DETECTION &
MONITORING

# HARMFUL ALGAL BLOOM MONITORING WITHIN SJRWMD

Joshua Papacek, Ph.D.

Environmental Scientist, Bureau of Water Resources

St. Johns River Water Management District
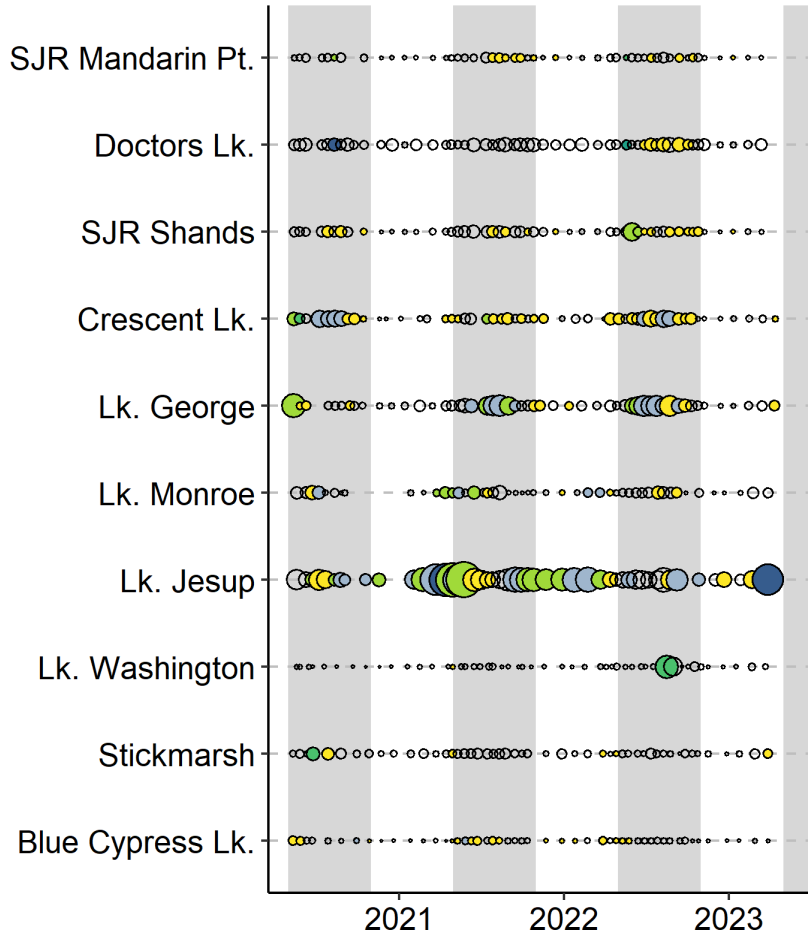
PROJECT SUMMARY

