**ESS-DIVE Metadata for Thresholds Data Package**

**Title**:

Data and scripts associated with “Thresholds of Area Burned and Burn Severity for Downstream Riverine Systems to ‘Feel the Burn’”

**Alternative Identifiers:**

**Abstract:**

This data package is associated with the publication “Thresholds of Area Burned and Burn Severity for Downstream Riverine Systems to ‘Feel the Burn’” submitted to Water Resources Research (Wampler et al. 2025).

This study used the Soil and Water Assessment Tool (SWAT), a processed based model to explore the impacts of area burned and burn severity on streamflow, nitrate, and dissolved organic carbon (DOC) in two test basins: a semi-arid, mixed land use basin and a humid, primarily forested basin. We developed 1800 wildfire scenarios that we ran in each basin: 20 different burn extents (5 to 100% by 5%), 3 different burn severities (low, moderate, and high), and 30 different post-fire precipitation scenarios. We also ran an additional 30 scenarios associated with no wildfire for the 30 post-fire precipitation scenarios. For each scenario we were interested in the change in runoff ratio (streamflow) and average concentration and annual loads (nitrate and DOC) across the wildfire scenarios.

This data package contains the data and scripts required to build SWAT models for the two test basins, create and run the wildfire scenarios, and generate the data summaries and figures used in the associated manuscript.

This dataset contains (1) file-level metadata; (2) data dictionary; (3) data package readme; (4) workflow documentation; (5) a folder with model input data (“inputs”); (6) a folder with model output data (“outputs”); and (7) a folder with scripts needed to create and run the models and analyze the outputs (“scripts”). The input data folder contains the following items: (1) a DOC/wildfire module where the DOC outputs are in kilograms per time step (Wampler et al. 2023); (2) a DOC/wildfire module where the DOC outputs are in milligrams per liter; (3) a modified SWAT-CUP (<https://www.2w2e.com/home/SwatCup>) file with absolute parameter values; (4) a .csv file with calibrated parameter values for both models; (5) a .txt file called “model.in” with updated parameters for the DOC module; and (6) a .pdf with directions for using the wildfire module. The folder with model output data contains three subfolders: (1) “data”, which contains the processed model outputs; (2) “figures”, which contains the figures from the manuscript; and (3) “summary-outputs”, which contains summarized data used to create tables and results for the manuscript. This package contains the following file types: csv, exe, in, txt, pdf, R, png.

**Keywords**:

Wildfire

Streams

Dissolved organic matter

Biogeochemistry

River corridor

ESS-DIVE CSV File Formatting Guidelines Reporting Format

ESS-DIVE File Level Metadata Reporting Format

ESS-DIVE Hydrologic Monitoring Reporting Format

ESS-DIVE Model Data Archiving Guidelines

**Data variables:**

Precipitation

Evapotranspiration

Nitrate

Dissolved Organic Carbon

Streamflow

**Pub date**:

**Data usage rights**:

Creative Commons Attribution

**Project**:

River Corridor and Watershed Biogeochemistry SFA

**Funding org:**

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**DOE Contracts**:

DOE Award #54737

**Related reference**:

Wampler, K. A., Myers-Pigg, A. N., Kang, H., Regier, P., Scheibe, T. D., and Bladon, K. D. (2025). Thresholds of Area Burned and Burn Severity for Downstream Riverine Systems to ‘Feel the Burn’. ESS Open Archive [preprint].

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**Start date**:

2017-08-11

**End date**:

2018-08-10

**Location description**:

The semi-arid basin was based on data from the Tule River Basin in California, USA (USGS gage 11204100).

The humid basin was based on data from the American River Basin in Washington, USA (USGS gage 12488500)

**Coordinates**:

American: 46.97761606 , -121.168696

Tule: 36.02411648, -118.8134258

**Methods:**

The Soil and Water Assessment Tool (SWAT) model was implemented using publicly available data and R was used for processing and analysis. Publicly available data were pulled directly in R from National Land Cover Database (USGS NLCD), Monitoring Trends in Burn Severity (USGS/USDA MTBS), Moderate Resolution Imaging Spectroradiometer (NASA MODIS), Shuttle Radar Topography Mission (NASA SRTM), Soil Survey Geographic Database (USDA SSURGO), Daymet (ORNL), and the National Hydrography Dataset (USGS NHDPlus). Detailed model setup and execution steps are outlined in “thresholds\_workflow.pdf”