



# Unified Water Study: Sound-Wide Embayment Monitoring

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# Discussion Overview

Unified Water Study

2. Some Details

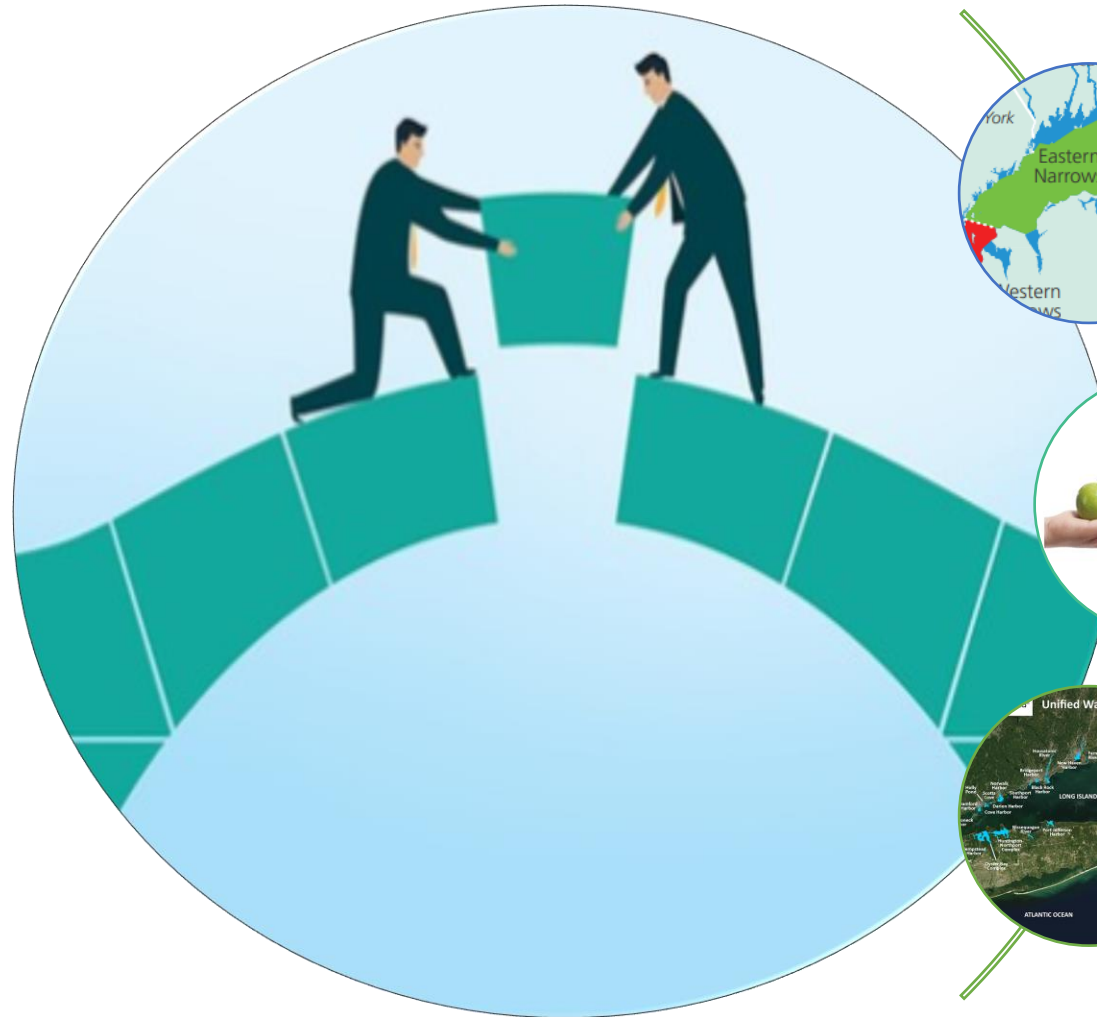
3. Discussion



STS staff conducting water quality sampling at sunrise in New Rochelle Harbor, NY



