

WELCOME!

EnviroDIY and monitoring in the DRB monthly meeting

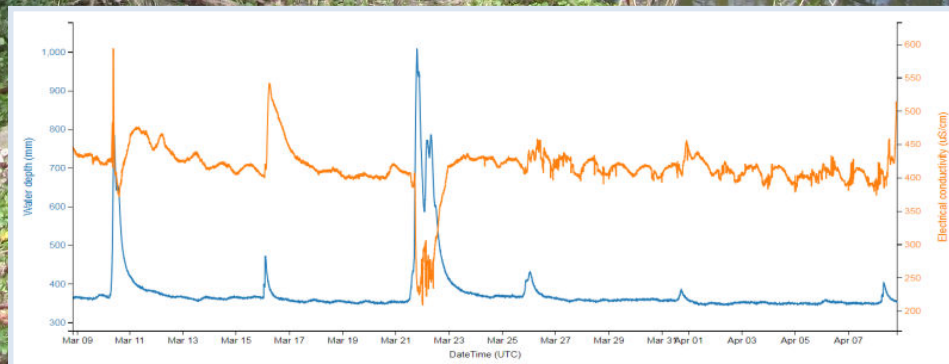
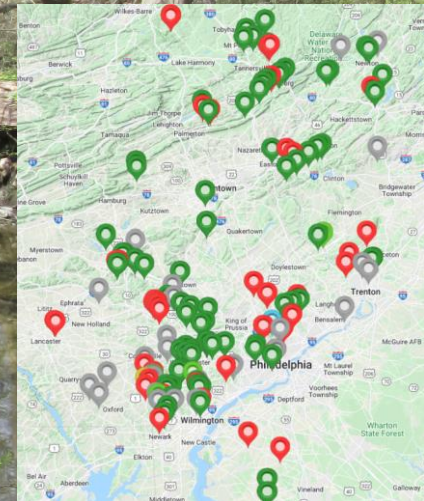
Online, Thursday, May 18, 2023, 2:30-3:30p



EnviroDIY



Monitor My Watershed®



STROUD
WATER RESEARCH CENTER

Today's Agenda

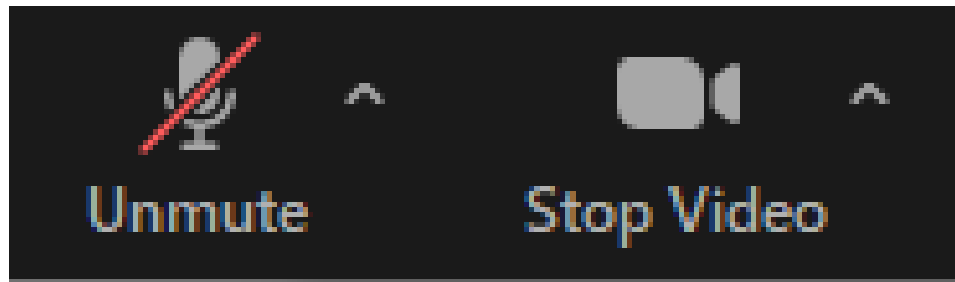
1. Introduction
2. Stroud Updates
3. Presentation – **Water Temperature – Part 2 – Monitoring and Data Usage at the Local Level**, Dave Bressler, Stroud Water Research Center
4. Discussion
5. Conclusion



Zoom Orientation



***Meeting is being recorded**



***Please mute when not speaking to the group**

These Monthly Meetings

Recordings available at: <https://wikiwatershed.org/drwi/>

YouTube

Search

WELCOME!
Monthly EnviroDIY-DRWI User Group Meeting
Online, Thursday February 17, 2021, 2:30-3:30p

EnviroDIY

Monitor My Watershed®

STROUD

February 2022 EnviroDIY-DRWI Monthly Meeting

24 views • Feb 17, 2022

1 DISLIKE SHARE SAVE ...

Stroud Water Research Center Videos
571 subscribers

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These Monthly Meetings

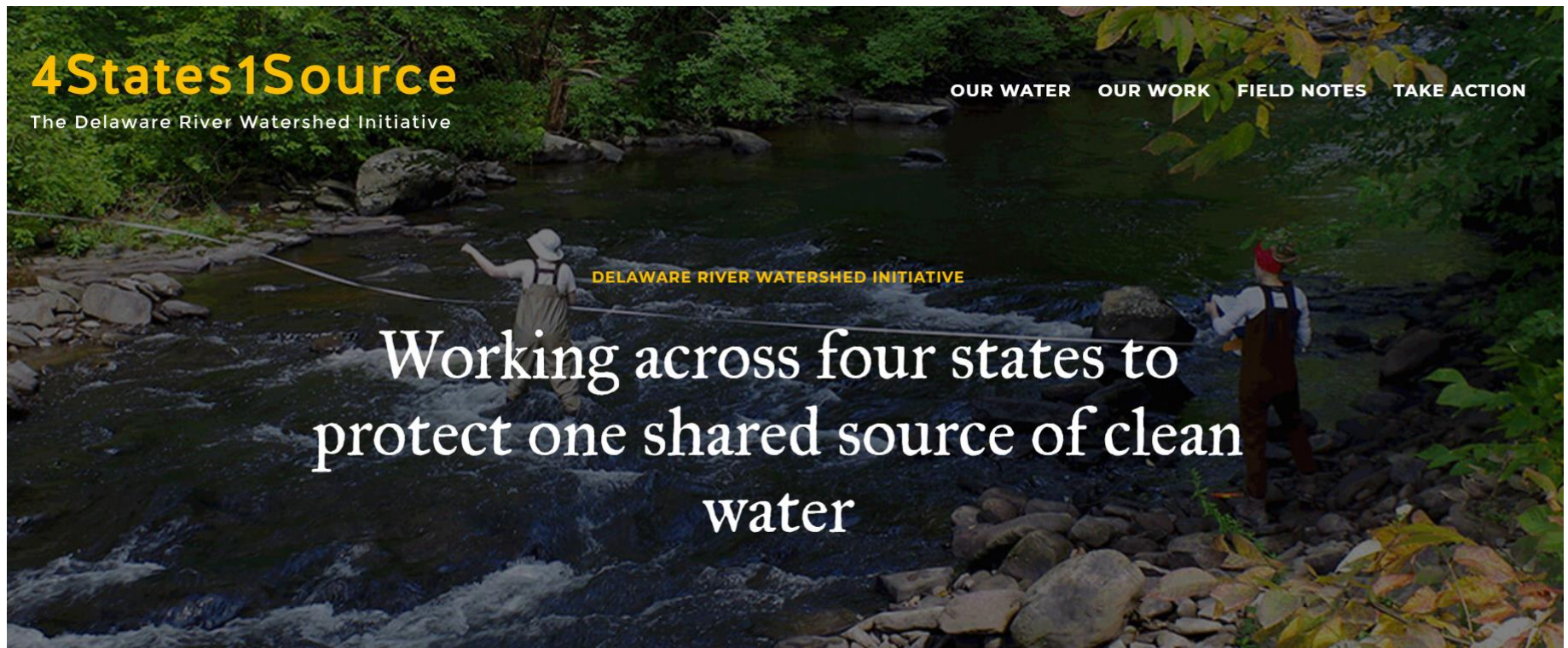
- Every third Thursday of the month
- 2:30-3:30p
- Zoom link will remain the same:
<https://us02web.zoom.us/j/81881801310?pwd=eUFmbXZLbmRibVcxa1dtNVhzRmNvZz09>
- Reminder email one week prior to each month's meeting
 - All are welcome, please share
 - **And let us know if others should be added**

REMINDER

- Attendees include:
 - Groups working in Delaware River Watershed Initiative (DRWI)
 - Groups working in Delaware River Basin (DRB) but not DRWI
 - Folks from outside the DRB
- Stroud Center support via DRWI and C-SAW

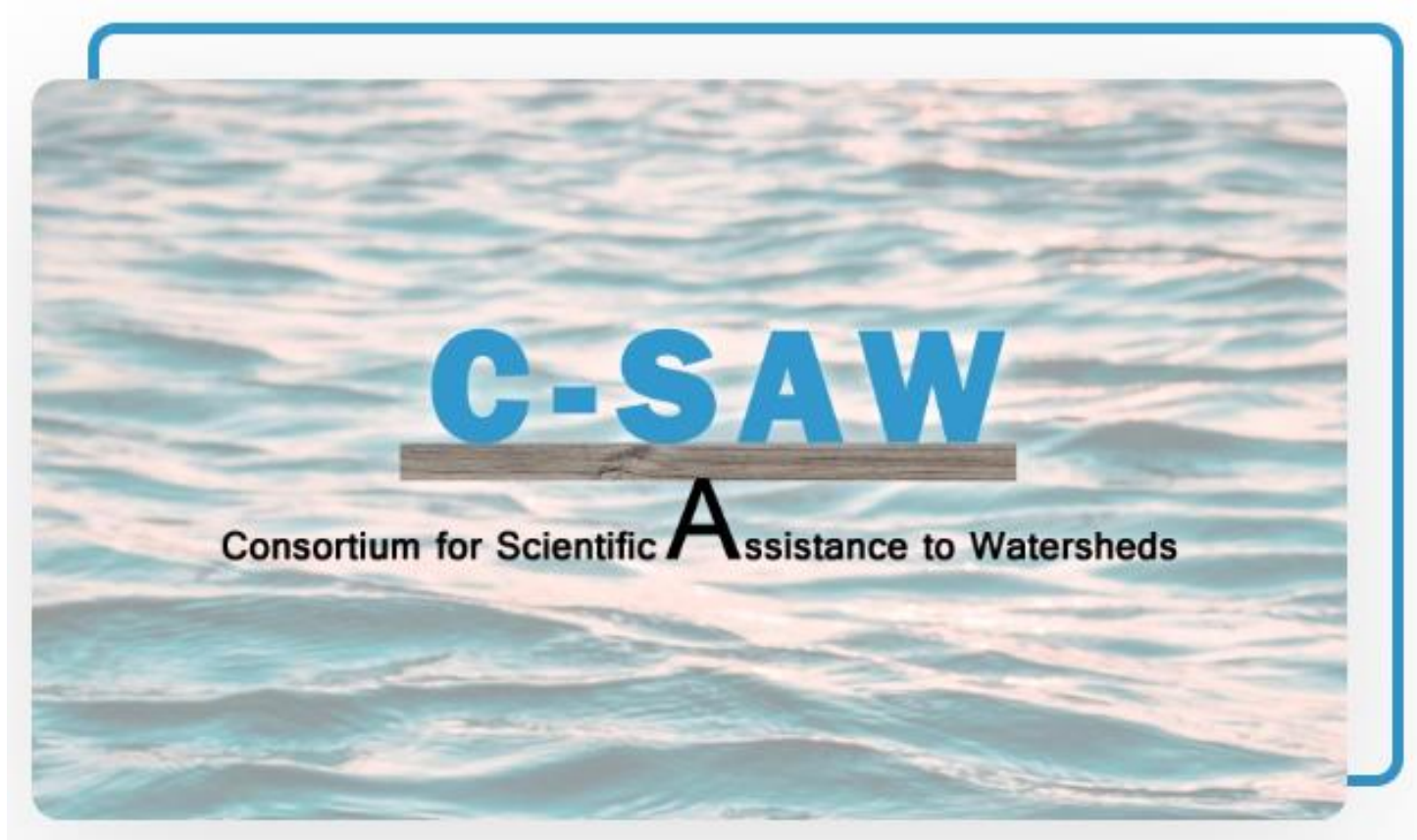
Delaware River Watershed Initiative (DRWI)