- **Routine monitoring**
  - 2020-present
  - 10 sites along SJR
  - Semimonthly (May-Oct) or monthly (Nov-April)
- **Response monitoring**
  - Ad-hoc sampling following public report or field crew observations
- **Samples analyzed by DEP**
  - Dominant species
  - Cyanotoxins (MC, CYL, ATX, STX)
  - WQ from SJRWMD Lab
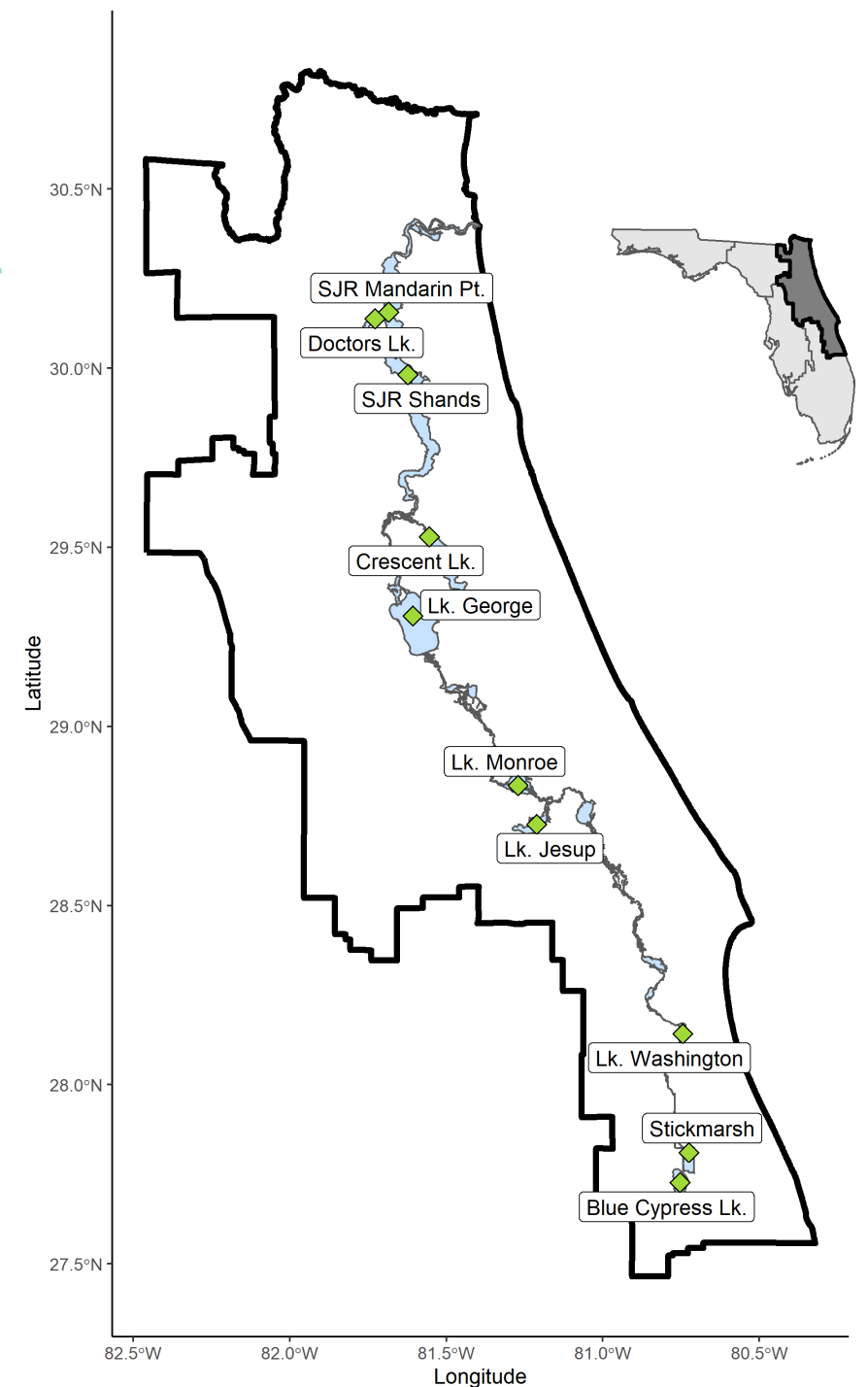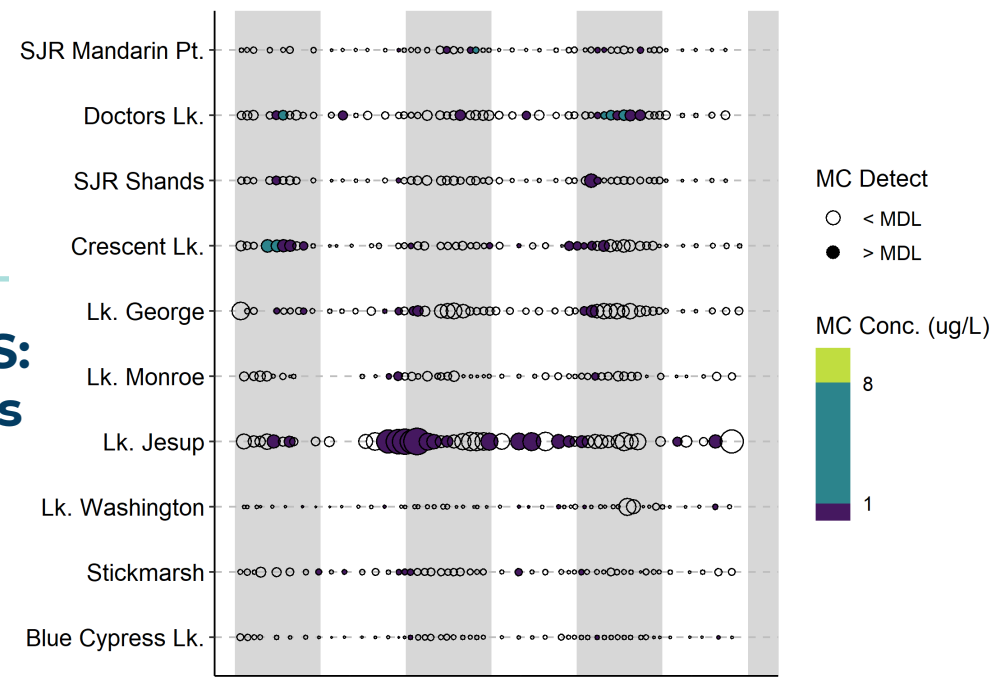
MAJOR TAKEAWAYS