# Unified Water Study (UWS) – Filling in the Gaps



Abundance of data existed for LIS open waters, but not bays & harbors



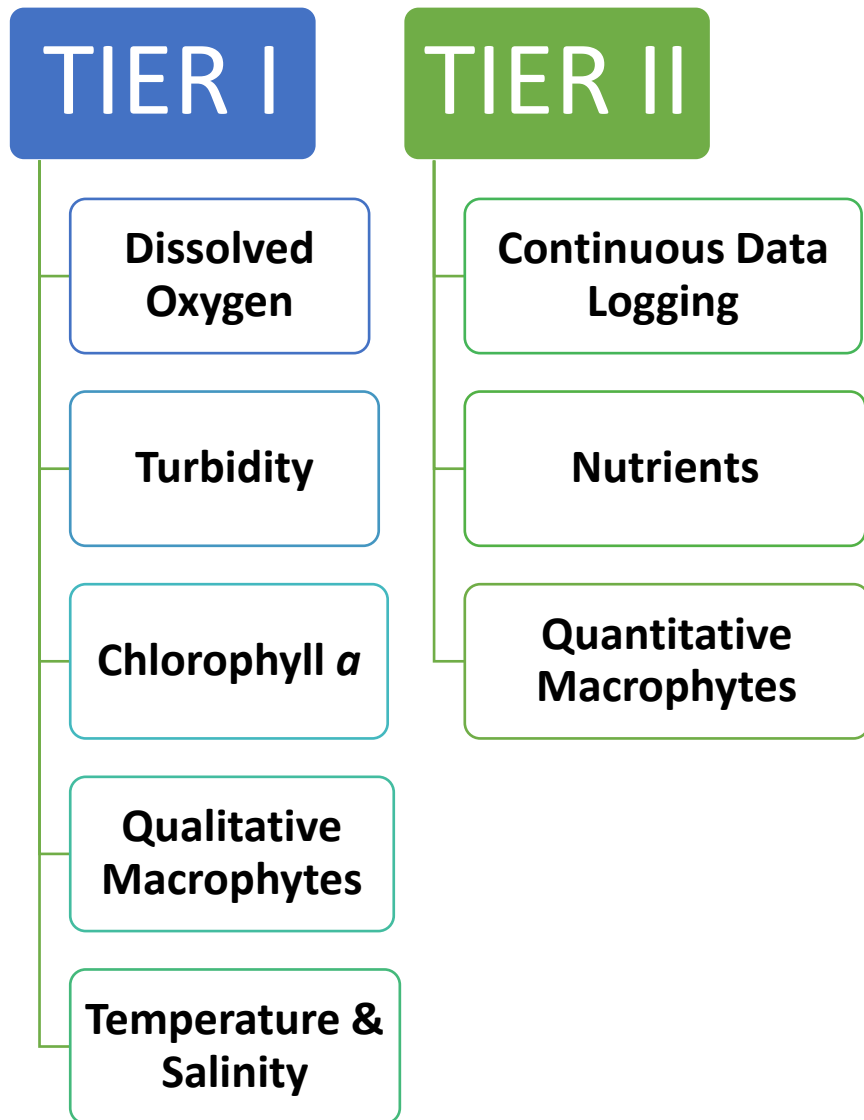
UWS provides comparable environmental health data around the margins of LIS