<https://4states1source.org/>



C-SAW

<https://www.c-saw.info/>



Goals for these monthly meetings

- **Time to check-in, ask questions, report issues, network, etc.**
- **Updates** from the Stroud Center
- **Presentations**
 - **Science**
 - **Monitoring**
 - **Watershed management**

****All of this to support gathering good data and using it purposefully***

Stroud Center project personnel

Stroud Center team:

David Bressler



Project facilitator

Rachel Johnson



Research Engineer
Technician

Christa Reeves



Northern DRB
technician and
organization
collaborator

Shannon Hicks



Research Engineer,
Mayfly and EnviroDIY
Inventor/Designer

Stroud Center project personnel

Master Watershed Steward Facilitators:

Carol Armstrong



George Seeds



Master Watershed Steward Program



PennState Extension

Stroud Center project personnel

Stroud Center DRWI Leads:

Dr. John Jackson



Senior Research Scientist

Matt Ehrhart



Director of Watershed Restoration

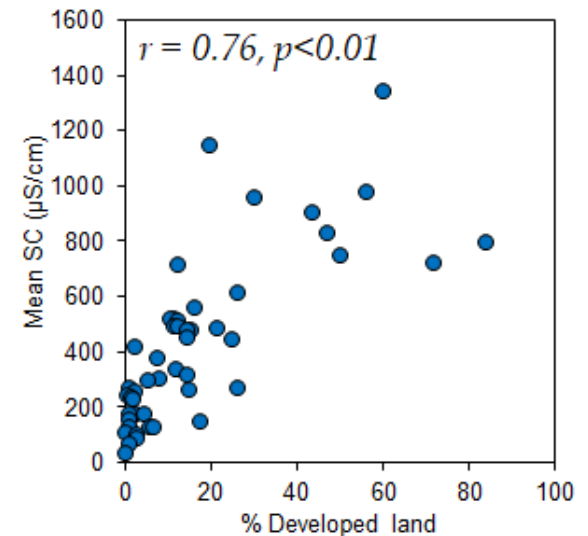
Dr. David Arscott



Executive Director, President
Research Scientist

Stroud Center Perspective – EnviroDIY in the DRB

- Primary Goal
 - Support Station owners, managers, and volunteers
 - Use stations for local purposes
- Secondary Goal
 - Analyze basin-wide data set
 - Develop tools to characterize and contextualize watersheds




Updates!

- Updates from the Stroud Center on EnviroDIY, science and monitoring, communications, etc.

EnviroDIY and monitoring resources


- Guidance materials - <https://wikiwatershed.org/drwi/>

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Home » Delaware River Watershed Initiative Resources

Delaware River Watershed Initiative Resources

The Delaware River Watershed Initiative (DRWI) is a cross-cutting collaboration that is working to [conserve and restore](#) the streams that supply drinking water to 15 million people in New York, New Jersey, Pennsylvania, and Delaware. In direct support of this initiative, [Stroud Water Research Center](#) is facilitating efforts to improve the capacity of watershed groups to conduct scientific investigations associated with DRWI projects, as well as to build general knowledge on the ecology of their watersheds and the broader basin.

These resources were created by the Stroud Center to assist DRWI efforts *specifically focused on stream monitoring using [EnviroDIY Monitoring Stations](#)*. They may also be of interest to community scientists and watershed groups working in other locations.

Shortcuts to General Resources

- [EnviroDIY Field Visit Data](#)
- [EnviroDIY Monitoring Station Help Resources](#)
- [Salt Monitoring Resources](#)
- [Data and Data Visualization Resources](#)

Shortcuts to Meetings, Workshops, Conferences

- [Monthly EnviroDIY-DRWI User Group Meetings](#)
- [User Support Workshops and Trainings](#)
- [Conference Presentations](#)
- [Watershed Ecology Workshops](#)

EnviroDIY Field Visit Data Form entry

<https://wikiwatershed.org/drwi/>

EnviroDIY Field Visit Data



Enter Field Visit Data

- [View field visit data](#)
- [View older data \(7/18/2017 to 7/24/2018\)](#)

EnviroDIY Field Visit Data Sheets (Printable)

- [EnviroDIY Field Visit Data sheet \(blank\)](#)
- [EnviroDIY Field Visit Data sheet tutorial](#)

EnviroDIY Monitoring Station Service Requests

Use this form to report technical issues that require assistance from the Stroud Center team.

Submit a Service Request

EnviroDIY Field Visit Data Form entry

<https://wikiwatershed.org/drwi/>

- Fill out any time a station is visited



EnviroDIY Field Visit Data

Enter all data online: wikiwatershed.org/drwi/; password: drwi

Name(s):			
Site ID:	LoggerID:		
Stream Name:	Location:		
GPS (Lat/Long):	Date: Arrival Time: AM/PM? *EST/EDT?		
Photos? Yes/No	*EST=Eastern Standard Time; EDT=Eastern Daylight Time (Daylight Savings)		
Precipitation last 24 Hours? Yes/No Amount:	Water Clarity (Clear, Cloudy, Muddy):		
General Notes/ Photo Descriptions:			

SENSOR CLEANING (Recommended frequency: weekly or biweekly; monthly if only CTD sensor)

*Cleaned Sensors? Yes/No If Yes, exact time: AM/PM? EST/EDT? *Clean >5 min. before grab sampling

A screenshot of the EnviroDIY Field Visit Data form. The header features the EnviroDIY logo and a photo of a circuit board. The form includes fields for Name(s), Site ID, LoggerID, Location, Date, Arrival Time, AM/PM, EST/EDT, Photos, Precipitation, Water Clarity, General Notes, Email, and Site ID. It also includes a link to the webmaster and a "Switch account" button.

EnviroDIY Field Visit Data

If you have trouble with this form, please contact webmaster@stroudcenter.org.

Please enter your email so we can send you a copy of your submitted data and a link for editing.

dbressler@stroudcenter.org [Switch account](#)

* Required

Email *

Your email

Name(s)

Your answer

Site ID *

Choose

EnviroDIY Service Request Form

<https://wikiwatershed.org/drwi/>

EnviroDIY Field Visit Data

Enter Field Visit Data

- [View field visit data](#)
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EnviroDIY Field Visit Data Sheets (Printable)

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EnviroDIY Monitoring Station Service Requests

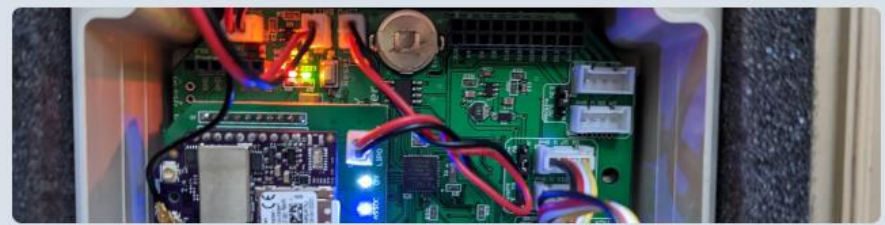
Use this form to report technical issues that require assistance from the Stroud Center team.



Submit a Service Request

EnviroDIY Service Request Form

- **Simpler form**
 - Required info now is very basic – all other info is optional
- **Anyone with assistance needs should complete this**
 - To make internal record-keeping easier



EnviroDIY Monitoring Station Service Request Form

Please complete this form with as much information as possible to assist Stroud Water Research Center technicians in troubleshooting your problem.

*Please note, station assistance is only available to groups working within the Delaware River Basin.

 dbressler@stroudcenter.org (not shared) [Switch account](#)



* Required

Name (first and last) *

Your answer

Organization *

Your answer

Support on Snapshots

- Stroud Center support on synoptic sampling (aka **snapshots** or blitzes)
 - Salt (chloride and conductivity)
 - Water temperature
- *Please be in touch if you would like support in doing this type of monitoring*

If you want, send your photos and stories



Email or Text to:

- Diane Huskinson (dhuskinson@stroudcenter.org; 717-383-1179)
- Dave Bressler (dbressler@stroudcenter.org; 410-456-1071)

POWR Conversation Cafe



Putting Water Quality Data to Work, Locally: A Conversation Café May 17, 2023 at 6 PM

POWR, along with our partners from Stroud Water Research Center, Penn State Extension Master Watershed Steward Program, and a small working group of watershed organization leaders invite you to a special Conversation Café to explore challenges and opportunities for meaningfully sharing water quality monitoring data with municipal officials, EACs, and the public for improved land use planning and decision-making.

POWR is excited to host this event to give you the opportunity to talk about your experiences, challenges, questions, and ideas related to sharing, using, and applying the water quality data you have gathered to help inform land use and other local policy, practices, and planning.

This event is FREE but registration is required to receive the Zoom link.

