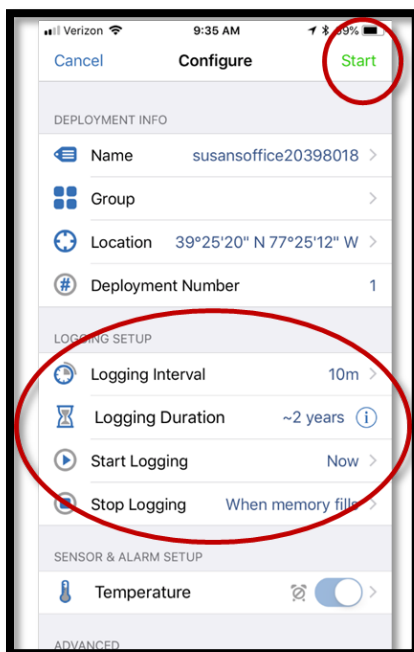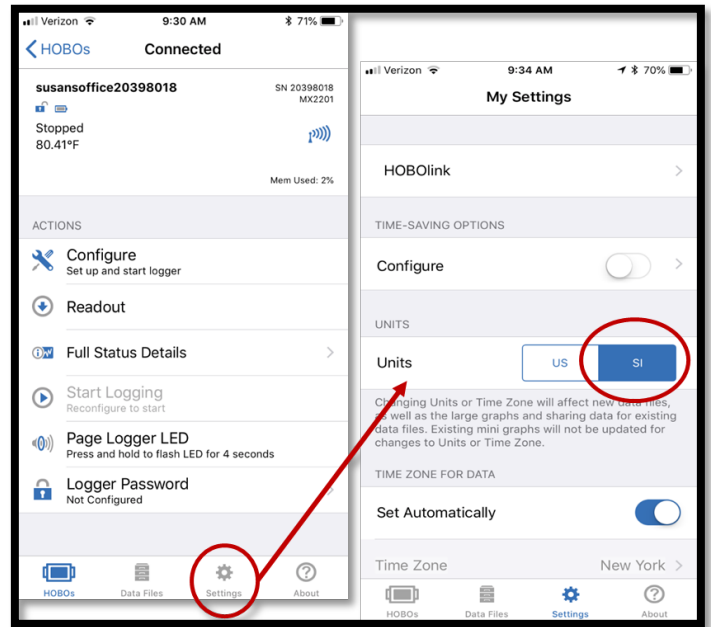## ONSET HOBO Pendant Logger MX2201

- Uses a free HOBOMobile app for iPhone or Android devices
- Requires devices to be Bluetooth 4.0 or newer
- ~$59 each from ONSET and Amazon
- Replaceable batteries
- Fully programmable
- Exports files to multiple formats such as CSV

CONFIGURE THE LOGGER BEFORE DEPLOYMENT

Prior to deploying:

- Check and update basic settings (time zone, units)
- Ensure the logger is collecting in scientific units
- Secure the logger to its appropriate housing and ensure appropriate ID is on the housing.

• Configure the Logger as needed (name, interval time)

Deployment Info

• You may add a name, but please keep the Serial number in the name

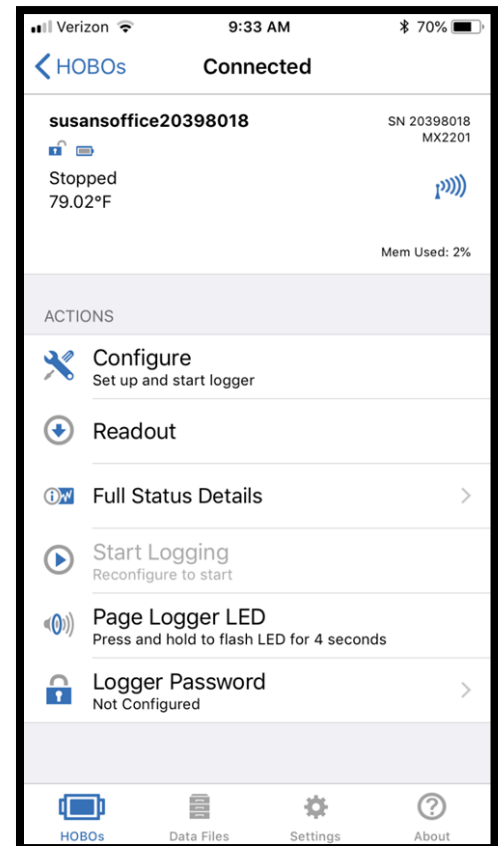• Groups are not necessary, but feel free to create one.

