(a) Field data collection

Best Practices: Calibrate before deployment.

Place in thalweg with electrodes just off streambed.

Visit regularly to check for erosion/ deposition, field observations, and maintenance.

Decisions: Placement, logging interval, calibration range, maintenance frequency

raw_hobo_data.csv

```
1  "Plot Title: 20946471"
2  "#","Date Time, GMT-05:00","Temp, °C (LGR S/N: 20946471, SEN S/N:
   20946471)","Intensity, Lux (LGR S/N: 20946471, SEN S/N:
   20946471)","Coupler Attached (LGR S/N: 20946471)","Coupler Detached
   (LGR S/N: 20946471)","Host Connected (LGR S/N: 20946471)","Stopped
   (LGR S/N: 20946471)","End Of File (LGR S/N: 20946471)"
3  1,07/16/21 05:00:00 PM,27.764,88178.4,,,,,
4  2,07/16/21 05:15:00 PM,28.655,77156.1,,,,,
5  3,07/16/21 05:30:00 PM,28.060,74400.5,,,,,
6  4,07/16/21 05:45:00 PM,27.764,74400.5,,,,,
7  5,07/16/21 06:00:00 PM,27.862,74400.5,,,,,
8  6,07/16/21 06:15:00 PM,27.370,71644.9,,,,,
9  7,07/16/21 06:30:00 PM,27.764,77156.1,,,,,
10 8,07/16/21 06:45:00 PM,27.370,77156.1,,,,,
11 9,07/16/21 07:00:00 PM,27.173,77156.1,,,,,
12 10,07/16/21 07:15:00 PM,26.390,77156.1,,,,,
```

(b) STICr processing

Input: Raw CSV file exported from HOBOware

tidy_hobo_data

Output: Tidy data frame with datetime, tempC, and condUncal

Step 1 Decisions: Download frequency, time zone conversion

Input: Calibration standard data

get_calibration

Output: Fitted model relating SpC to condUncal

Input: Tidy data frame and model

apply_calibration

Output: Tidy data frame with SpC column added

Step 2 Decisions: Whether to calibrate, functional form (currently linear)

Input: Tidy data frame including condUncal or SpC

classify_wetdry

Output: Tidy data frame with wet/dry classification column added

Step 3 Decisions: Classification variable (condUncal, SpC) and method (absolute, percent, y-intercept)

Input: Classified data frame

qaqc_stic_data

Output: Classified data frame with QAQC column added

Step 4 Decisions: QAQC flags (Negative, Outside calibration range, short-term Deviation), set negative SpC values to 0

Input: Classified data frame and field observations

validate_stic_data

Output: Field observations joined to nearest-in-time STIC data

Step 5 Decisions: Download frequency, max time difference between logger and observation

(c) Data evolution