[REGISTER NOW](#)

Recording available – contact Tali MacArthur,
tmacarthur@pecpa.org

Coming months

- June 15 – Christa Reeves – flow data usage with USGS on Musconetcong (tie in with local policy/practice use of depth data)
- July 20 – Updates/progress presentation from local policy/practice workgroup
- **Aug 17 – Volunteer? 2023 water temperature in DRB?**
- Sept 21 – John Jackson (Stroud), science of salt pollution and recent advances
- Oct 19 – Dave Bressler (Stroud), monitoring of salt pollution and what to do with the data (tie in guidance from local policy/practice workgroup)
- **Nov 16 – Volunteer? Requested topic?**
- Dec 14 – Dave Bressler (Stroud), end of year summary and planning for 2024
 - **Meeting is currently Dec 21 – suggestion to move it to Dec 14*

Updates from Local Policy/Practice Workgroup

- Updates from Ian Brastow, Lopatcong Creek Initiative/New Jersey Highlands Coalition, NJ

Update from Local Policy/Practice Workgroup

Agenda from May 3 Workgroup Meeting:

- 1) Putting Water Quality Data to Work Locally: A Conversation Café
- 2) Types and forms of resource documents to emerge from the workgroup.
- 3) Welcome to Steve Tricarico

Updates from Local Policy/Practice Workgroup

- **Current leadership:**

- Ian Brastow, Lopatcong Creek Initiative/New Jersey Highlands Coalition (NJ)
- David Manning, PA Master Watershed Steward and Schuylkill Water Steward with Green Valleys Watershed Association (PA)
- Christa Reeves, Musconetcong Watershed Association (NJ)
- Alex Jackson, Brodhead Watershed Association (PA)
- Erin Landis, Wissahickon Trails (PA)
- Joe Debes, PA Master Watershed Steward and Stroud Center volunteer (PA)
- Carol Armstrong, PA Master Watershed Steward (PA)
- Tali MacArthur, PA Environmental Council (PEC)/PA Organization for Watersheds and Rivers (POWR)(PA)
- *NEW* Steve Tricarico, Tulpehocken Creek Watershed Association, member Bern Township planning committee (PA)

- **Support:**

- David Bressler, Stroud Water Research Center (PA)

- ***Meetings: 1st Thursdays, 11 am (Zoom, <https://zoom.us/j/5889670619>)***

The Workgroup's Charge

To develop the most effective ways of employing stream monitor data to advise and otherwise influence municipal entities.

Types and Forms of Resource Documents

- **Four documents** that focus on the fundamentals of stream monitoring data and their relation to land use and development:
 1. Temperature
 2. Depth
 3. Conductivity
 4. Turbidity (not priority, because of turbidity data/sensor issues)
- **One document** (5) that provides guidance in identifying and talking to appropriate municipal decision makers.

Example: Resource Document for Stream Temperature Data

- **Determinants of stream temperature** – natural and anthropogenic
- **Temperature thresholds** for aquatic organisms
- **Land use or development of concern** with respect to stream temperature
- **Factors that might motivate municipalities** to modify land use or development related to impacts on stream temperature
- **Case studies**

Resource Document for Working with Municipal Decision Makers (#5)

- **One document** (5) that provides guidance in identifying and talking to appropriate municipal decision makers.
 - **Identifying the decision makers** and the hierarchies within which they work.
 - **Identifying what decision makers care about.**
 - Local economy
 - Community sentiment
 - Compliance with county, state, and federal mandates
 - **Establishing a sense of collaboration.**
 - Participation in meetings or on advisory committees
 - Sharing model ordinances and mutually beneficial grant opportunities
 - Shouldering some of the workload, *e.g.*, BMPs with respect to MS4 requirements
 - Being there as a knowledgeable and trustworthy resource

Any questions before we move on?



Today's presentation

- **Water Temperature – Water Temperature – Part 2 – Monitoring and Data Usage at the Local Level**, Dave Bressler, Stroud Water Research Center



Topics

- Monitoring
 - EnviroDIY continuous data
 - Other continuous data, e.g., Hobo Tidbits
 - Synoptic sampling (aka Snapshot)
- Using temperature data at the local level
 - Following up on discussions between Dave Manning and Steve Tricarico

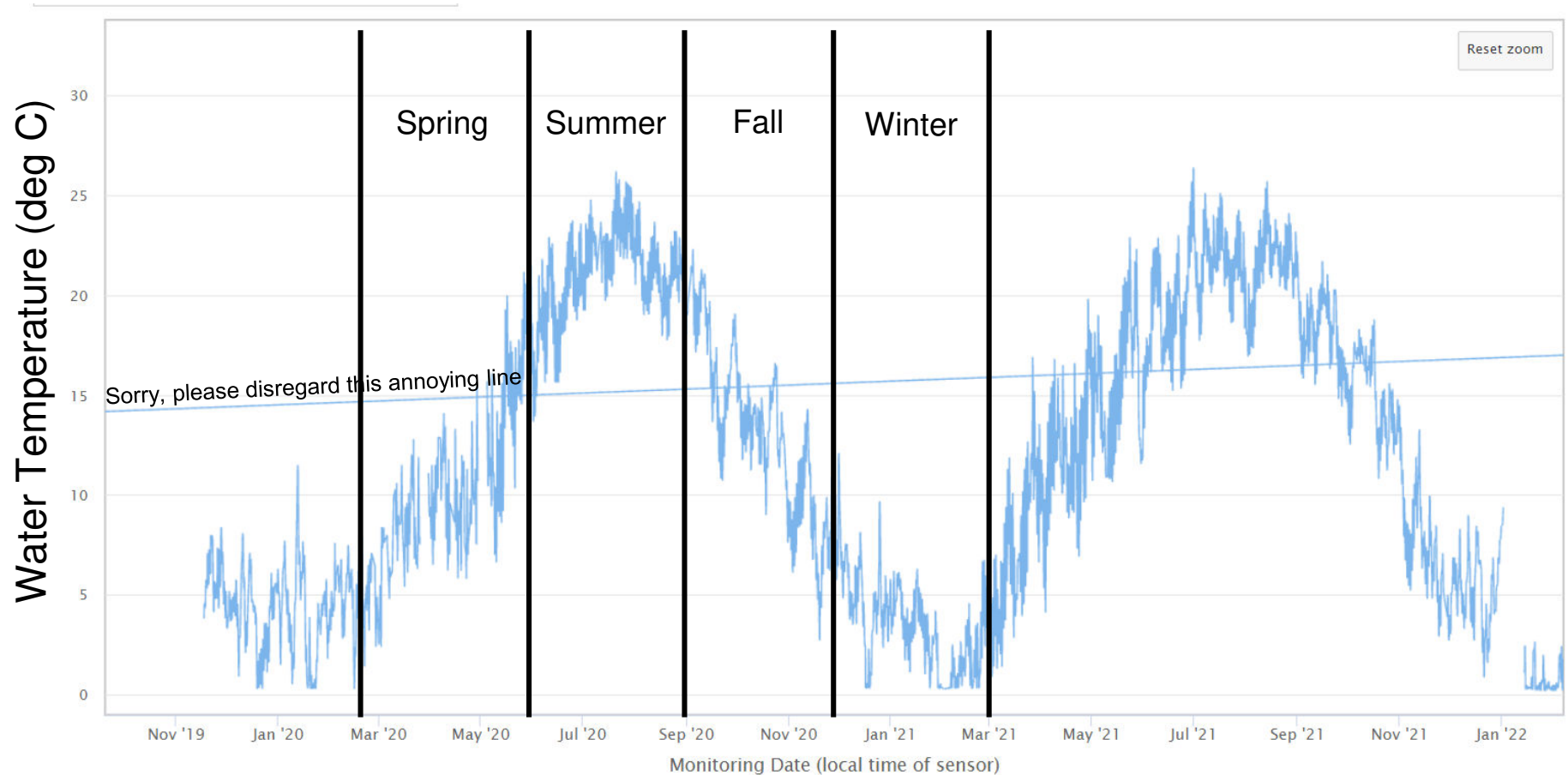
Monitoring water temperature in detail

- **Three potential sources of water temperature data**
 - Continuous, online, real-time - EnviroDIY station
 - Temporally detailed
 - Spatially limited
 - Cost \$\$\$
 - Continuous, potentially online, not real-time – Hobo Tidbit
 - Temporally detailed
 - Spatially limited (but less so than EnviroDIY)
 - Cost \$\$
 - Synoptic – hand held meters, not online, spatial detail
 - Temporally limited
 - Spatially detailed
 - Cost \$

