

**FLOWING ASTHENOSPHERE AND A SLAB WINDOW BENEATH THE COAST MOUNTAINS
BATHOLITH, BRITISH COLUMBIA**

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I use three well-developed techniques for shear-wave splitting analysis on high quality teleseismic recordings to develop a preliminary model of mantle deformation fabric beneath the Coast Mountain Batholith (CMB) in British Columbia. High quality results show a consistent shear-wave splitting trend of ~1.5 to 2 seconds for the highest signal-to-noise earthquake recorded during the Batholiths Continental Dynamics Experiment seismic deployment. These new observations show a pronounced trend of seismic anisotropy corresponding to an east-west striking fabric superimposed beneath the entire region, crossing several Mesozoic-age terrane boundaries as well as the Cenozoic-age CMB. This trend contrasts with previous work showing null or weak measurements of shear-wave splitting observed elsewhere along the Canadian Cordillera and continental margin. This distinct trend of splitting occurs near the inferred northern edge of the subducted Explorer Plate (Madsen et al., 2006). The anisotropy also strongly mirrors the trend of the 14-0 Ma Anahim Volcanic belt (Souther, 1986). The orientation of splitting coincides with neither the current absolute plate motion of North America, nor the predicted angle of convergence during subduction in the late Cretaceous and early Cenozoic. In addition, the magnitude of the splitting requires a layer of significant seismic anisotropy exceeding 100 km in thickness. These constraints imply that the fabric is likely to have developed more recently, resides to a significant extent in the asthenosphere, and may relate to a dynamic interaction of the northern edge of the subducted Explorer Plate and the subcontinental mantle of the North American and Pacific Plates.