

N:P uptake ratios to infer optimal conditions for HABs

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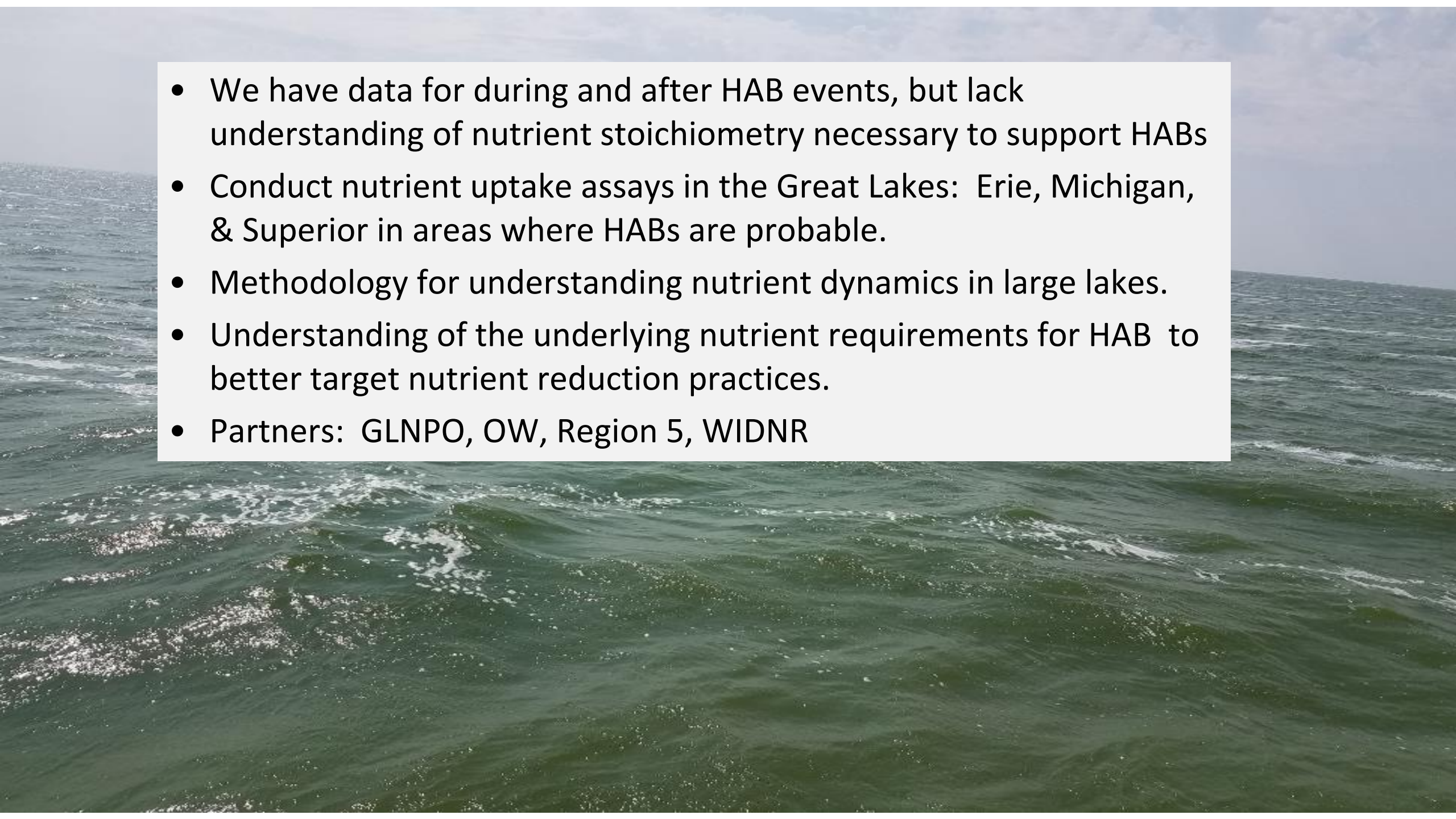
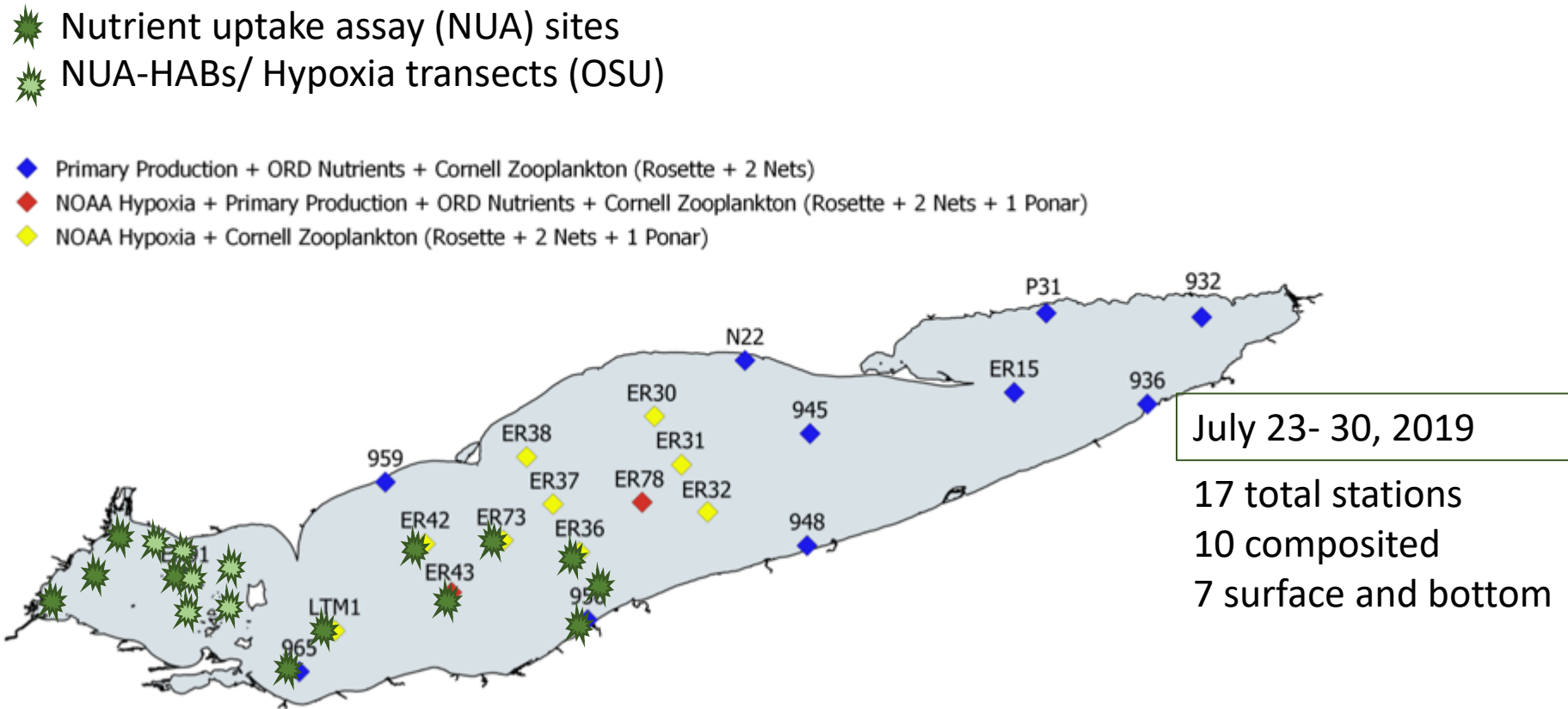
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- We have data for during and after HAB events, but lack understanding of nutrient stoichiometry necessary to support HABs
 - Conduct nutrient uptake assays in the Great Lakes: Erie, Michigan, & Superior in areas where HABs are probable.
 - Methodology for understanding nutrient dynamics in large lakes.
 - Understanding of the underlying nutrient requirements for HAB to better target nutrient reduction practices.
 - Partners: GLNPO, OW, Region 5, WIDNR