Logger Setup

• Logger Interval: 15 minutes

• Start Logging: select a day and hour AFTER you expect to deploy the units

• Stop Logging: When Memory fills is fine, because you will readout the data before the memory is full.

DOWNLOAD (READOUT) THE DATA FROM YOUR LOGGER

Can be done at any time, while leaving the logger running and deployed. If you do choose to remove the logger from its deployed site, stop the logger from collecting data and to preserve the battery life.
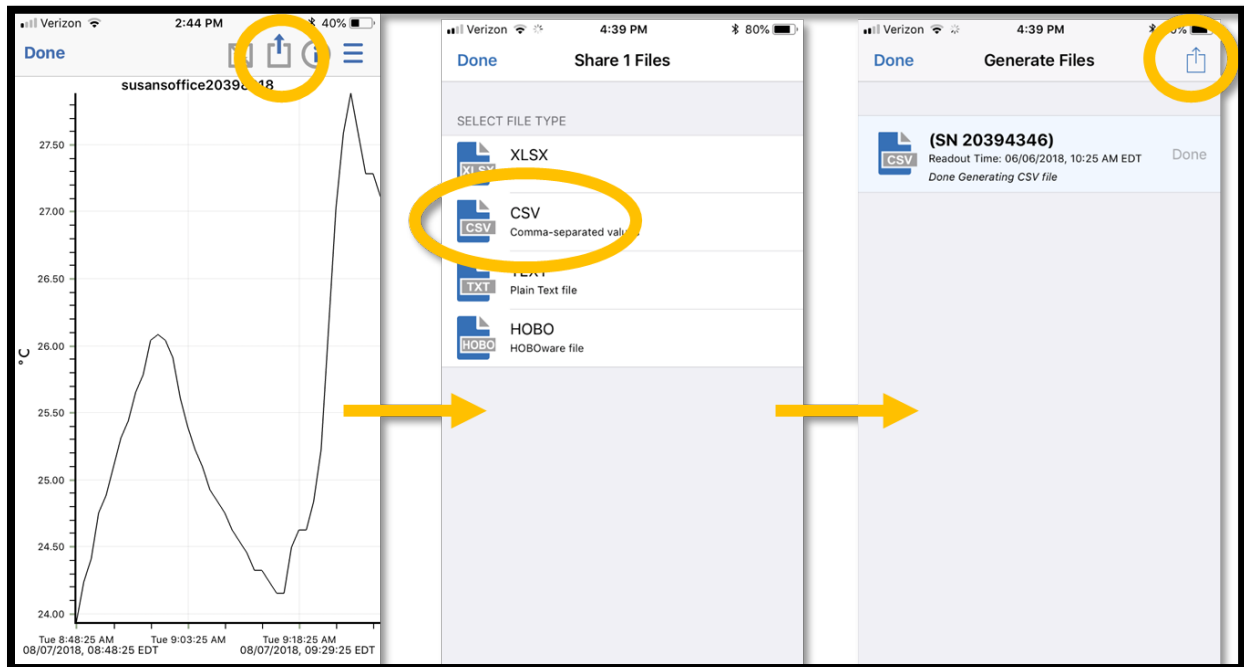
- "Wake" the logger by selecting the center button on the logger. You may have to press hard, or use the blunt end of a pen, taking care not to pierce the plastic.
- On the HOBOmobile app: select the logger of interest.
- (skip this step if you are leaving the logger deployed) Stop the logger from recording temperatures if you are removing it from its deployed site.
- Select "Readout" to retrieve the data from the logger to a file on your device.
- The file will remain on your device until you send/share it.

