

Dataset for Geomorphic regulation of floodplain soil organic carbon concentration in watersheds of the Rocky and Cascade Mountains, USA

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Abstract:

Mountain rivers have shown the potential for high organic carbon (OC) storage in terms of retaining OC-rich soil. We characterize valley bottom morphology, floodplain soil, and vegetation in two disparate mountain river basins: the Middle Fork Snoqualmie, in the Cascade Mountains, and the Big Sandy, in the Wind River Range of the Rocky Mountains. We use this dataset to examine variability in OC concentration between these basins as well as within them, at multiple spatial scales. We find that although there are some differences between basins, much of the variability in OC concentration is due to local factors, such as soil moisture and valley bottom geometry. From this, we conclude that local factors likely play a dominant role in regulating OC concentration in valley bottoms, and that inter-basin trends in climate or vegetation characteristics may not translate directly to trends in OC storage. We also use analysis of OC concentration and soil texture by depth to infer that OC is input to floodplain soils mainly by decaying vegetation, not overbank deposition of fine, OC-bearing sediment. Geomorphology and hydrology play strong roles in determining the spatial distribution of soil OC in mountain river corridors.

Description:

These data describe organic carbon concentrations in rivers and associated characteristics. These data were collected during 2016 and 2017, and support analyses described in the journal article listed below.

- **Format of data files:** .csv
- **Location where data were collected:** Middle Fork Snoqualmie Watershed, WA, USA; Big Sandy Watershed, WY, USA. See data sheet for lat/lon for each datum.
- **Time period during which data were collected:** 2016 and 2017
- **File Information:** 3 files:
 1. README.pdf: this readme
 2. table_s1_metadata.csv: metadata describing each column in dataset

3. table_s1.csv: data sheet, with columns defined by metadata. Data are processed.

- **Definitions of acronyms, site abbreviations, or other project-specific designations used in the data file names or documentation files:** see table_s1_metadata.csv
- **Variable information:** see table_s1_metadata.csv
- **Environmental or experimental conditions:** All data were processed using Excel, the R statistical package, and ArcGIS
- **Method(s):** See accompanying journal article (DOI will be included when published)
- **This project was funded by** NSF Grant EAR-1562713