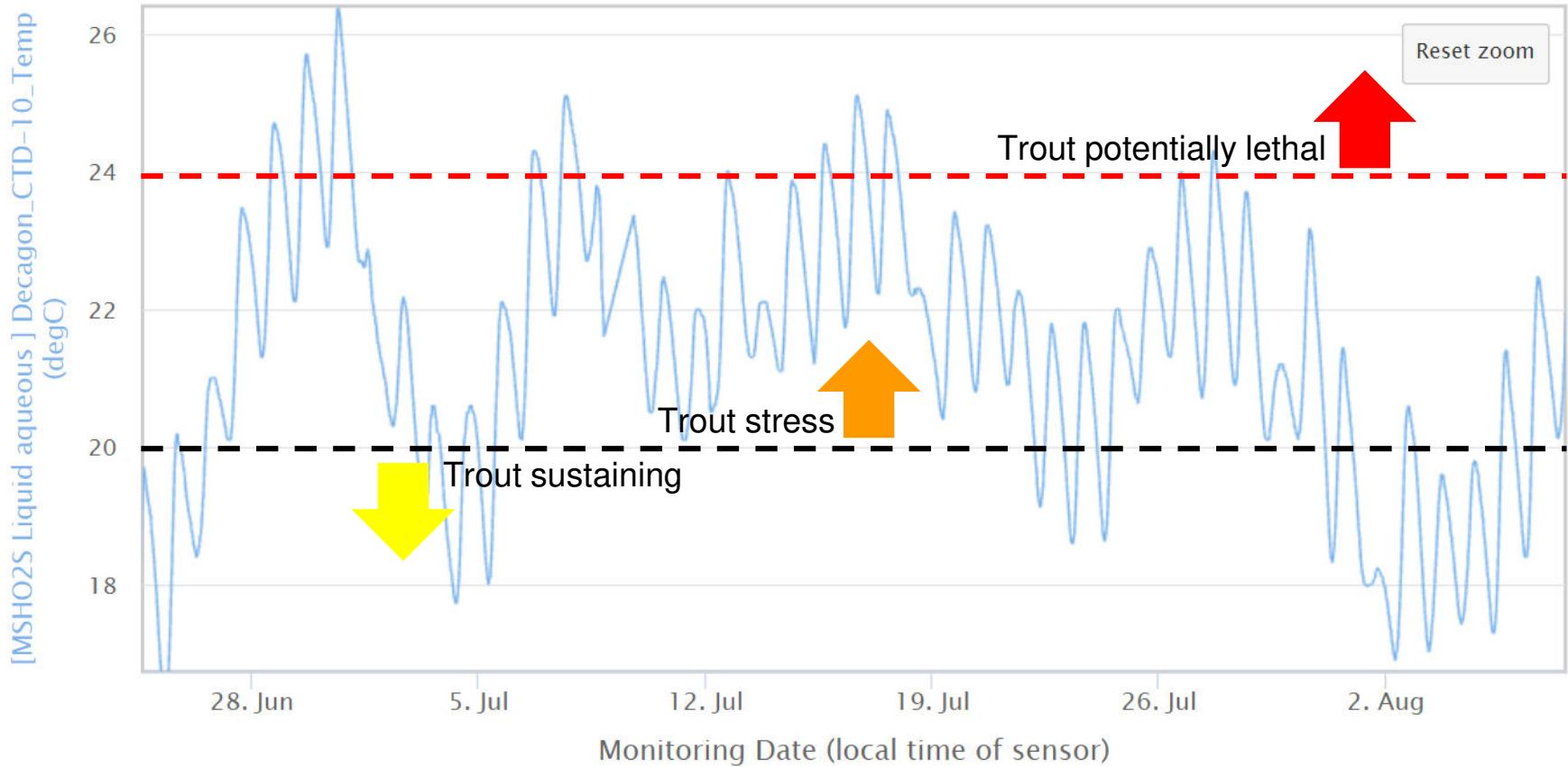
Continuous temperature data



Continuous data shows patterns through the year



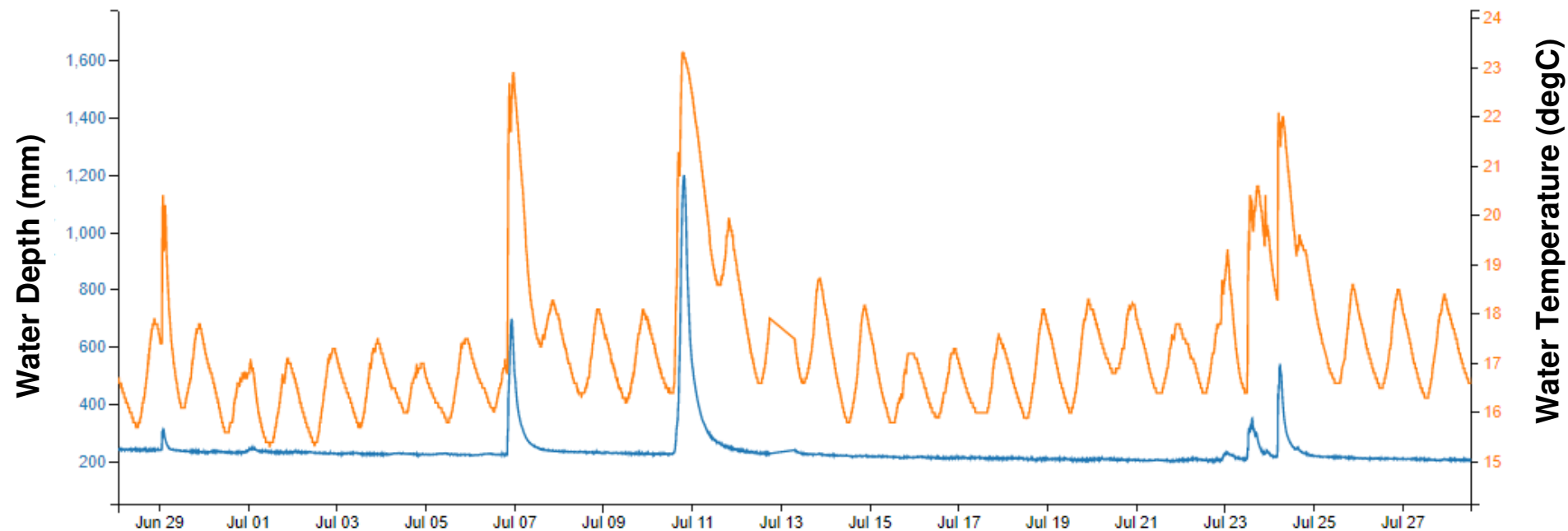
Continuous data show daily patterns



Continuous data can show stormwater thermal pollution

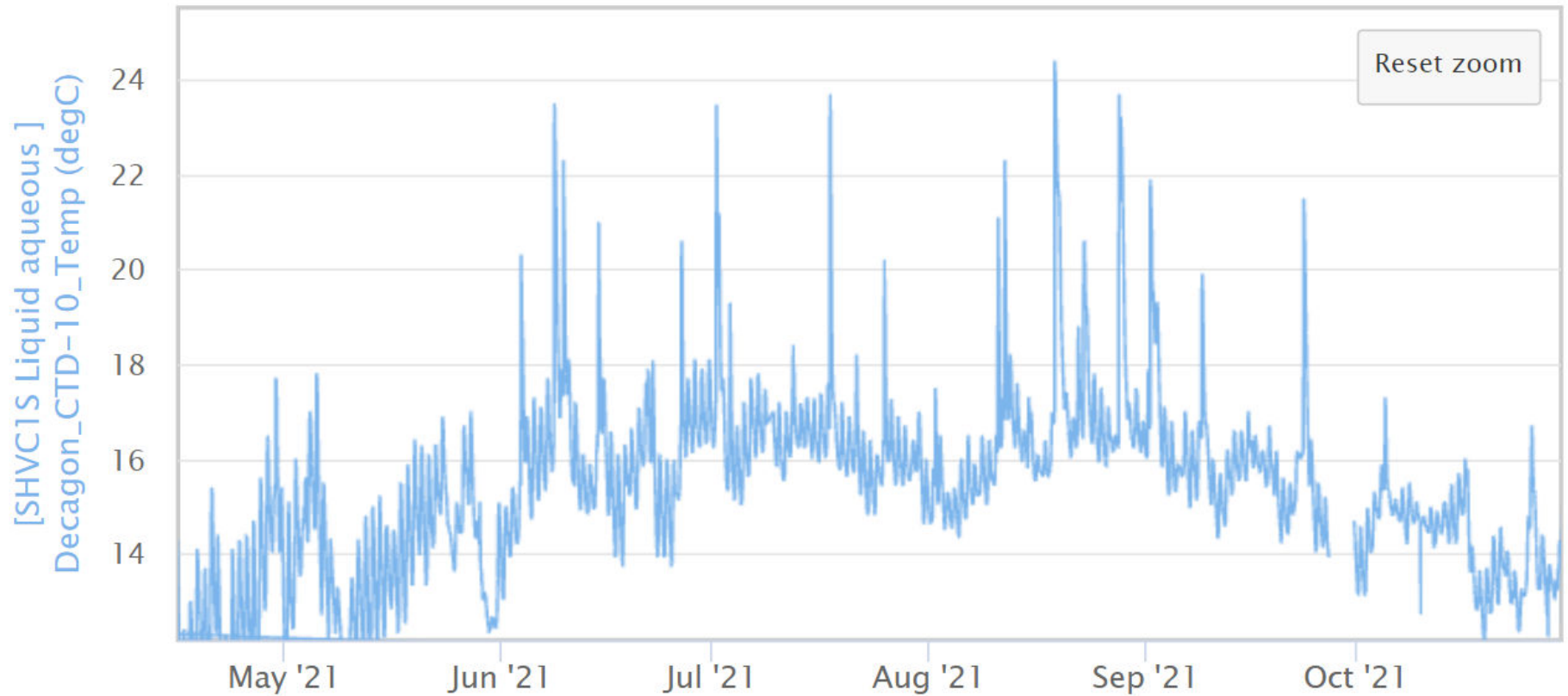
Depth increase indicates association with storms

- Runoff from hot asphalt?
- Overflow from warm stormwater ponds?