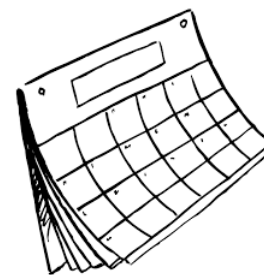
27 groups monitoring in 2024



# Unified Water Study



**6 Month Monitoring Season:  
May – October**

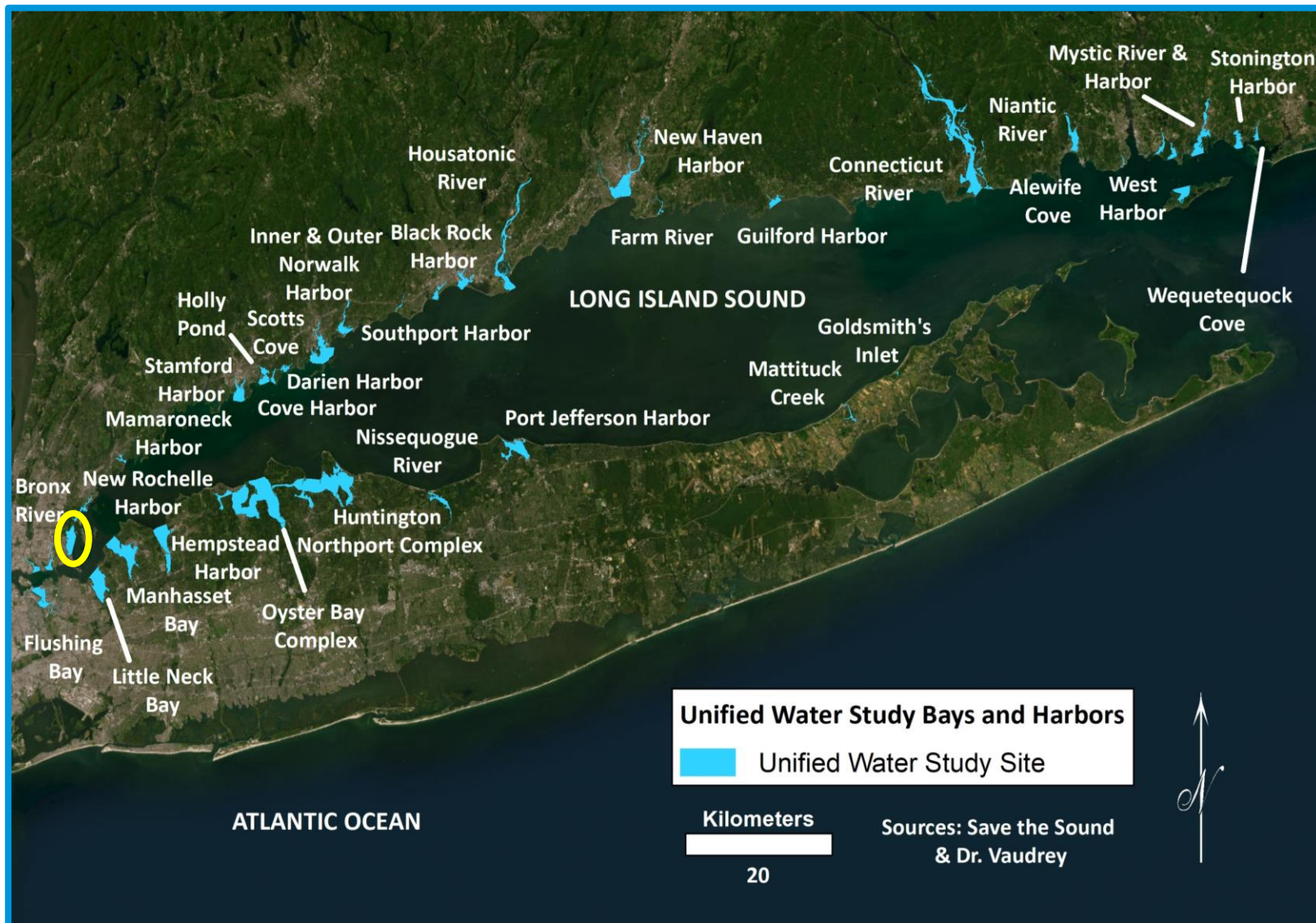