Figure 1: Samples sites for Lake Erie Lower Food Web/primary production surveys. Selected sites will be sampled for nutrient uptake assays.



Collection:

- Samples were collected via the Rosette at 3 depths: 1M, Fmax, 2M from bottom
- Composited by stratification

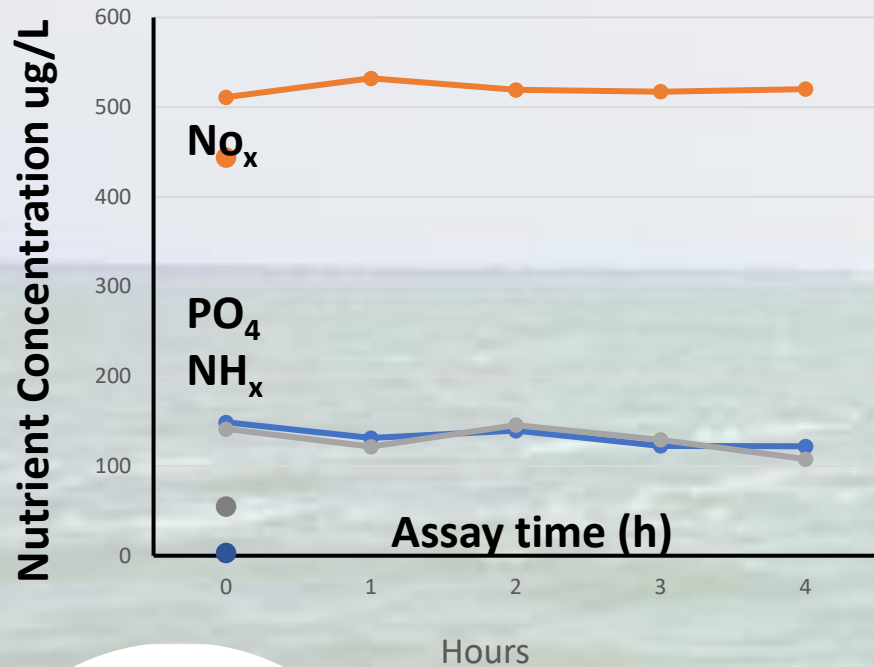
Bioassays:

