@INPROCEEDINGS{Ramesh2021-ma,
 title   = "Comparing the Dynamics of Dissolved Organic Carbon in Harvested
              and Unharvested Watersheds within the Oregon Cascades",
 author   = "Ramesh, Shreya and Kerins, Devon and Li, Li and Sullivan, Pamela",
 abstract = "Clearcutting and other land-use changes are known to release
              terrestrial carbon and mobilize organic carbon into streamwater,
              significantly augmenting aquatic carbon levels in the
              short-term. However, little is known about the lasting impacts
              of forest management decisions on the riverine concentration
              levels of Dissolved Organic Carbon (DOC). Here we compare data
              from HJ Andrews Experimental Forest, a long-term ecological
              research (LTER) site located in the Oregon Cascades. We paired
              stream chemistry and discharge measurements spanning 15-30
              years. Two watersheds that were 100\% clear-cut 40-50 years ago
              (WS01 and WS10) were compared with their unharvested and
              controlled counterparts (WS02 and WS09). Temporal analysis
              showed that, on average, DOC concentrations in the old-growth
              watersheds are notably higher than their harvested analogs to
              this day. This suggests even though clearcutting can release DOC
              from soil and vegetation to water, the terrestrial organic
              carbon stock is ultimately depleted post-clearcutting resulting
              in lower DOC concentrations. Concentration-discharge (CQ)
              analysis also revealed a sharp difference in behaviors between
              watersheds 1 and 2, with WS01 exhibiting a slight flushing
              pattern bordering on hysteresis while WS02 displayed a
              pronounced dilution pattern. Based on the shallow-deep
              hypothesis (Zhi et al. 2019; Zhi and Li, 2020) this indicates
              that the old-growth watershed has a pronounced groundwater DOC
              source, and clearcutting could have altered this source within
              WS01 and significantly lowered baseflow organic carbon
              concentrations. However, it should be noted that WS09 and WS10
              displayed DOC behavior similar to that of WS01, which could also
              signify that the previously mentioned opposing CQ behaviors are
              a result of some underlying geological or lithological
              contribution unique to WS02. These competing hypotheses will be
              further tested using a watershed scale reactive transport model
              HBV-BioRT.",
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