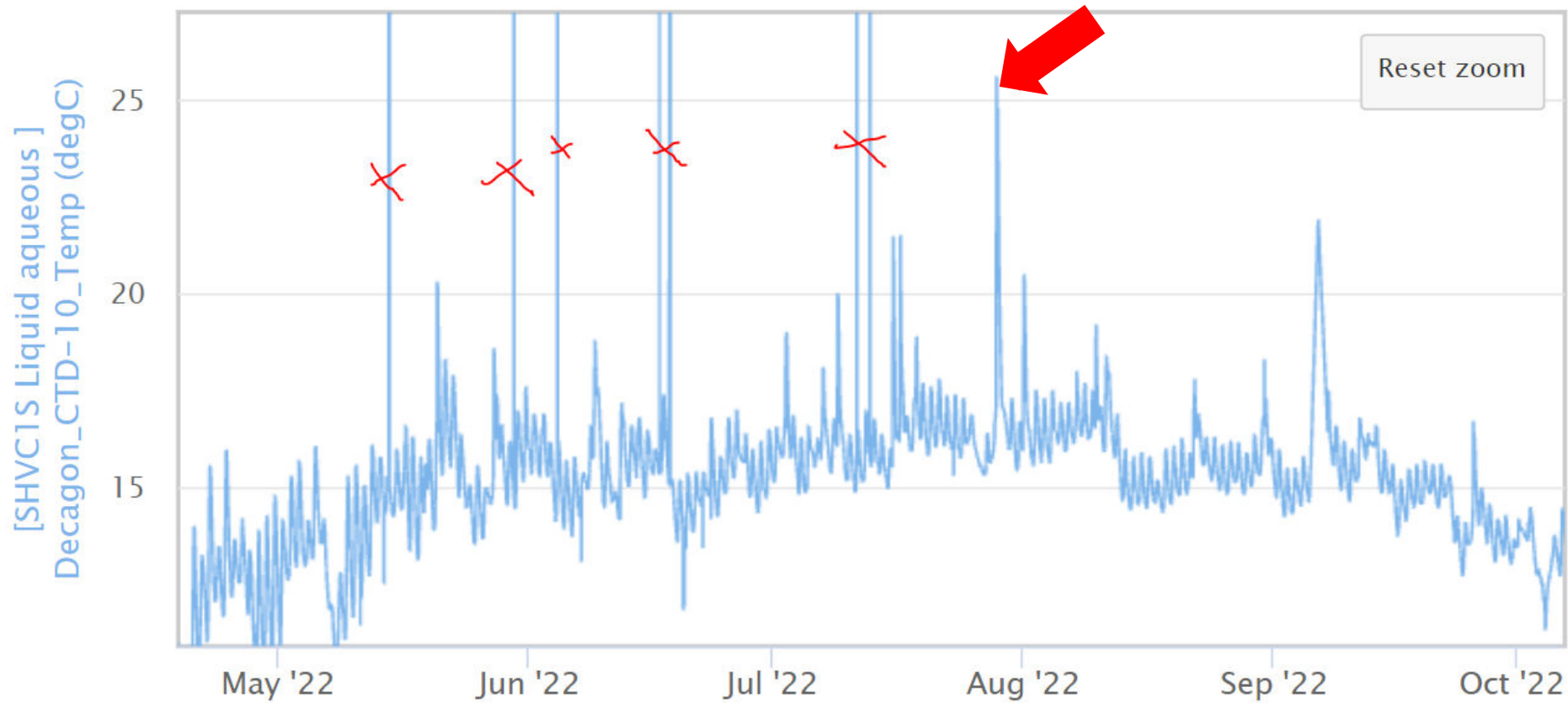


Valley Creek at Valley Creek Park, 2020

Continuous data can show stormwater thermal pollution



Continuous data can show stormwater thermal pollution



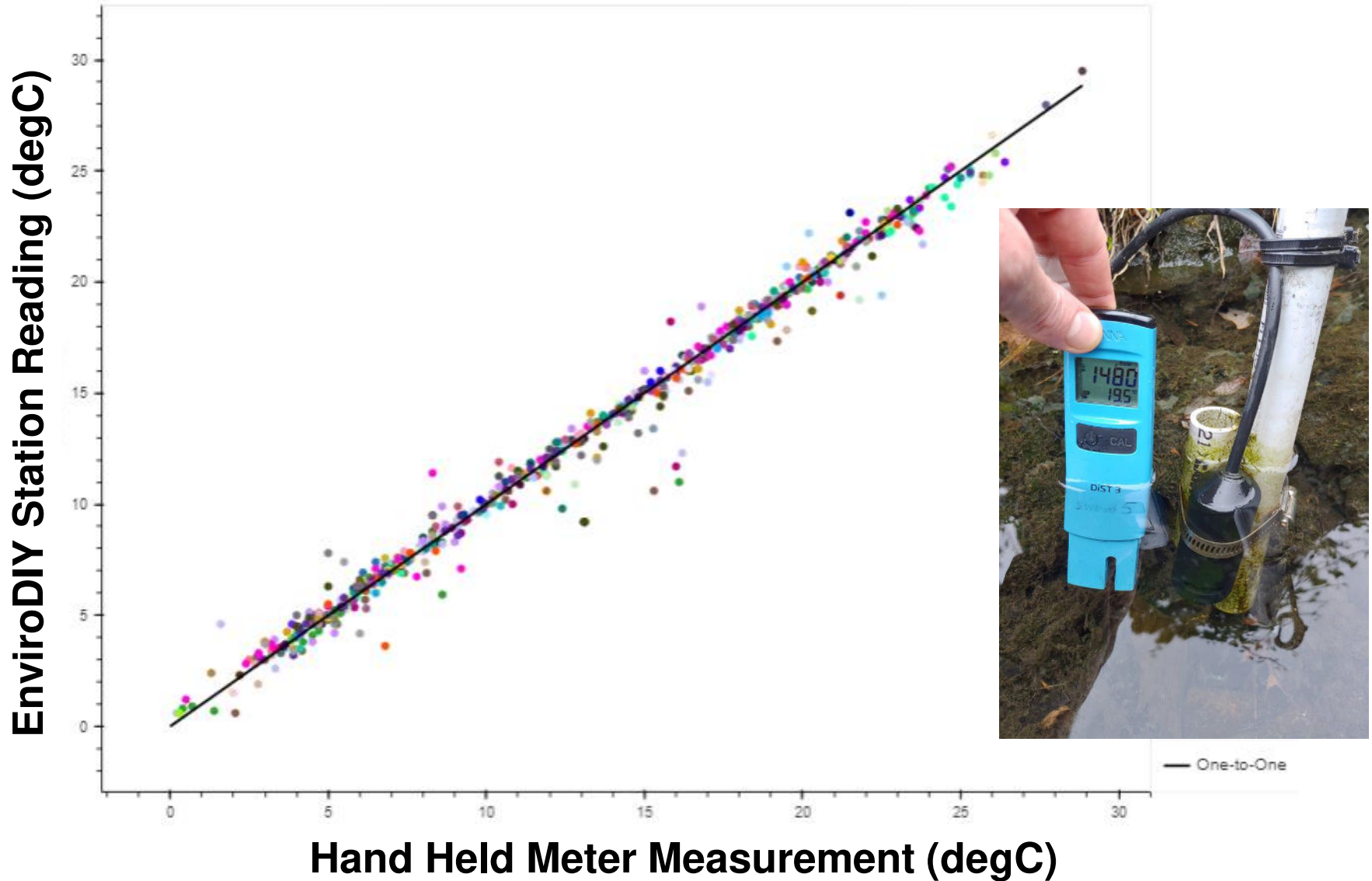
Literature suggests these thermal surges are harmful

- Quick increases in water temperature cause surges of stress hormones in trout (e.g., Fowler et al 2009)
 - Worse effects on adult and larger trout.
 - Experimental temperature increase range was 13 to 25 degC
 - Which is a wider range than seen on Valley Ck (17-25 degC)
 - However, the rate of increase was actually quicker in Valley (5.3 degC/hour) than in their experiment (3 degC/hour)
- Suggests that populations may be affected (e.g., via reproduction – bigger more mature fish, better reproduction)
- Plus anglers like bigger fish (as an angler/community concern)

Zahn, E., Welty, C., Smith, J.A., Kemp, S.J., Baeck, M.L. and Bou-Zeid, E., 2021. The hydrological urban heat island: Determinants of acute and chronic heat stress in urban streams. *JAWRA Journal of the American Water Resources Association*, 57(6), pp.941-955.

Fowler, et al. 2009. A comparison of the heat shock response in juvenile and adult rainbow trout (*Oncorhynchus mykiss*) — implications for increased thermal sensitivity with age. *Can. J. Fish. Aquat. Sci.* 66: 91–100 (2009) doi:10.1139/F08-192

Quality Control – make sure the data are correct



EnviroDIY monitoring stations

- Continuous, online, real-time - EnviroDIY station
 - Temporally detailed
 - Spatially limited
 - Cost \$\$\$



~\$1200 with CTD sensor



EnviroDIY monitoring stations



~\$1200 with CTD
sensor



Data transmission directly to
online portal in near real-time
(pay cell bill)

Semi-permanent installation –
need to tend to station

Wires, exposure to vandalism
from humans and animals,
damage from floods, etc.

Need to pay attention to the data
on a daily basis to ensure
functionality

EnviroDIY monitoring stations

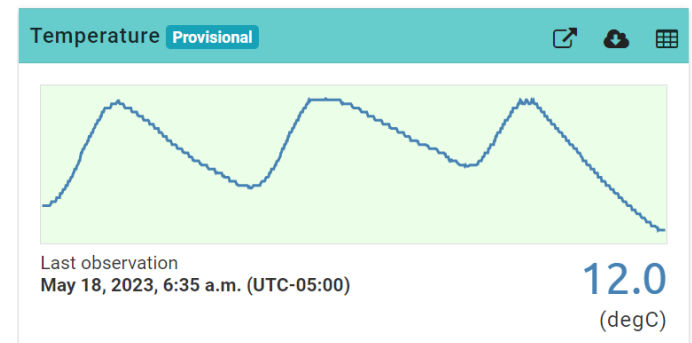


~\$1200 with CTD
sensor



Building, installation,
maintenance – all more time and
money than options that follow

But gives you ability to see in
real-time what is happening –
this is the main difference
between EnviroDIY and Hobo
Tidbit and other loggers)



Data loggers, e.g., Hobo Tidbit

- Continuous, potentially online, not real-time – Hobo Tidbit
 - Temporally detailed
 - Spatially limited (but less so than EnviroDIY)
 - Cost \$ - \$\$



\$69

Data loggers, e.g., Hobo Tidbit



\$69

Set timing for data collection e.g., data point every 15 minutes

Shield logger from direct sunlight

Inexpensive installation

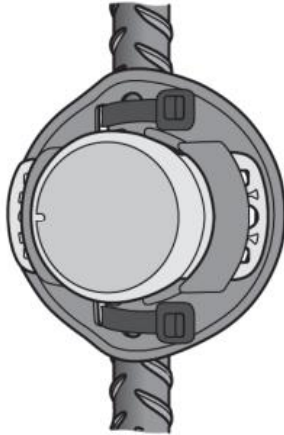
Download monthly or semi-monthly via Bluetooth (MX Temp shown)

Download data in spreadsheet format

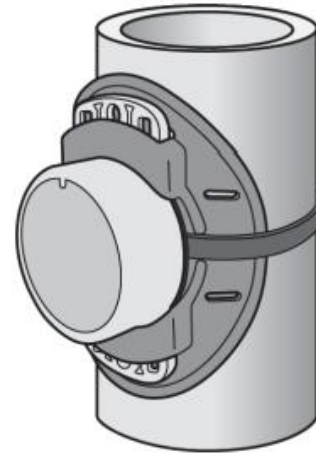
Online option: can transform column headers, incorporate UUIDs, for upload to Monitor My Watershed (online but not real-time)

Data loggers, e.g., Hobo Tidbit

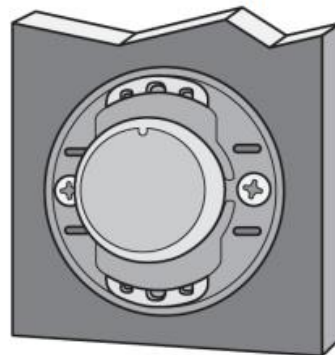
To mount the logger in a boot to a small pipe, use two of the cable ties included with the boot as shown.



To mount the logger in a boot to a large pipe, use one of the cable ties included with the boot as shown.



To mount the logger in a boot to a flat surface, use two #8 screws as shown. Do not overtighten the screws.