Please note: Data will remain on the logger until you reconfigure the logger for its next deployment.

SEND THE DATA FILES FROM YOUR DEVICE to a location such as an email address.

- Go to the "Data Files" option from the bottom menu
- Press "Select" on top right of screen.
- Select the files
- Select the Share image (a square with an arrow pointing out of the square)
- Select the format (send CSVs to yourself, send HOBO format to CCWS)
- Select the share button and send to a location such as your email or shared drive that you can access from a desktop computer.
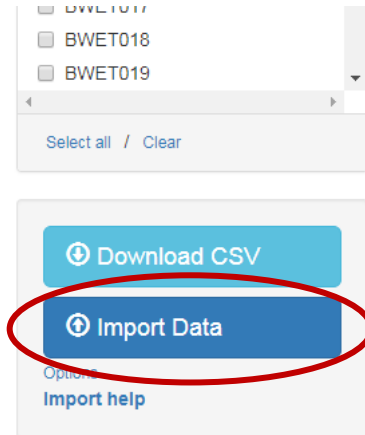

- Once at your computer, locate the files in the directory you save them. (If you emailed them to yourself, you'll need to download them to a directory or flashdrive you can access.)

DATA UPLOAD TO HOOD WEBSITE

BWET-STEM Project Site URL: http://ccwsscience.org

- Navigate to the data tab on the CCWSCIENCE.org website.
- Select the Import Data button (shown right)
  - **If this is the first time uploading data for a site,** enter a logical short descriptive location for your logger. Please include your school's County acronym Ex. FCPS UHS Water Site 1.
  - **If this is a repeat site,** enter the site name exactly as entered prior. Your browser many "remember" the full site name for you.
- GPS coordinates are optional
- Drag and drop the appropriate .CSV file from from your local directory.

Once successfully uploaded, a message will appear below the import data button noting if the file was uploaded and any errors. "Files Skipped" denotes temperature readings that were already in the website database and were not uploaded.

Data can be reviewed immediately. Bad readings or loggers that experienced problems with the clock can be reviewed by Hood staff for editing as appropriate.

*****REFRESH the page prior to importing the next logger file*****

USING THE WEBSITE

Students can start summarizing the logger data after all the data files have been uploaded to the BWET-STEM website (http://www.ccwsscience.org). **Please note! If a logger had inadvertently collected data when inside or not in the deployment site, this data must be deleted by Hood-CCWS. Please notify us of the logger number and time range that contains erroneous data**

Use the website to calculate the average temperatures for the various lessons in the program.

General Data Management Website Directions:

1. Go to: ccwsscience.org online and select the DATA tab.
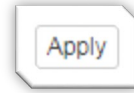2. Select the logger number(s) in the left hand column that you wish to view data.

    TIP: Complete the worksheet column by column which uses same date range.

3. Enter the data range to be studied in the "From:" and "To:" found at top right of page.

You will now see a graphical representation of the temperature recordings for that date range. Below the graph, a table will calculate the averages for the date/time range you desire.

5. Enter hourly time range, if desired. Specific time ranges are needed for the start and stop of individual rain events. Select the "Apply" button for the table to populate the calculated values.

6. To calculate temperature averages found during the daytime hours (0600-1800) or nighttime hours (1800-0600), select the appropriate button for the table to recalculate the values for the loggers selected.

TIP: Ensure the "ALL" button is selected (not the "Daytime" or "Nighttime" button) when calculating the Average Season Temperature & Rain Event Temp.

Other Tips:

• You can select more than one logger at a time to view data in the same time range.
• If a logger shut down early or malfunctioned prior to the end of the full deployment, temperature measurements may not be available.