CYANO DOMINANCE: 33% of samples

MICROCYSTINS: 16% of samples

CYLINDROSPERMOPSIN: 13% of samples
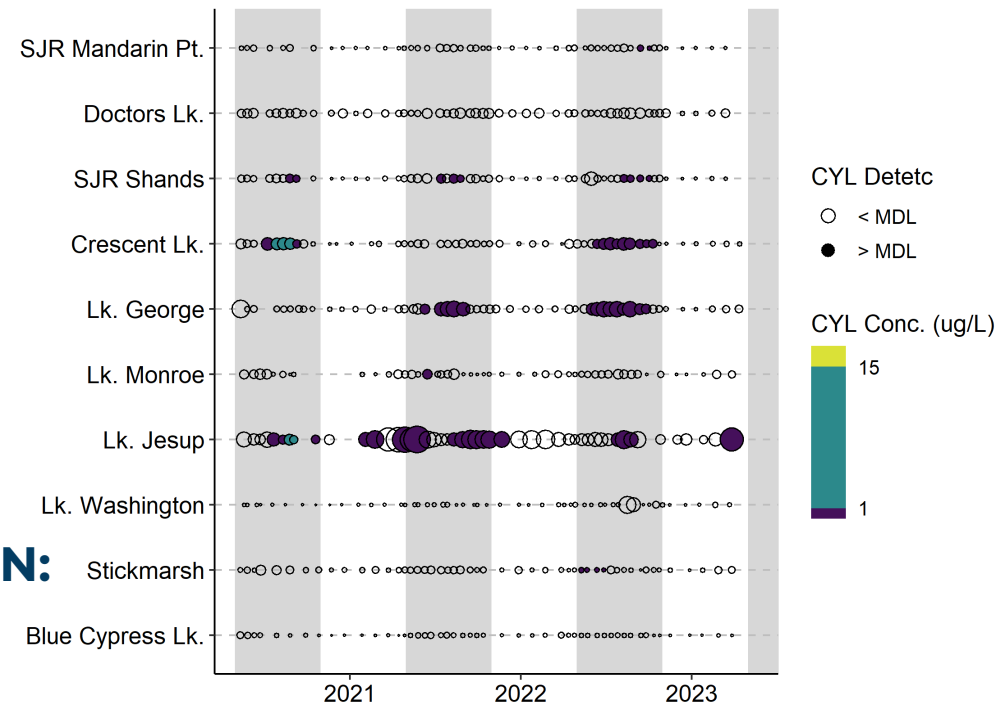
ADDITIONAL RELEVANT INFO