Data loggers, e.g., Hobo Tidbit



Data loggers, e.g., Hobo Tidbit



Data loggers, e.g., Hobo Tidbit



**FIGURE 8. PVC HOUSING
FIXED TO REBAR USING A
NYLON STRAP (ZIP TIE).**



**FIGURE 7. TIDBIT FASTENED
INTO PVC CAP USING A TIE
STRAP (ZIP TIE).**

Synoptic sampling – hand held meters

- Synoptic – hand held meters, not online, spatial detail
 - Temporally limited
 - Spatially detailed
 - Cost \$-\$\$



<https://www.cabelas.com/shop/en/white-river-fly-shops-stream-thermometer>



<https://www.lowes.com/pd/ThermoPro/5013718935>



\$64

Synoptic sampling – hand held meters



\$11

<https://www.lowes.com/pd/ThermoPro/5013718935>

People power – use lots of people to get the data

Low cost equipment – need to choose thermometers that will work for the people (readable, calibration necessary?, cost)



\$10

<https://www.cabelas.com/shop/en/white-river-fly-shops-stream-thermometer>

Situational – can be adjusted to accommodate the group dynamics and its intentions

Concept – detailed temperature monitoring

1. Real-time, online, continuous data

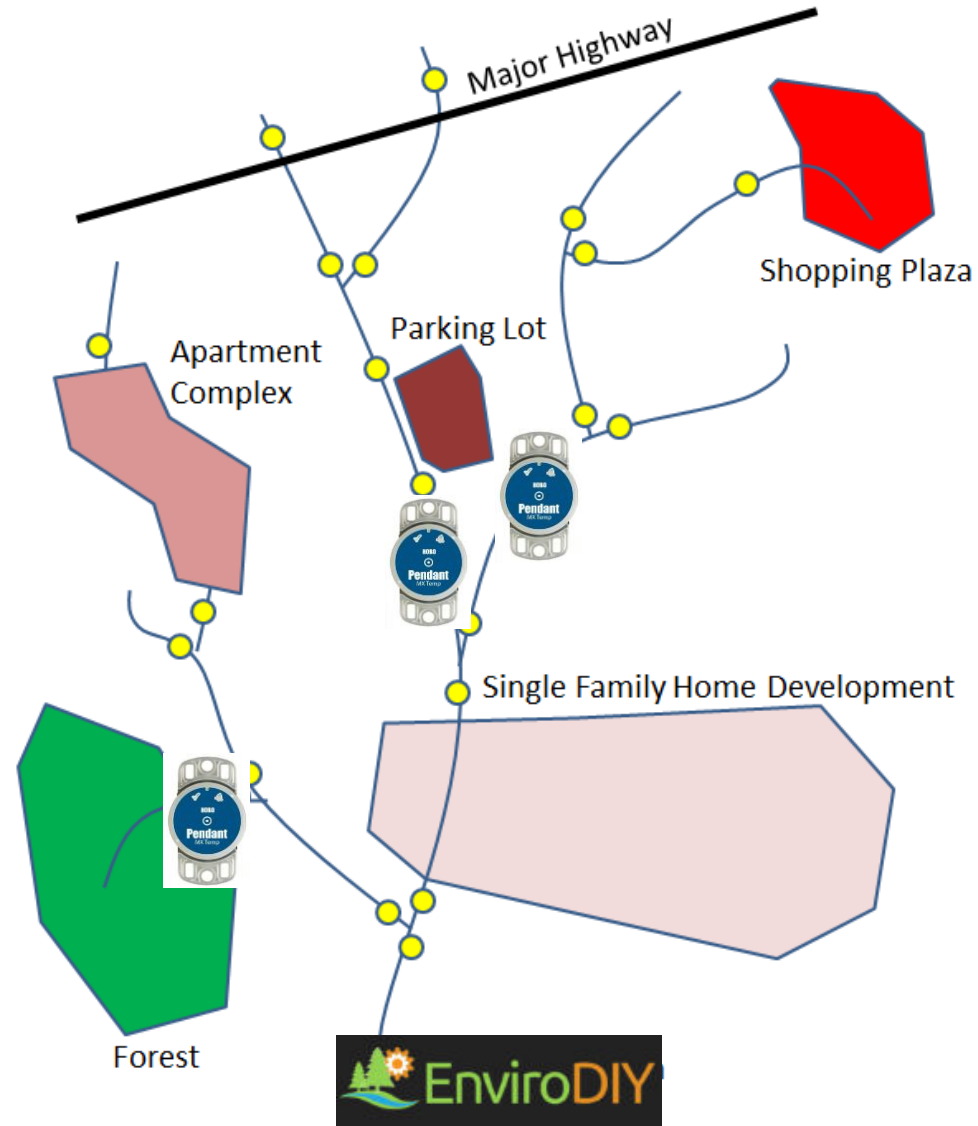
- a. Use as a foundation
- b. Can always see what's going on

2. Continuous data (online if needed)

- a. Additional continuous data in major tribs and key spots

3. Synoptic sampling data

- a. Point-in-time – timing important
- b. Increase spatial detail (a snapshot of the watershed)



Temperature Snapshot

Detailed protocol being finalized



Summer High Temperature Snapshot Instructions

Overview

The following is a method for documenting approximate maximum/high temperatures of streams and rivers across a watershed by measuring water temperature during baseflow conditions during peak temperature hours during the summer.

The intent of this method is to 1) determine approximate maximum water summer temperatures that aquatic life (e.g., trout) is exposed to on hot summer days in streams of a watershed or region and 2) identify specific areas of a watershed or region that may be contributing to or preventing thermal pollution.

The basic method:

Over several hours in the afternoon on a typical hot summer day, a group of people fans out across a watershed (or other area of interest) during baseflow conditions and measures water temperature at pre-determined stream sites. Sites are strategically

Continuous data

- **Concept**

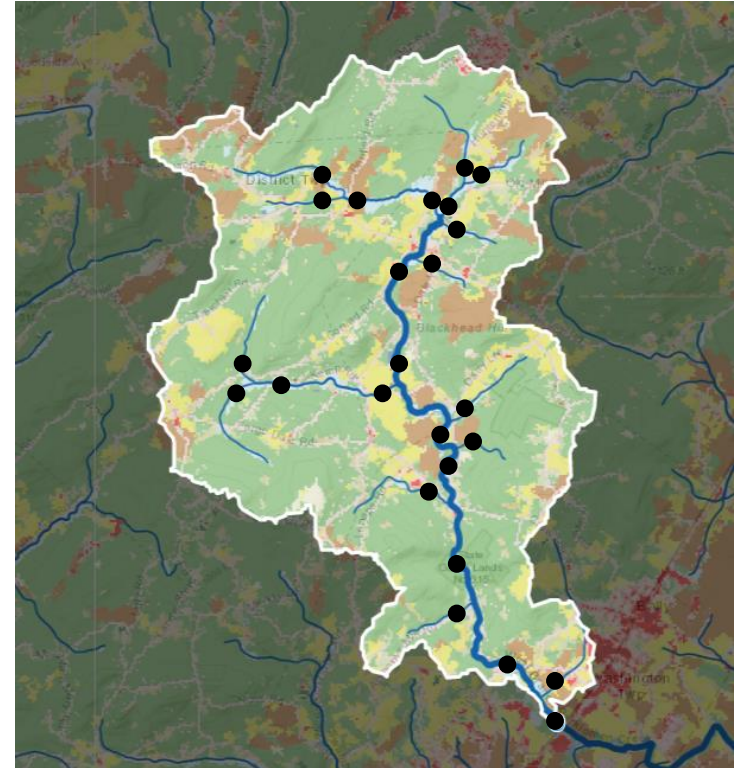
- Real time, online (EnviroDIY) – place at locations where viewing data in real-time is important for
 - Tracking stream conditions
 - Strategizing on other sampling (e.g., snapshots)
- Not real time, not automatically online (Hobo loggers) – place at locations where frequent data will be informative, e.g.,
 - In a forested area as control
 - Downstream of effluents, stormwater BMP discharges, or any likely thermal pollution sources



Temperature Snapshot

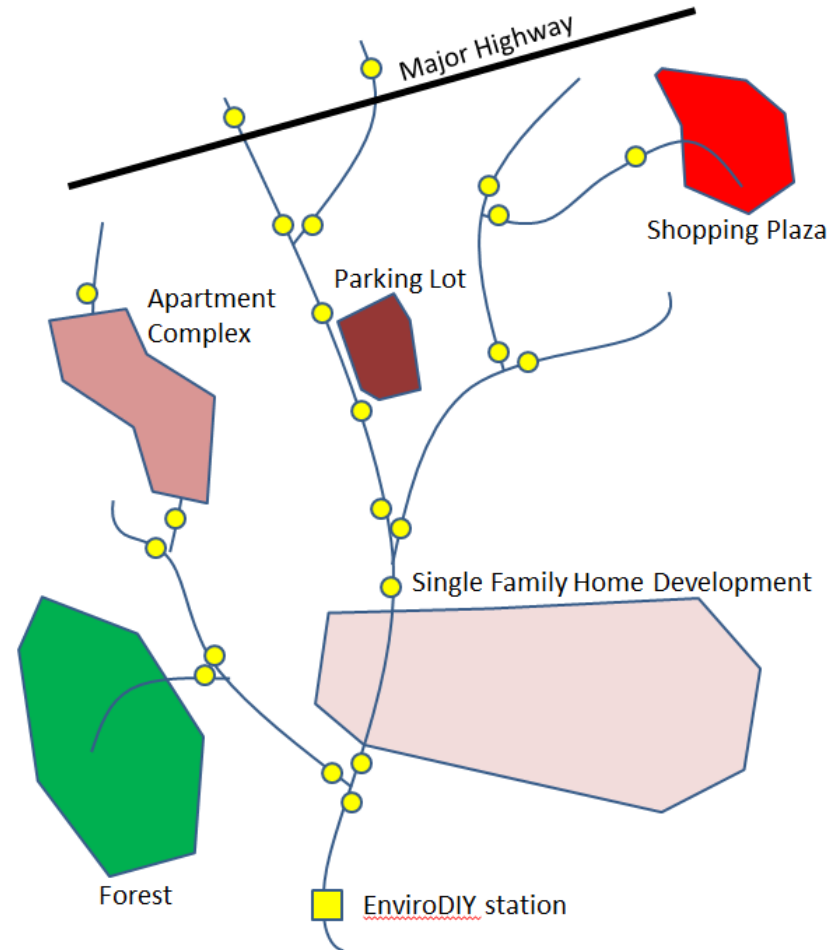
- **Concept**

- Sample sites throughout a watershed at the same time
- Choose locations that represent whatever variations and potential thermal pollution sources or cold water refuges may exist
- Aim to do measurements at/near when maximum water temperature is occurring
 - Average max temp in streams of Delaware Basin ~3:30pm



