, J. Lulon (rock slab preparation), J. Neiman (slab photography) and P. Dobson (diagram).