**Conducted in compliance with an EPA-  
Approved Quality Assurance Project Plan**





# Unified Water Study



46

Tier I Embayments

14

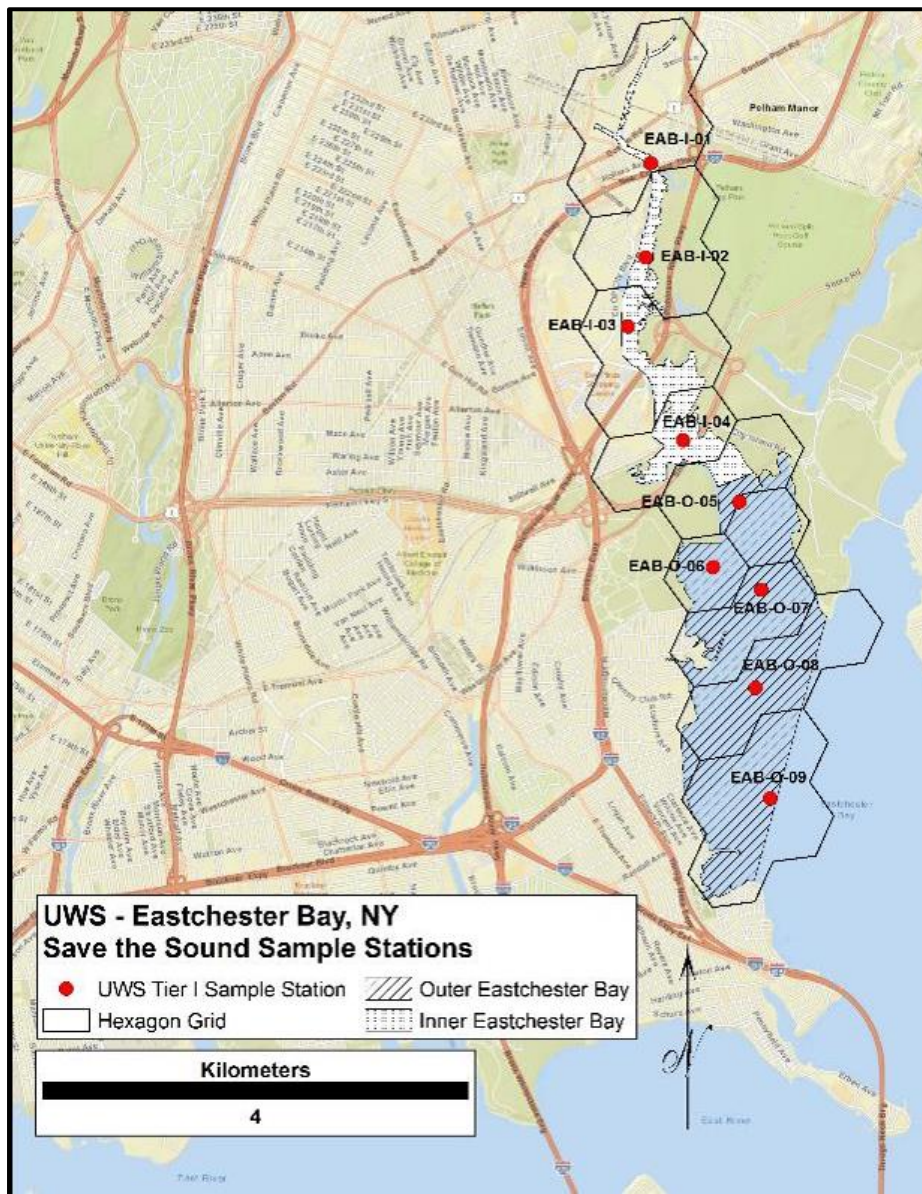
Tier II Embayments

273

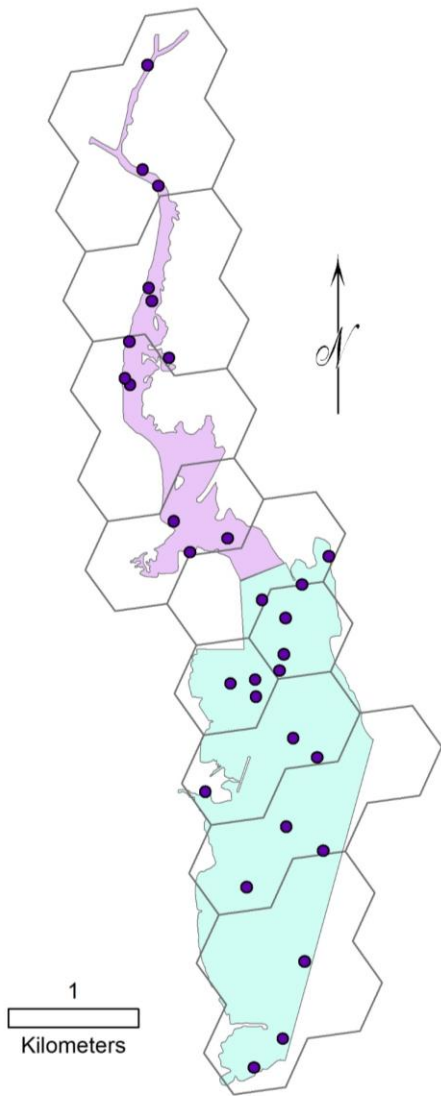
