**ScienceHub repository README**

There are 14 zip files in the directory that contain the model prediction output from a spatial stream network (SSN) temperature modeling effort aimed at exploring the relative and combined impact of various management/restoration effects on stream temperature in three study basins in the Pacific northwest region of the USA. The three basins are the Middle Fork John Day (MFJD) in Oregon state, South Fork Nooksack River (SFNR) in Washington state, and Wind River (WR) in Washington state.

The “00StudyBasin\_README\_and\_metadata\_directories.zip” file contains individual directories for each study basin. Within each basin directory there is a README file specific for that basin which describes the metadata files for exploring all the predictions from the various scenarios. There are both raw data (.csv, .dbf, .RDS) and geospatial (.shp) files in the basin README directories that offer various means for working with the predictions.

The other zip files contain the actual model input/output files as well as a PDF model report for each scenario. The file names for these zip files follow the following format:

“[**basinID**]\_[**scenarioID**][**month**]\_scenarios.zip”

**basinID**: either MFJD, SFNR, or WR

**scenarioID**: numerical value that represents which month and climatic/hydrologic scenario was being modeled. 500s is for May scenarios, 800s August, and 900s September. MFJD August climatic and hydrologic scenarios were too large to be zipped as one zip file for ScienceHub (1GB file limit), so they were split into individual scenario files representing each climatic/hydrologic condition we explored. There were six climatic/hydrologic conditions among our modeling scenarios that were crossed with five management activities. If the value for scenarioID is 500, 800, or 900, then it contains the full suite of six climatic/hydrologic condition scenarios. Otherwise, the specific climatic/hydrologic condition is noted in the zip file name.

Climatic/Hydrologic Conditions:

01: Year that mechanistic model was calibrated for in each basin

02: Historical record (1990-2015)

03: Low Palmer Drought Severity Index (PDSI) year (dry year)

04: High PDSI year (wet year)

05: low water temperature year

06: high water temperature year

Management Activity scenarios were denoted with capital letters:

A: current riparian vegetation shade (the default baseline condition for comparison)

B: restored riparian vegetation shade if the system were unimpacted/unaltered by humans or left to revegetate and return to a natural condition given its ecoregion and climate

C1-C5: restored channel width has five levels that represent 10%, 20%, 30%, 40%, and 50% baseflow channel width reductions. This restoration activity was only represented in MFJD due to agricultural impacts in the system that resulted in artificial widening of the stream channel.

D: irrigated crop water reductions

E: a scenario representing the combined impacts of B, C5, and D

**month**: is a three-letter code for each month (somewhat redundant with the numeric ‘scenarioID’)

The PDF report contains the R code used to generate the predictions for each scenario as well as summary text and figures for the model suites.

Each scenario directory (e.g., “802B” directory for MFJD) for a given study basin will have two folders and the PDF prediction report within it. The two folders hold the input data and the output data for the scenario. The prediction output from each scenario has already been collated and made available in the README directories for each study basin, so extracting individual scenario predictions is unnecessary, but available in these directories as well.