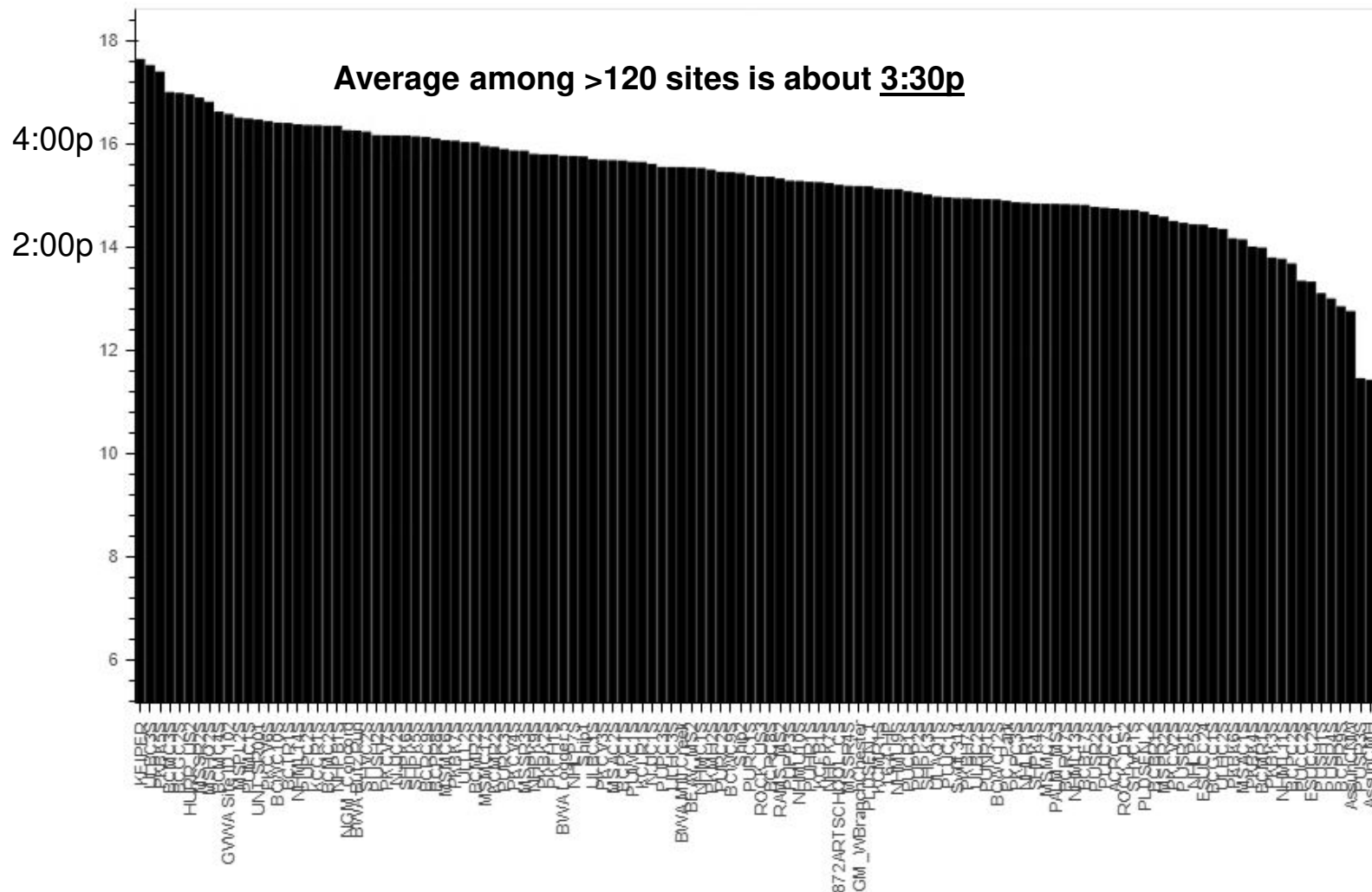
Temperature Snapshot

- **Results intended to show**
 - Where cool refuges are
 - Where warmer problems areas are
 - Possible reasons for warm/cool water temperatures

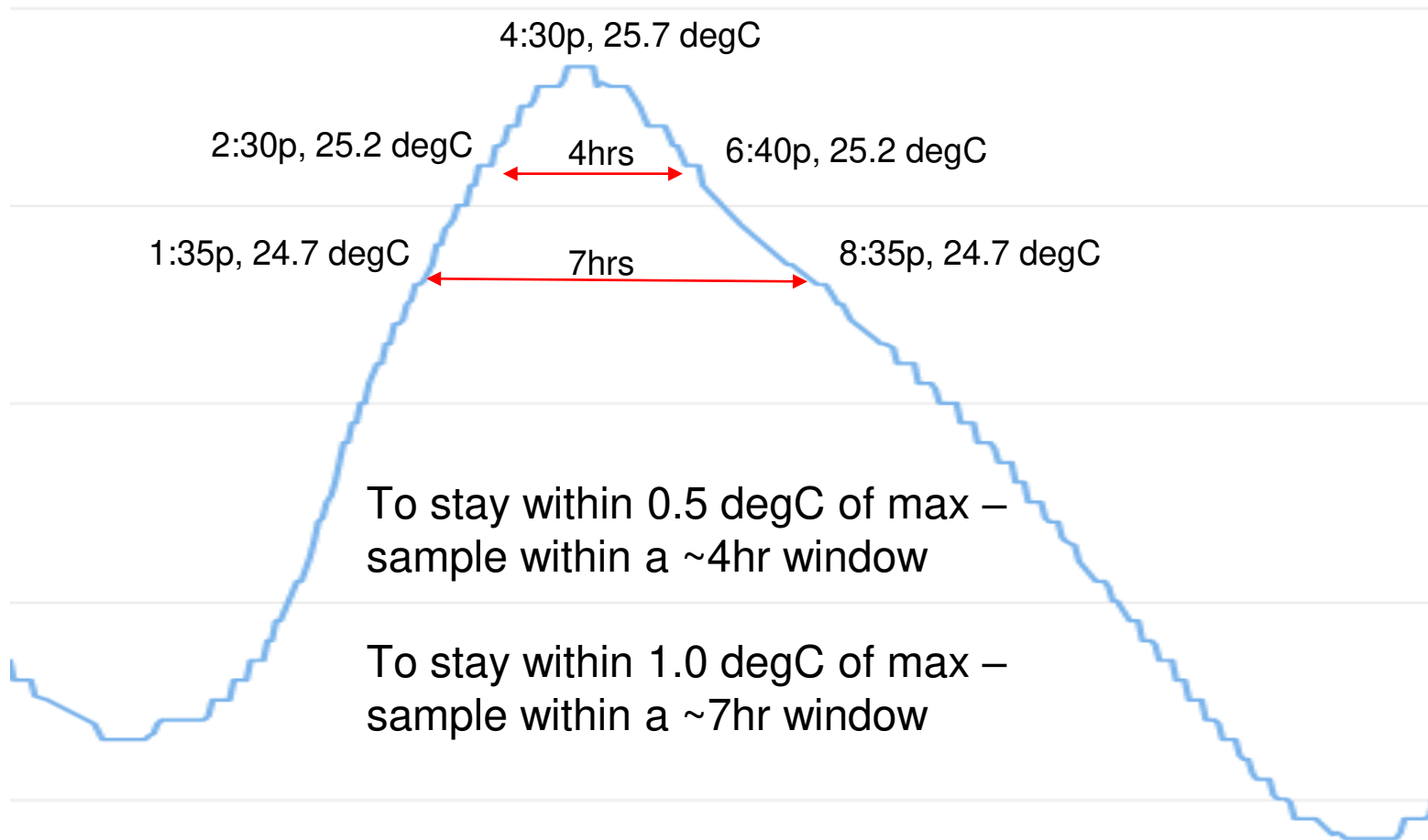


When to sample to get the hottest water?

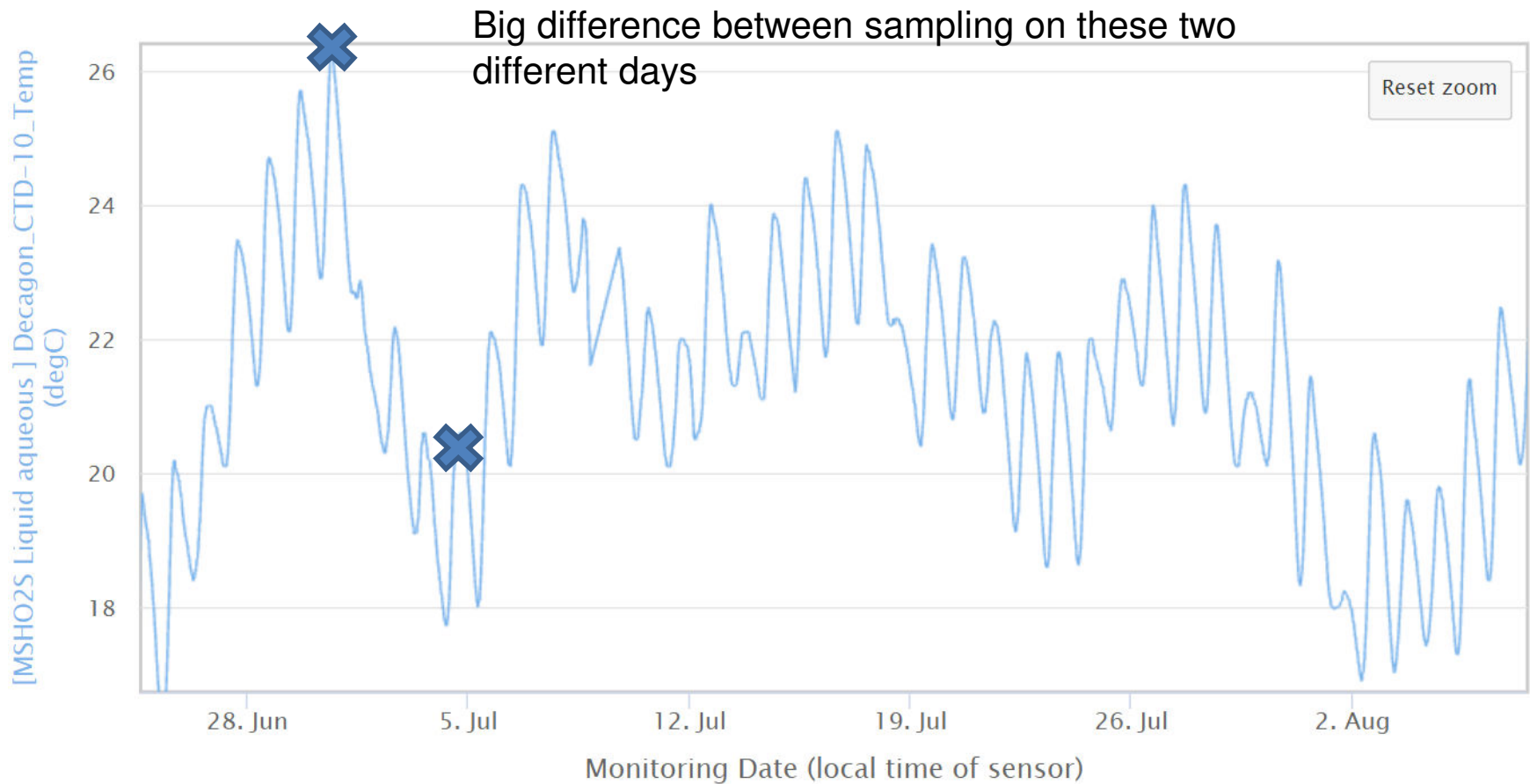
Average time of summer day when maximum water temperature occurs



How big of a window to sample in?