Tier I Stations



# Unified Water Study

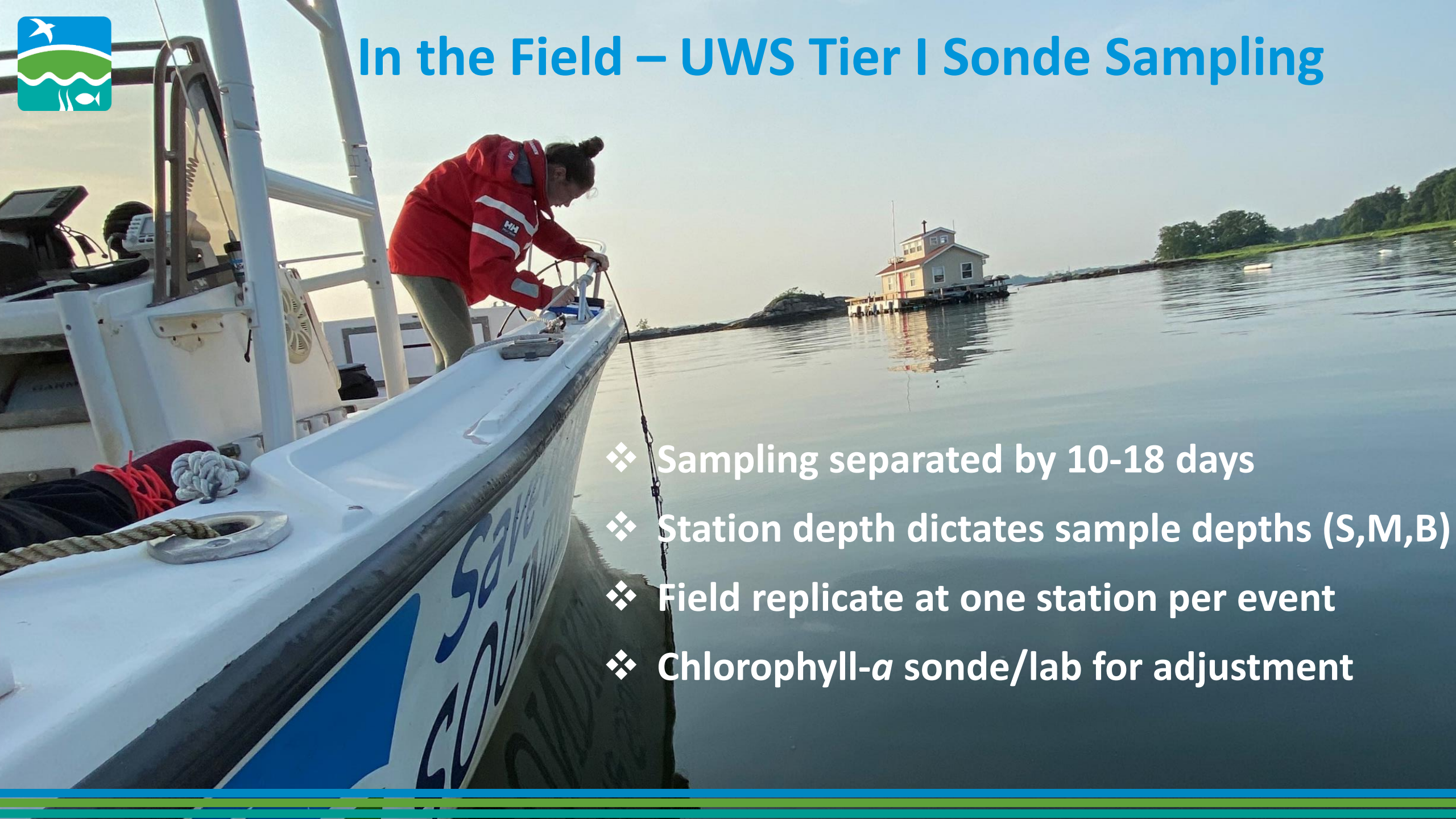


- ❖ 0.42 km<sup>2</sup> hexagon grid
- ❖ Random stations
- ❖ 4 Tier I WQ stations minimum
- ❖ 3 stations per segment





# In the Field – UWS Tier I Sonde Sampling



- ❖ Sampling separated by 10-18 days
- ❖ Station depth dictates sample depths (S,M,B)
- ❖ Field replicate at one station per event
- ❖ Chlorophyll- $\alpha$  sonde/lab for adjustment



