Title

Spatial Study 2021: Sensor-Based Time Series of Surface Water Temperature, Specific Conductance, Total Dissolved Solids, Turbidity, pH, and Dissolved Oxygen from across Multiple Watersheds in 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 two-hour time series hydrological and water chemistry sensor data, manual chamber open channel respiration data, handheld sensor water chemistry data, river substrate grain size photos, general environmental context photos, and field metadata (including qualitative information on instream and river corridor characteristics) collected during the same two-week period at 47 sites within multiple rivers throughout the Yakima River Basin in Washington, USA. Grain size photos can be used to improve estimates of channel substrate D50 data. In addition to the sensor data, there are plots of two-hour time series sensor data and R scripts used to generate the plots. Related sample-based water chemistry data will be published separately and can be used to link sediment respiration rates to biogeochemical processing rates.

Data Package Structure

This dataset is comprised of four main folders, one containing three sensor-specific subfolders and the others containing photographs. The SFA_SpatialStudy_2021_SensorData main data folder includes file-level metadata (FLMD), data dictionary (dd), installation methods, field metadata, manual summary data, field data collection protocols, R scripts for creating plots, international geo-sample number (IGSN) mapping file, and a readme file. Each sensor subfolder (BarotrollAtm, MantaRiver, and MinidotManualChamber) contains a sensor data subfolder and a subfolder for plots and summary statistics. The BarotrollAtm Data subfolder contains In Situ Rugged BaroTROLL pressure and temperature data. The MantaRiver Data subfolder contains Eureka Manta+ 35B multisonde temperature, specific conductance, turbidity, and pH data. The MinidotManualChamber Data subfolder contains PME MiniDOT Logger dissolved oxygen (mg/L and percent saturation) and temperature data. The folder SFA_SpatialStudy_2021_EnvironmentalContextPhotos contains environmental context photographs and videos. The folders SFA_SpatialStudy_2021_SedimentQuadratPhotos_Part1 and SFA_SpatialStudy_2021_SedimentQuadratPhotos_Part2 contain sediment quadrat photographs. All files are .csv, .pdf, .R, .jpg, .jpeg, .mp4, or .mov.

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Change History

Version 1	September 2022	Original data package publication
Version 2	January 2023	• Added normalized root mean square error (NRMSE) columns to Minidot_Summary_Statistics_v2.csv $$\left(normalized\ RMSE\ = \frac{\sqrt{\frac{1}{n}\sum(y_i - \hat{y}_i)^2}}{\bar{y}} = \frac{RMSE}{\bar{y}} \right)$$ • Updated flmd, dd, R scripts, and readme to reflect changes