- **Lake Washington Bloom (Aug-Sep 2022)**
  - Field observations + Supplemental tools
  - Communication with stakeholders
  - Leveraging data
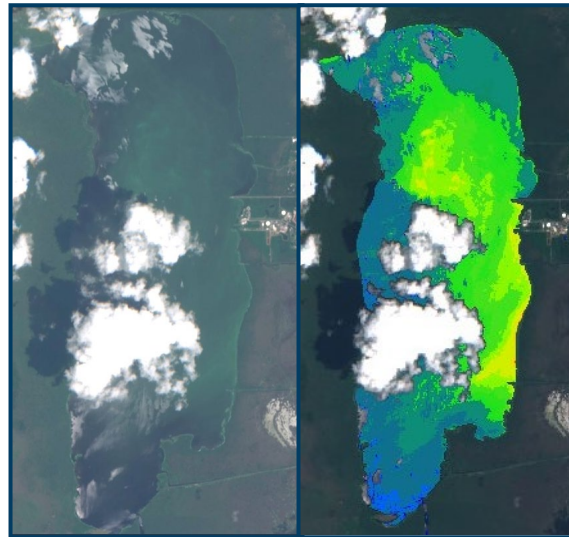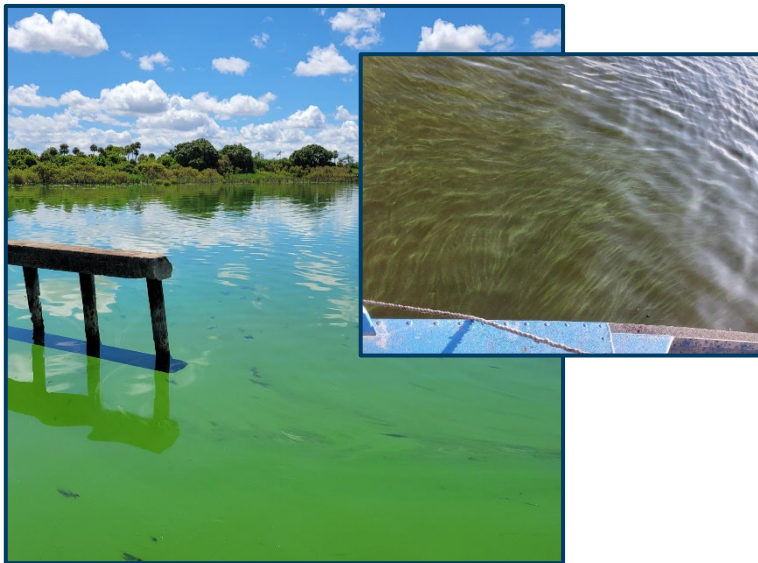
CyAN CI (Sentinel-3 OLCI)

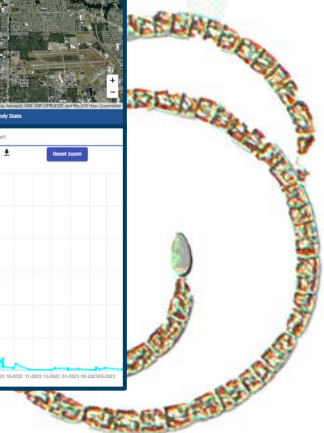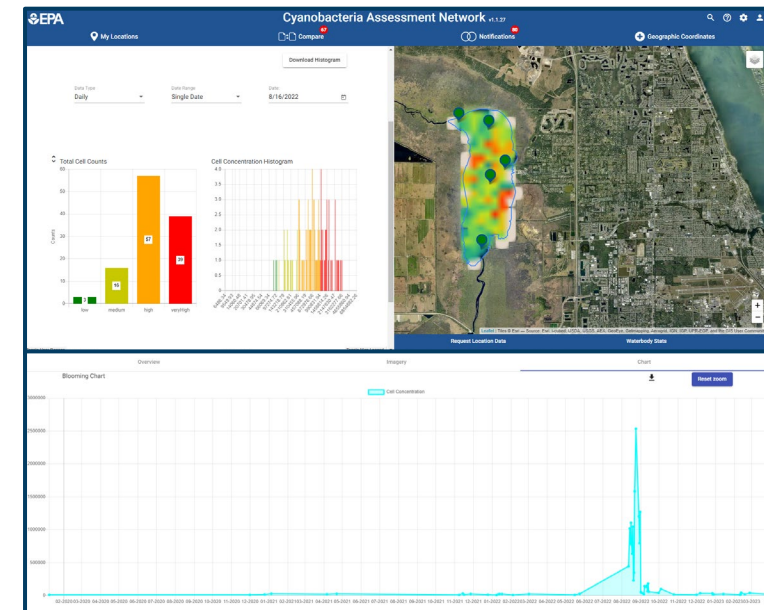Sentinel-2 L1C RGB/NDCI

RESEARCH PRIORITIES

- Enhance blue-green algae monitoring, including time series (longitudinal) as another data point

- Determine if and what role environmental conditions have on cyanotoxin levels

- Develop sampling plans to meet existing recommendations and use (e.g., WHO, EPA)

NEW DATA GAPS

- Blooms outside of routine sites and "peak" season

- Snapshot monitoring

- Sample turn-around time vs. management decision-making

- Linking data from multiple agencies

Georges Lake, Putnam Co. Feb. 2023, *M. aeruginosa* Photo from DEP NEROC

ACKNOWLEDGEMENTS

- Florida Department of Environmental Protection
- SJRWMD Bureau of Water Resources Information
- SJRWMD Bureau of Water Resources