# In the Field – UWS Tier I

## Qualitative Macrophytes (None, Some, Lots)



3 Sampling Events



July 15 – August 7

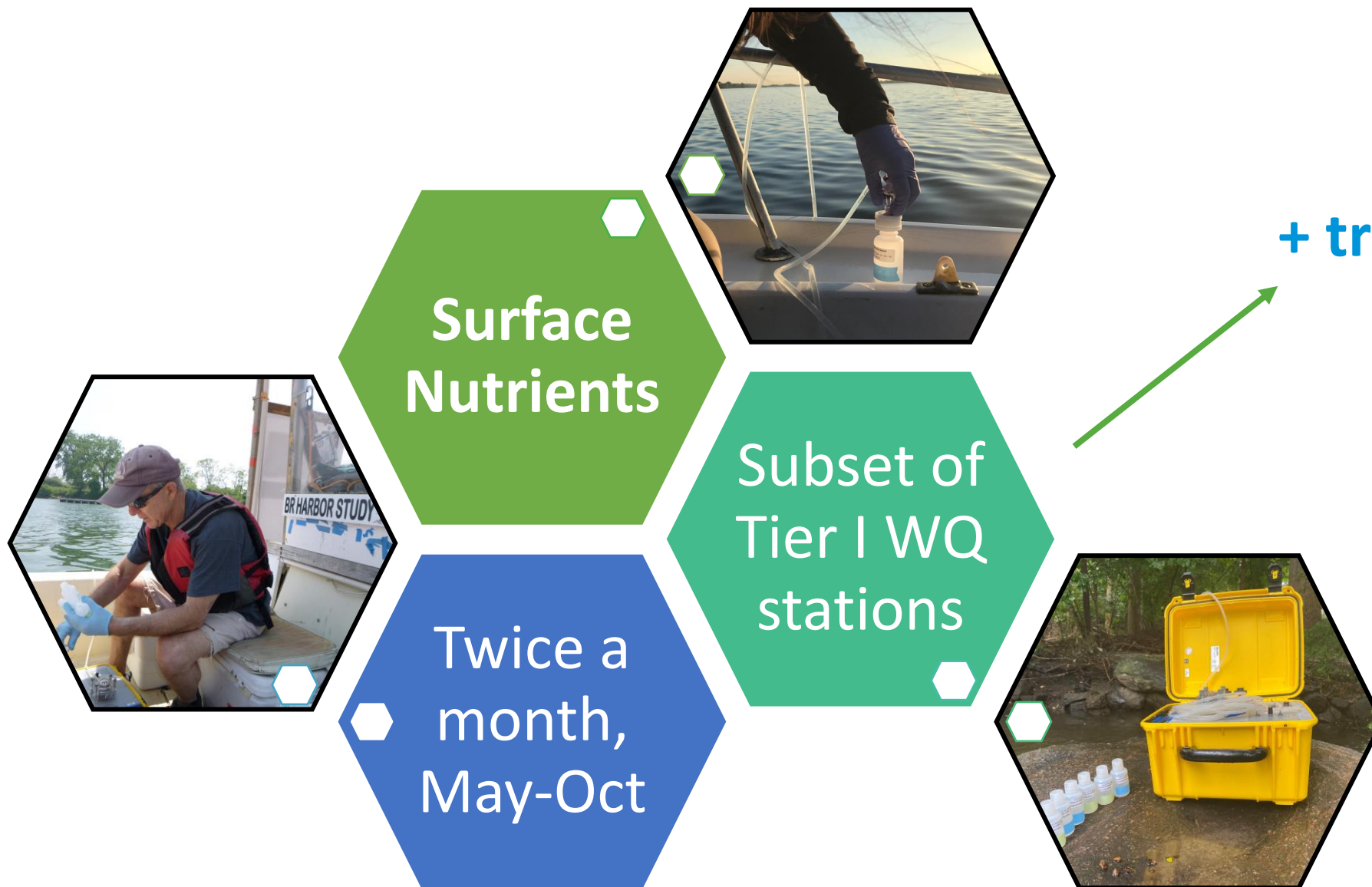


3-7 stations per embayment

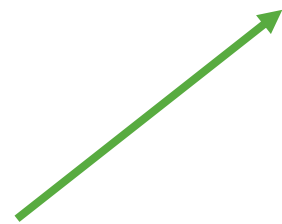




# In the Field – UWS Tier II



+ tributary station(s)





# John & Daria Barry Foundation Laboratory

- Est. Dec 2021
- Laboratory Manager: Elena Colón
- Laboratory Technician: Lindsay Potts

- Pathogen Indicator Bacteria
- Chlorophyll-*a*
- Total Suspended Solids (TSS)
- Harmful Algal Blooms (HABs)
- Nutrients





# UWS Nutrients

- ❖ 2400+ samples
- ❖ SEAL AQ400  
Discrete Analyzer
- ❖ NYSDOH ELAP  
Audit completed