- Conducted the following day between 10 am 2pm
- 5L biotainers
- Added nutrients to 100ppb above background
- under natural density film to mimic in situ light conditions.
- Tank flow through lake water to incubate at lake temperature
- Sampled hourly over 4 hours
- NH_4 , NO_3 , PO_4 , Si, Fe, DOC, cations and anions

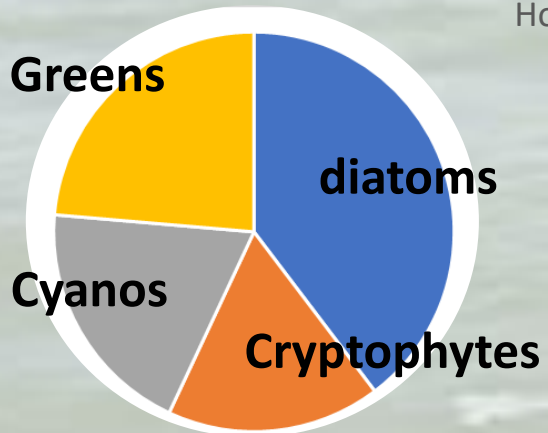
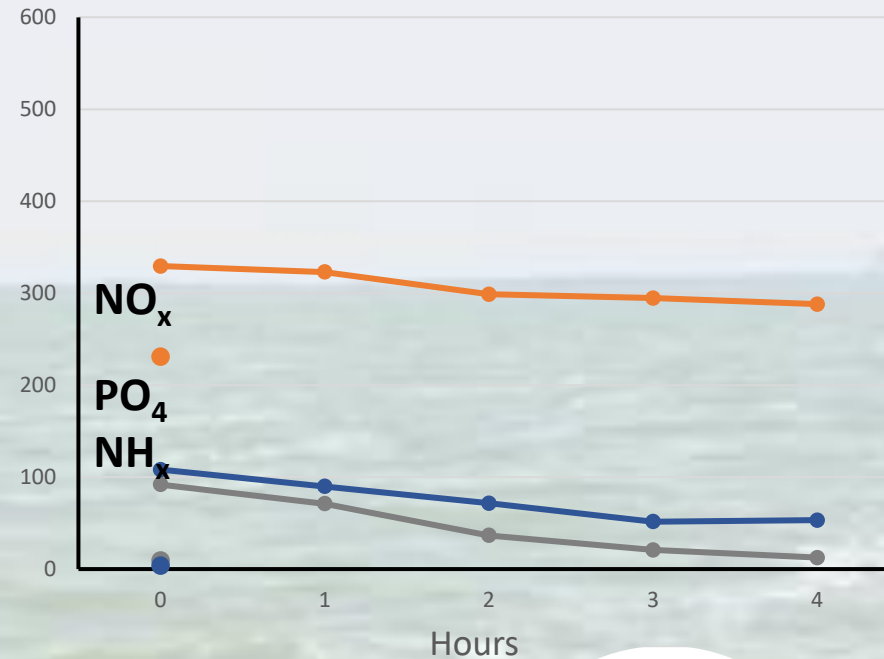


Nutrient uptake dynamics in Lake Erie (CSMI 2019)

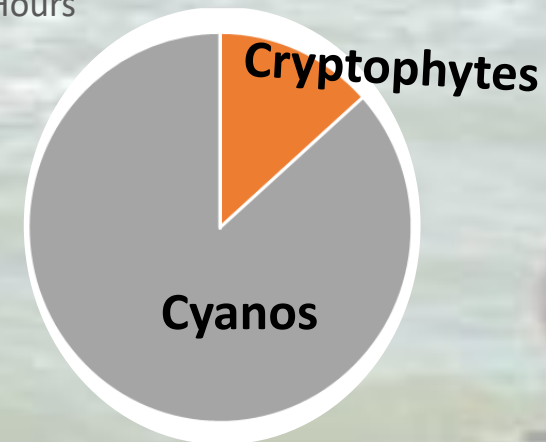
Low Chl a (2.6 ug/L)

