

Title

Schneider Springs Fire Study 2023 for Ecosystem Respiration Rates: Surface Water Chemistry and Hydrologic Sensor Data across the Yakima River Basin, Washington, USA

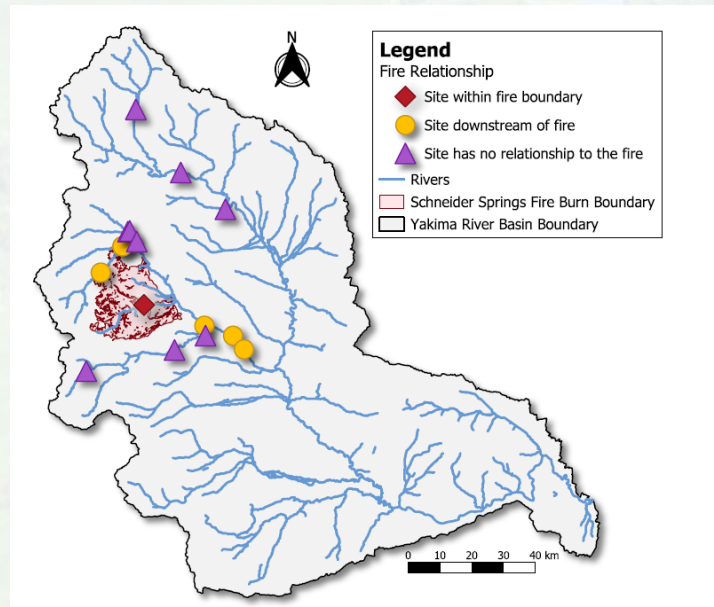
Summary

This dataset supports a broader study examining the drivers of spatial variability in wildfire impacts across the Yakima River Basin. Data provided within this dataset were generated from sample collection across 17 total sites (8 sites affected by a recent wildfire, 9 sites unaffected by a recent wildfire) within multiple rivers throughout the Yakima River Basin in Washington, USA from May-July 2023. Fire affected sites are defined as those affected by the 2021 Schneider Springs Fire, based on the drainage area of the streams being within the 2021 Schneider Springs Fire burn perimeter or not (Figure 1, below). The contents include surface water geochemistry data (dissolved organic carbon; total dissolved nitrogen; total suspended solids); short-term sonde data (specific conductivity; turbidity; pH; chlorophyll A; temperature); stream depth data; stream velocity; manual chamber open channel respiration data; sensor time-series data (oxygen; water pressure; barometric pressure); field metadata (including qualitative information on in stream and river corridor characteristics); and environmental context photos taken in the field. The dataset also includes a summary file of the sensor data; plots of the sensor data; and R scripts used to generate the plots. Sensors were only recovered at 15 out of the 17 sites, and not all sensors were recovered at all 15 sites (see Methods section for more details), therefore all data does not exist at all sites. Data from a 2022 study at the same sites, as well as additional sites, can be found at <https://data.ess-dive.lbl.gov/view/doi:10.15485/1969566>.

