Title

Spatial Study 2022: Surface Water Samples, Cotton Strip Degradation, and Hydrologic Sensor Data across the Yakima River Basin, Washington, USA

Summary

This dataset supports a broader study examining the drivers of spatial variability in sediment respiration rates in the Yakima River Basin. The dataset provides data and photos generated from sample collection during the same one-week period at 48 sites within multiple rivers throughout the Yakima River Basin in Washington, USA. The contents include surface water geochemistry data; river substrate grain size photos; stream depth data; manual chamber open channel respiration data; and field metadata (including qualitative information on instream and river corridor characteristics). Grain size photos can be used to improve estimates of channel substrate D50 data. The dataset also includes tensile strength and photos from cotton strip field degradation experiments; five-week sensor time series temperature, dissolved oxygen, pressure, pH, specific conductance, chlorophyll A, and turbidity data; plots of the sensor data; and R scripts used to generate the plots.

Samples collected during this study were labeled as "Second Spatial Study" or "SSS." A subset of data from the SSS samples were published in the contiguous United States (CONUS)-Scale Model-Sample (CM) study data package available at https://data.ess-dive.lbl.gov/view/doi:10.15485/1923689 that presents data from across the CONUS. SSS data published in the CM data package were not included in this data package. They include dissolved organic carbon (DOC, measured as non-purgeable organic carbon, NPOC), total nitrogen (TN), grain size, aerobic sediment respiration, dissolved oxygen (DO), and temperature. Parent IDs and Site IDs are consistent between the SSS and CM data packages, and they can be mapped directly so data across packages can be used together. Additionally, sensor data from a similar 2021 spatial study can be found at https://data.ess-dive.lbl.gov/view/doi:10.15485/1892052 and 2021 sample data can be found at https://data.ess-dive.lbl.gov/view/doi:10.15485/1898914. The 2021 spatial study had some sites in common with this 2022 spatial study.

Critical Details

1 – Each sampling event has a unique Parent_ID in the format SSS#. The field metadata and data files all contain these unique IDs and can be mapped across each other accordingly. The Parent_ID may have other indicators appended when referring to samples. See figure below for details.
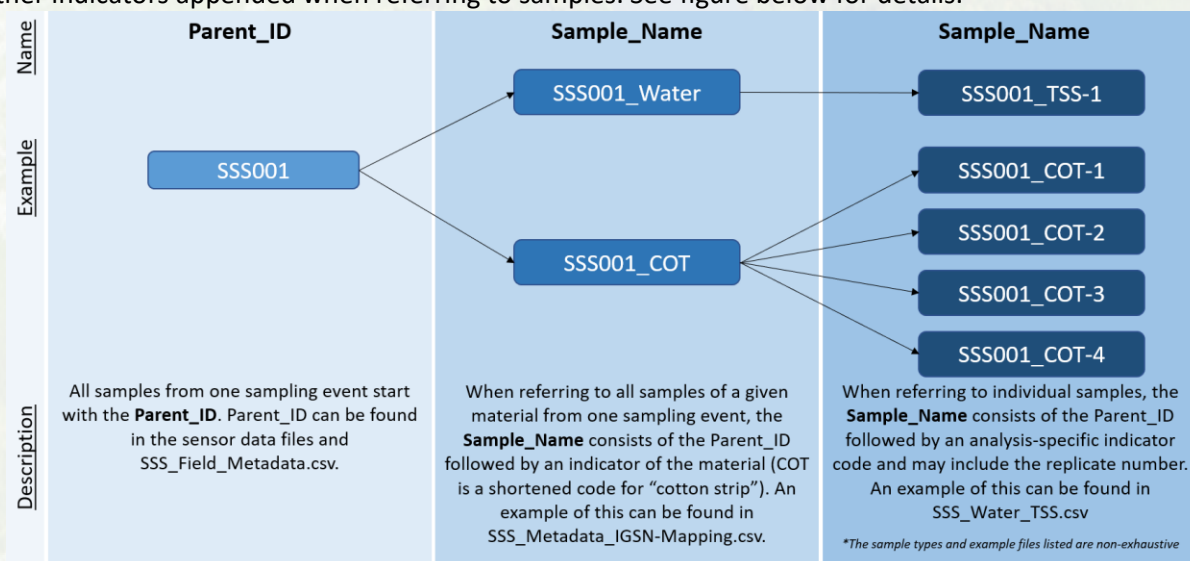
2 – Each physical site has a "Site_ID" and each sampling event in time at that Site has a "Parent_ID" (i.e., in 2021, Site_ID T07 was sampled and the resulting Parent_ID of the samples was SPS_0053. In 2022, Site_ID T07 was sampled again and the resulting Parent_ID of the samples was SSS013). The sensor files indicate both the Site_ID and the Parent_ID to indicate at which Site the sensor was deployed (SiteID) and to which sampling event the data is most relevant (Parent_ID). The identifier most relevant to the data user will depend on the specific analyses being done.

3 – Site S63 was originally mislabeled as S63P. All files have this corrected. However, the quadrat photos of full quadrats include a whiteboard with "S63P" written. To avoid affecting the resolution of these images, the text inside the images was left unaltered. The correct site ID is S63. There is nothing from site ID S63P in this data package.

Data Package Structure

This dataset is comprised of three photo folders and one main data folder with six subfolders. The photo folders contain photographs and videos of cotton strip retrieval and sediment quadrats. The main data folder consists of (1) file-level metadata; (2) data dictionary; (3) field metadata; (4) total suspended solids (TSS) data and cotton strip tensile strength data and averages; (5) field protocol; (6) readme; (7) methods codes; (8) international geo-sample number (IGSN) mapping file; (9) sensor installation methods summary; (10) stream depth and averages; and (11) Ultrameter data and averages. The Sonar subfolder consists of Sonar time-series depth data and a processing script. The BarotrollAtm, DepthHOBO, MantaRiver, miniDOT, and miniDOTManualChamber subfolders contain time-series data, plots, and summary files. All files are .csv, .pdf, .R, .Rmd, .jpg, .jpeg, .AVI, .mp4, or .mov.

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Change History

Version 1	April 2023	Original data package publication