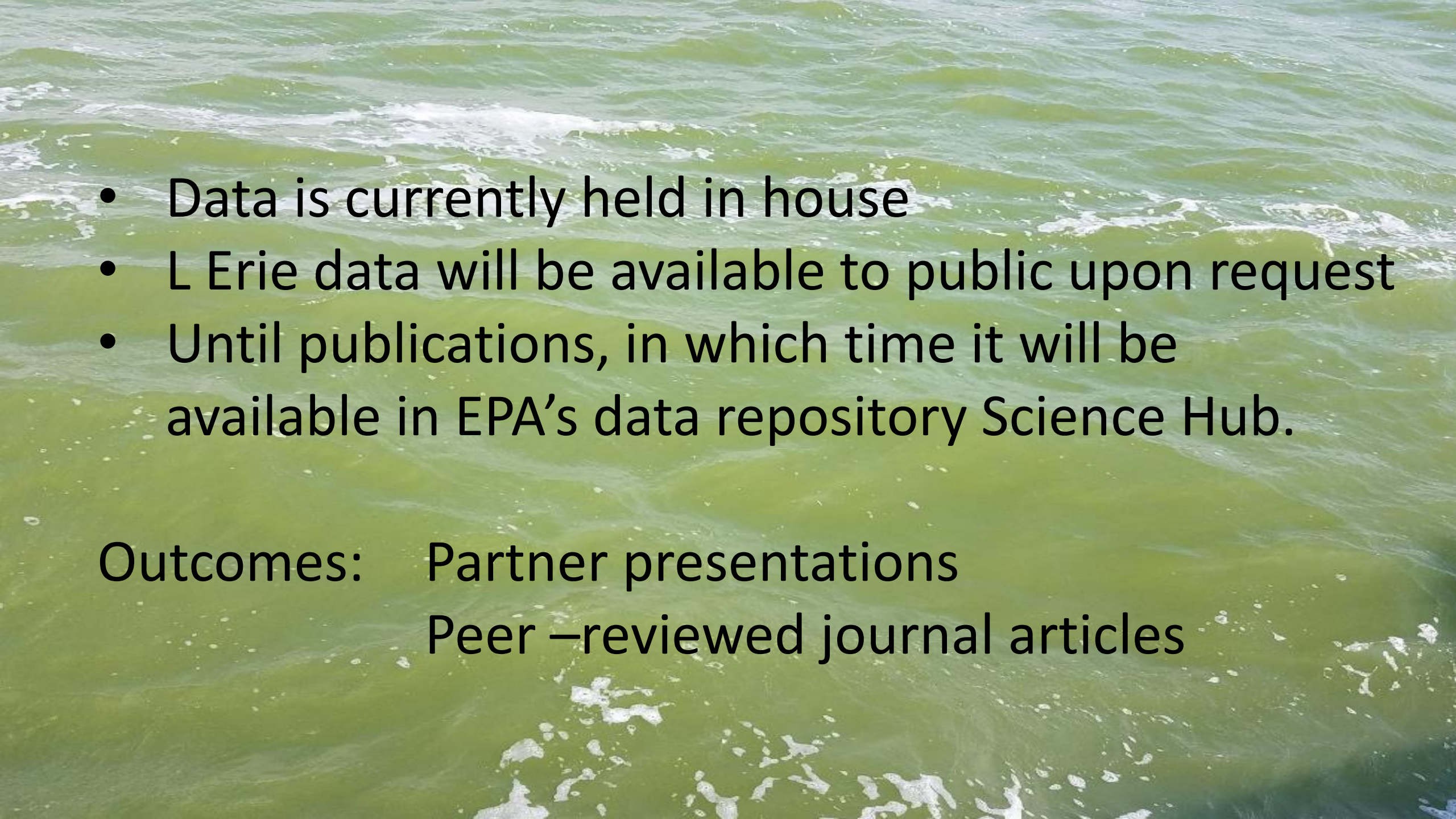


High Chl a (40 ug/L)



Nutrient uptake assays show minimal nutrient uptake in low Chlorophyll a sites, while high Chlorophyll a sites show Ammonium and Phosphate as the preferred nutrients, possibly co-limiting.



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- Data is currently held in house
 - L Erie data will be available to public upon request
 - Until publications, in which time it will be available in EPA's data repository Science Hub.

Outcomes: Partner presentations
Peer –reviewed journal articles