Brief Overview of Methods

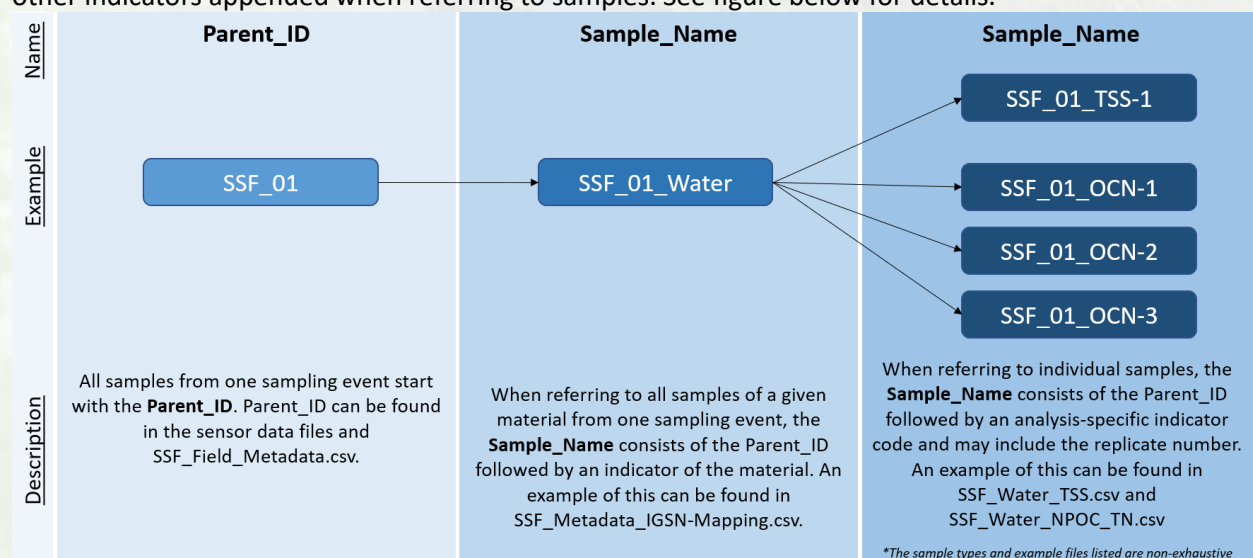
We monitored diurnal dissolved oxygen dynamics and water pressure at 1-minute intervals from May-July in 2023 using in stream sensors at 17 sites by 2-person teams in multiple rivers within the Yakima River Basin. Each site was instrumented with a MiniDOT Oxygen Logger (PME) and HOBO Water Level Data Logger (Onset) during the week of May 15-20, 2023. In stream sensors were deployed either on a cinderblock lying on the bottom of the streambed placed as close to the thalweg as possible, on a piece of rebar installed in the stream, or both. Teams collected sample data, additional sensor data, qualitative metadata, and environmental context photos, at the same 17 sites during the week of May 22-25, 2023. Sensors from May deployments were retrieved by teams during the week of July 18-27. Due to high flow conditions, the sensors at one site were unable to be retrieved during the week of July 18-27 so a team went out to that site on September 25, 2023. Upon arrival, the team was only able to recover one HOBO Water Level. Due to high flow conditions throughout the deployment period, all sensors at 2 of the 17 sites were washed away and not recovered. At an additional 3 sites, sensors installed on the cinderblock were lost; however, the rebar sensors were recovered. The same teams also measured depth and velocity measurements along multiple transects using both manual measurements with a Swoffer Wading Rod, and the Float method during the week of July 18-27. See [SSF_Field_Protocol.pdf](#) for field method details. Surface water samples were processed and analyzed in the laboratory after field collection. For details regarding laboratory methods, see the alphanumeric methods codes located in the header rows of the chemistry data csv file and their associated definitions in [SSF_Methods_Codes.csv](#).

Critical Details



1 – Map of the Yakima River Basin overlaid with the Schneider Springs Fire boundary. Sites that were within the fire boundary or their watershed is within the fire boundary are indicated by the red diamond. Sites that were downstream of the fire boundary or their watershed is downstream of the fire boundary are indicated by the orange circle. Sites and their watersheds that have no relationship to the fire are indicated by the purple triangle. Due to close proximity of some sites, not all sites are visually distinguishable on the figure. The fire boundary was acquired from the USDA Forest Service, Geospatial Technology and Applications Center, BAER Imagery Support Program (<https://fsapps.nwcg.gov/afm/baer/download.php>)

2 – Each sampling event has a unique Parent_ID in the format SSF_#. 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.



3 – Each physical site has a "Site_ID" that remains the same through time and across studies. Each sampling event in time at that Site has a "Parent_ID" that changes for each sampling event (i.e., during the 2022 Spatial Study (SSS), Site_ID S01 was sampled, and the resulting Parent_ID of the samples was

SSS045. During the 2023 Schneider Spring Study, Site_ID S01 was sampled again, and the resulting Parent_ID of the sample was SSF_01). The sensor files include both the Site_ID and the Parent_ID to indicate which site the sensor was deployed (Site_ID) and which sampling event the data is most relevant to (Parent_ID). The identifier most relevant to the data user will depend on the specific analyses being conducted.

Data Package Structure

This dataset is comprised of one folder with field photos and one main data folder with six subfolders. The main data folder consists of (1) file-level metadata; (2) data dictionary; (3) field metadata; (4) total suspended solids (TSS) data; (5) dissolved organic carbon (DOC, measured as non-purgeable organic carbon, NPOC) data and averages; (6) total dissolved nitrogen (TN) data and averages; (7) field protocol; (8) readme; (9) methods codes; (10) international generic sample number (IGSN) mapping file; (11) sensor installation methods summary; (12) stream depth and averages; and (13) stream velocity. The BarotrollAtm (barometric pressure; temperature), DepthHOBO (water pressure; temperature), MantaRiver (specific conductivity; turbidity; pH; chlorophyll A; temperature), EXO (specific conductivity; pH; temperature), miniDOT (dissolved oxygen; temperature), and miniDOTManualChamber (dissolved oxygen; temperature) subfolders contain time-series data, plots, and summary files. All files are .csv, .pdf, .jpg, .jpeg, or .mov.

Acknowledgements and Citations

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The majority of data in this package were collected from the greater Yakima River Basin, located within the homelands of many of the Columbia Plateau tribes. We thank the US Forest Service (USFS), Washington Department of Natural Resources (WDNR), and Washington Department of Fish and Wildlife (WDFW) for access to field locations where these samples were collected.

- Turnipseed, D. P., & Sauer, V. B. (2010). *Discharge measurements at gaging stations* (Report 3-A8; Techniques and Methods). USGS Publications Warehouse. <https://doi.org/10.3133/tm3A8>

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Change History

Version 1	November 2023	Original data package publication
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