Ammonia

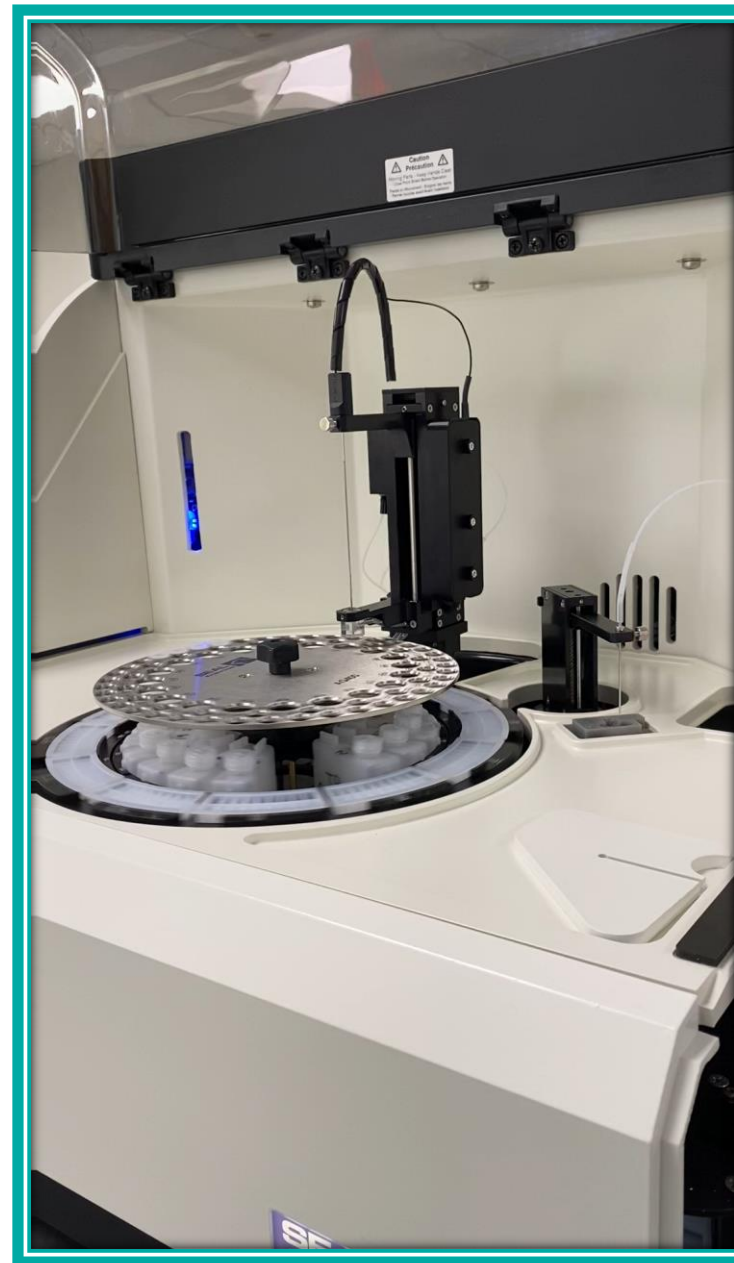
Nitrite

Nitrate-Nitrite

ortho-Phosphate

Total Nitrogen

Total Phosphorous





## In the Field – UWS Tier II

### Continuous Data Loggers

- Dissolved Oxygen
- Salinity
- Temperature
- Barometric Pressure
- Light



**May-Oct.**  
**One station per segment**  
**0.5 meters off bottom**





## In the Field – UWS Tier II



Quantitative Macrophytes

Completed once per season, per embayment

Water quality and rake toss stations



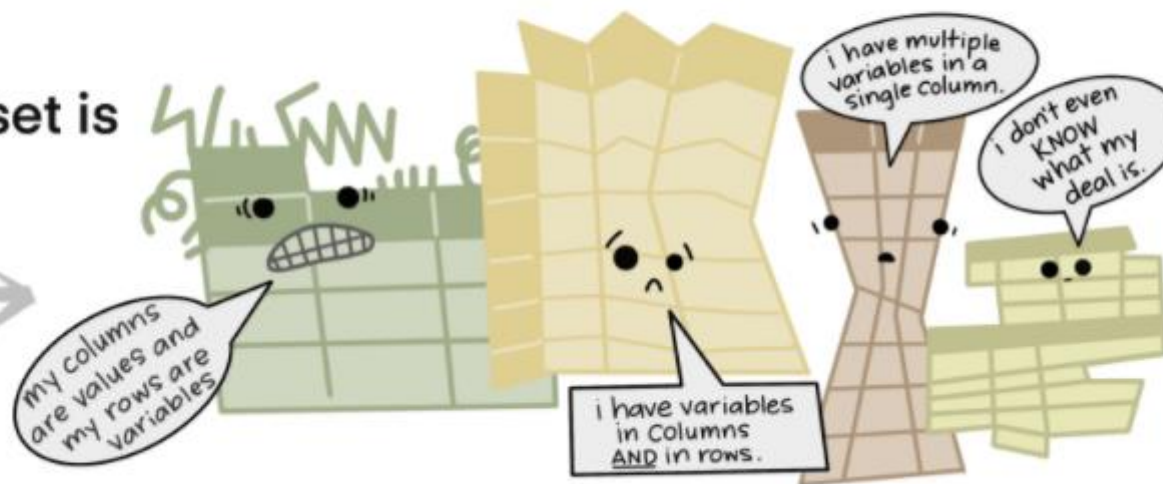
# Field to the Screen

The standard structure of tidy data means that "tidy datasets are all alike..."



"...but every messy dataset is messy in its own way."

—HADLEY WICKHAM





# Questions/Comments



Can I help you?



AQUA