Need to choose a normal or hot day



Snapshot data sheet

Hardy copy for printing and spreadsheet for final data entry

[illegible]

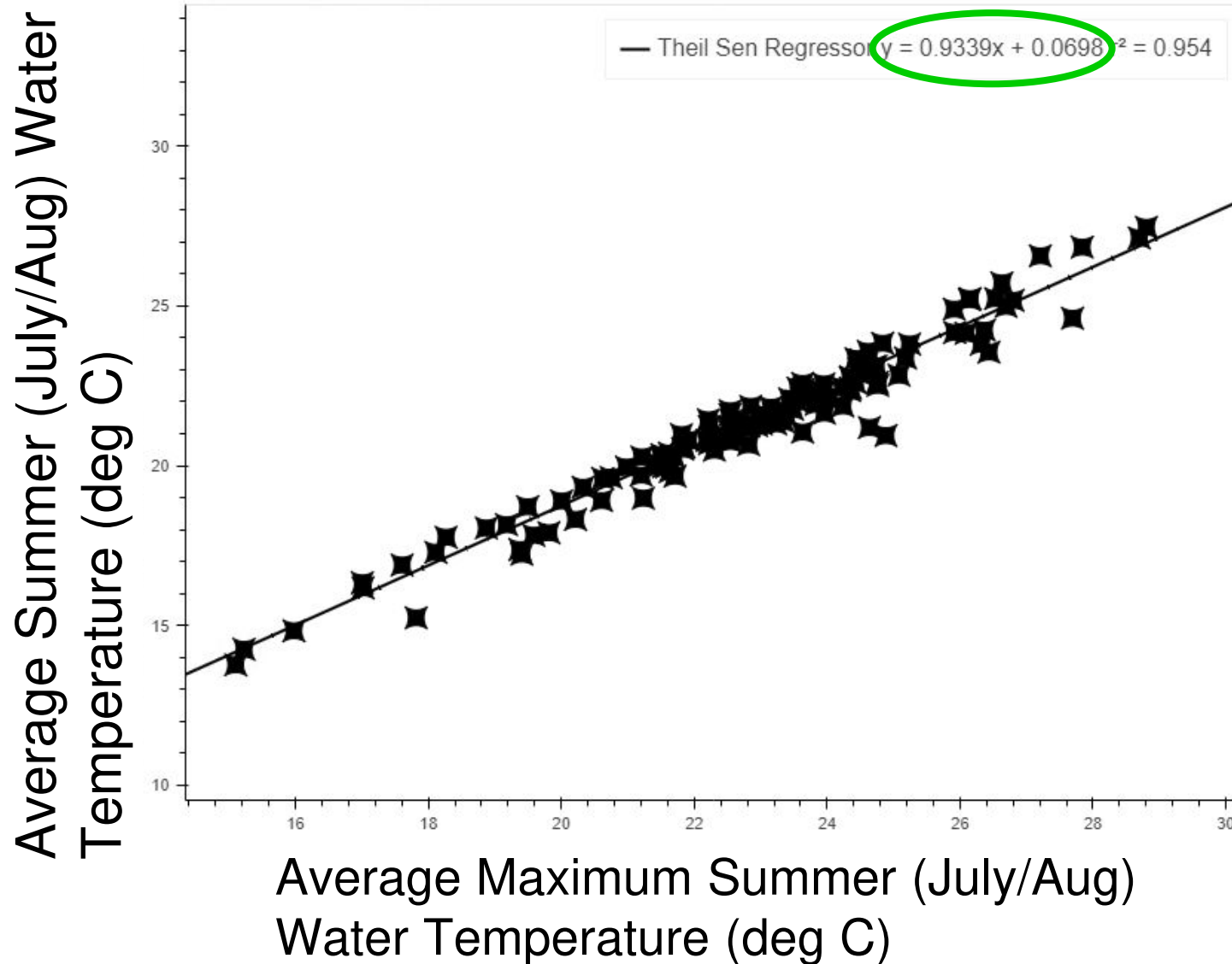
Keep in mind about a snapshot

- It will always allow you to compare between your sites (those you sample in that event) – even if you sample on a cooler than normal summer day
- But, if you don't sample on a hot day then you may underestimate how warm the water is getting
 - Difficult to then compare to for instance trout thresholds
 - Difficult to compare to other watersheds (that may do snapshots or may have continuous data)
- Keeping track of air temperature

Snapshot – making sure you're doing it on a good day

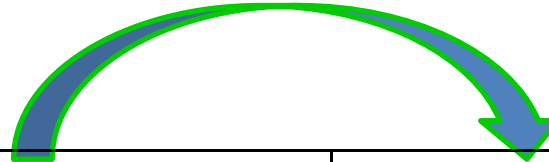
- To ensure you're getting data that represent the most temperature stressed conditions (i.e., the hot days): **sample on days when it is at least average air temperature** for that time of year in that location.
- Use local online historical data to determine past average air temperature
- Use local online current and predicted data to plan for snapshot event
- Compare air temperature predictions to historical averages
 - If event day air temperature is predicted to be equal to or higher than the historical average then **PROCEED** with the event
 - If event day air temperature is predicted to be lower than the historical average then **RESCHEDULE** the event

Get high temp and infer average temp



Get high temp and infer average temp

Measure then convert



Snapshot measurement of approximate daily max water temperature (deg C)	Predicted summer (July/Aug) average water temperature (deg C)
	$=0.9339 \times \text{snapshot max} + 0.0698$
24.2	22.7
25.1	23.5
23.8	22.3
22.0	20.6
20.0	18.7
19.4	18.2
16.2	15.2
23.5	22.0
20.5	19.2
18.7	17.5
19.3	18.1
26.1	24.4
23.4	21.9
24.3	22.8

Trout temperature thresholds

Table 1. Trout water temperature thresholds.

Temperature Category	Summer average water temperature	Explanation
Ideal	<17 degrees C	Corresponds with ~100% occupancy probability in SHEDS model and optimal growth in lab studies.
Sustaining	17-20 degrees C	Corresponds with ~50-100% occupancy probability in SHEDS model and not stressful.
Stressful	20-23.5 degrees C	Corresponds with ~5-50% occupancy probability in SHEDS model; physiological stress and biomass predicted to be lower than in colder sites.
Potentially Lethal	>23.5 degrees C	Corresponds with ~0% occupancy probability in SHEDS and upper incipient lethal thresholds

USGS SHEDS Brook Trout Model; NV DEP 2017; Chadwick et al. 2015; Kratzer, 2013; Wherley et al. 2017.

Using water temperature data at the local level

Dave Manning:

“Why municipal decision makers would care about stream temperature is the driving question. And it's a hard one to answer!

Our document should provide a list of reasons and examples, which will certainly depend on the municipality. It will be incumbent on the reader to apply the info accordingly.”

Using water temperature data at the local level

Which speaks to Steve Tricarico's suggestion:

“I suggest that we start off by simply attending the municipal meetings and observe at least one or two meetings. Simply be a face in the crowd. Next meeting, ask to be put on the Agenda and simply introduce yourself and your organization. Practice your presentation ahead of time and keep it to less than 5 minutes. Simply highlight what your group has done to date in ‘helping other organizations’. This is not the time to tell them how bad their local environment is or how they need to adopt better ordinances or try to educate them on water temperature issues.”

Using water temperature data at the local level

By Dave Manning: for starting a discussion within our workgroup and perhaps with others, possibly reasons municipalities would be concerned about water temperature:

- The economy of the municipality depends on temperature-sensitive aquatic life (the easiest to address)(e.g., trout)
- Vanity (what municipality wants a bunch of dead streams? Seriously, some townships are all about appearance, including environmental issues, as way of attracting residents)
- Awareness and protection are consistent with what students are being taught in terms of environmental guardianship (I often think how effective recruiting student environmental groups into the decisions that municipalities make might be)
- Change in biota is unattractive (especially at the level of parks and for residents that live along the sides)
- Accommodation (some watershed groups do a lot for the municipality, e.g., in relation to stormwater management and MS4 applications, and would be willing to work on temperature-related items to continue the relationship)
- Also, obviously, elected municipal leaders care about votes, promotion, and legacy. Community activism can go a long way here. This and accommodation (above) would be the subject of document #5.

Using water temperature data at the

- What could municipal leaders do? Steve Tricarico: “for starters, they could:
 - Pass ordinances like we have in our township regarding RBA.
 - Have ordinances which require minimal the removal of natural resources.
 - Have a Comprehensive Plan that includes a section on Ecological Resources.”

Mentors currently available

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- George Seeds (MWS), geoseeds@verizon.net, 484-886-9586
- Rachel Johnson (Stroud Center), rjohnson@stroudcenter.org, 973-557-8995
- Christa Reeves (Musconetcong Watershed Association/Stroud Center), christa@musconetcong.org, 727-520-5849

Conclusion

Next month's meeting will be on:

Thursday June 15, 2023
2:30-3:30p

Onward!

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