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### Data S2

### Download and format raw stream sensor data from streampulse.org

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### File list

download\_rawSPdata.R

correct\_level\_data.R

gap\_fill\_level.R

update\_rating\_curves.R

calc\_avg\_channel\_crosssections.R

calc\_discharge\_from\_crossection.R

prep\_raw\_SPdata.R

**Description**

This code can be run from the master.R file contained in the data supplement DataS1 and relies on the data contained in that file.

download\_rawSPdata.R – Downloads all raw sensor data from the streamPulse data portal ([www.streampulse.org](http://www.streampulse.org)) based on the site list contained in the NHCsite\_metadata.csv file.

correct\_level\_data.R – Downloads raw air pressure data from NOAA based on the latitude and longitude of sites. Uses NOAA air pressure data paired with manual depth measurements collected at each sensor visit (all\_nhc\_ysi\_data.csv) to convert water pressure data into stream level at each of the sites. Sensor data must be downloaded into the appropriate folder first by running the above script. Note, this file must first be run with the sites dataframe containing only NHC (row 1) to generate the corrected NHC level file which is then used to correct the other sites, by re running with all sites in the sites dataframe.

gap\_fill\_level.R – gap fills level data at the upstream and downstream sites based on data from the other sensor when one has missing data.

update\_rating\_curves.R – Calculates discharge rating curves for the upstream and downstream sites based on field measurements.

calc\_avg\_channel\_crosssections.R – Calculates average reach widths and depths in the 1km reach upstream of each site based on data from geomorphic surveys and on longitudinal transects of the entire study reach. Data referenced are contained in the longitudinal\_sampling data folder.

calc\_discharge\_from\_crosssection.R – Calculates a discharge based on widths, depths, and velocities collected using hand profiling with an electromagnetic sensor.

prep\_raw\_SPdata.R – Formats raw sensor data to be ready to run using StreamMetabolizer. Calculates average depths, incident light, discharge, and formats datetimes as solar times.