Remote Sensing of Cyanobacteria in Lakes: The CyAN Web App and National Modeling

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The views expressed in this presentation are those of the authors and do not necessarily represent the views or policies of the U.S. Environmental Protection Agency

Data and analyses are preliminary and subject to change

50 EPA at Progress for a Stronger Future

Cyanobacterial Assessment Network

Interagency Project

Temporal coverage
- MERIS: 2008-2011
- Sentinel 3A/B: 2016-Present

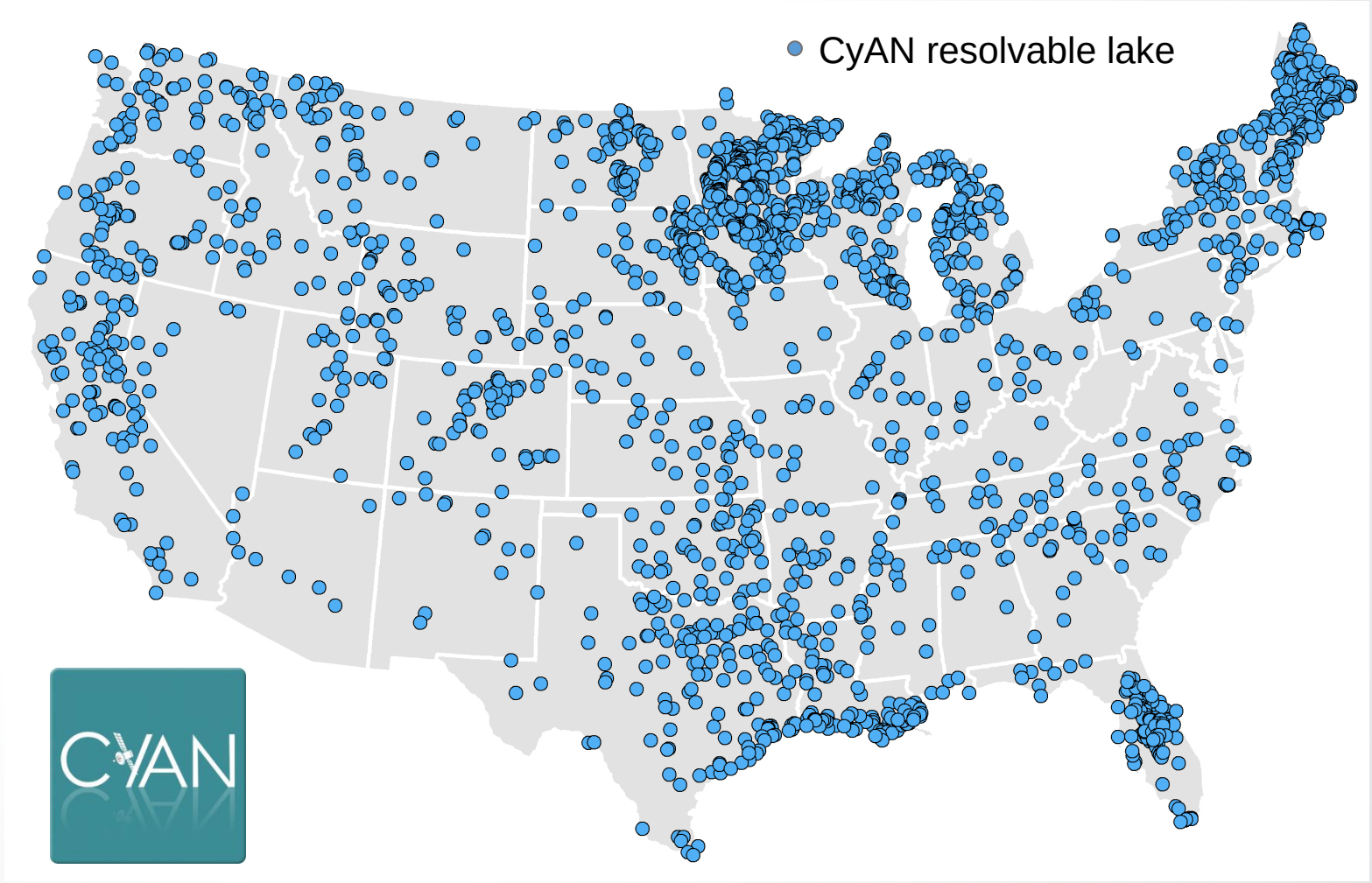
Pixel size: 300 x 300 m

Resolved lakes: ≥ 3 pixels

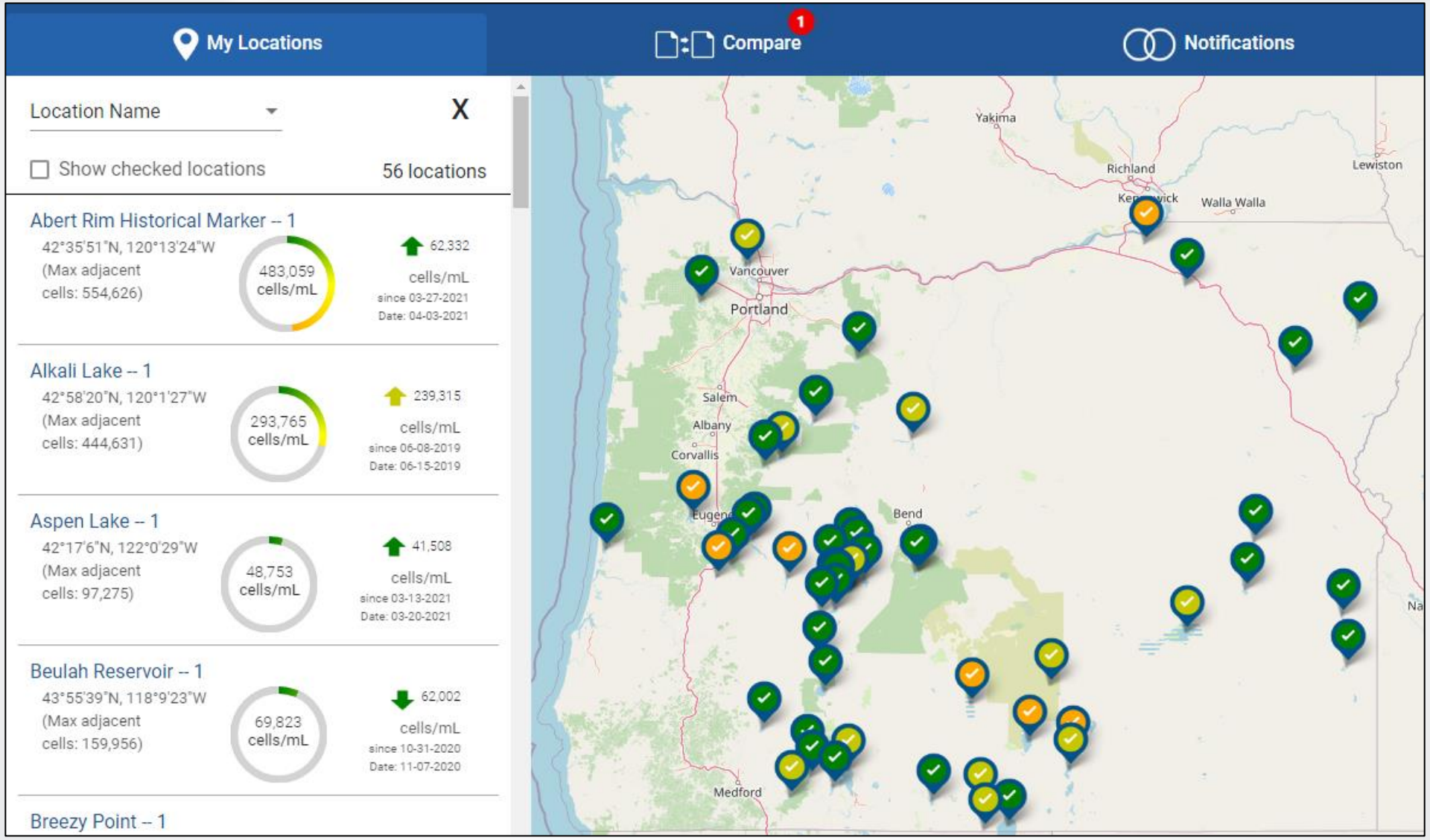
Number of lakes: ~2,200

Current Android App

Web app in development

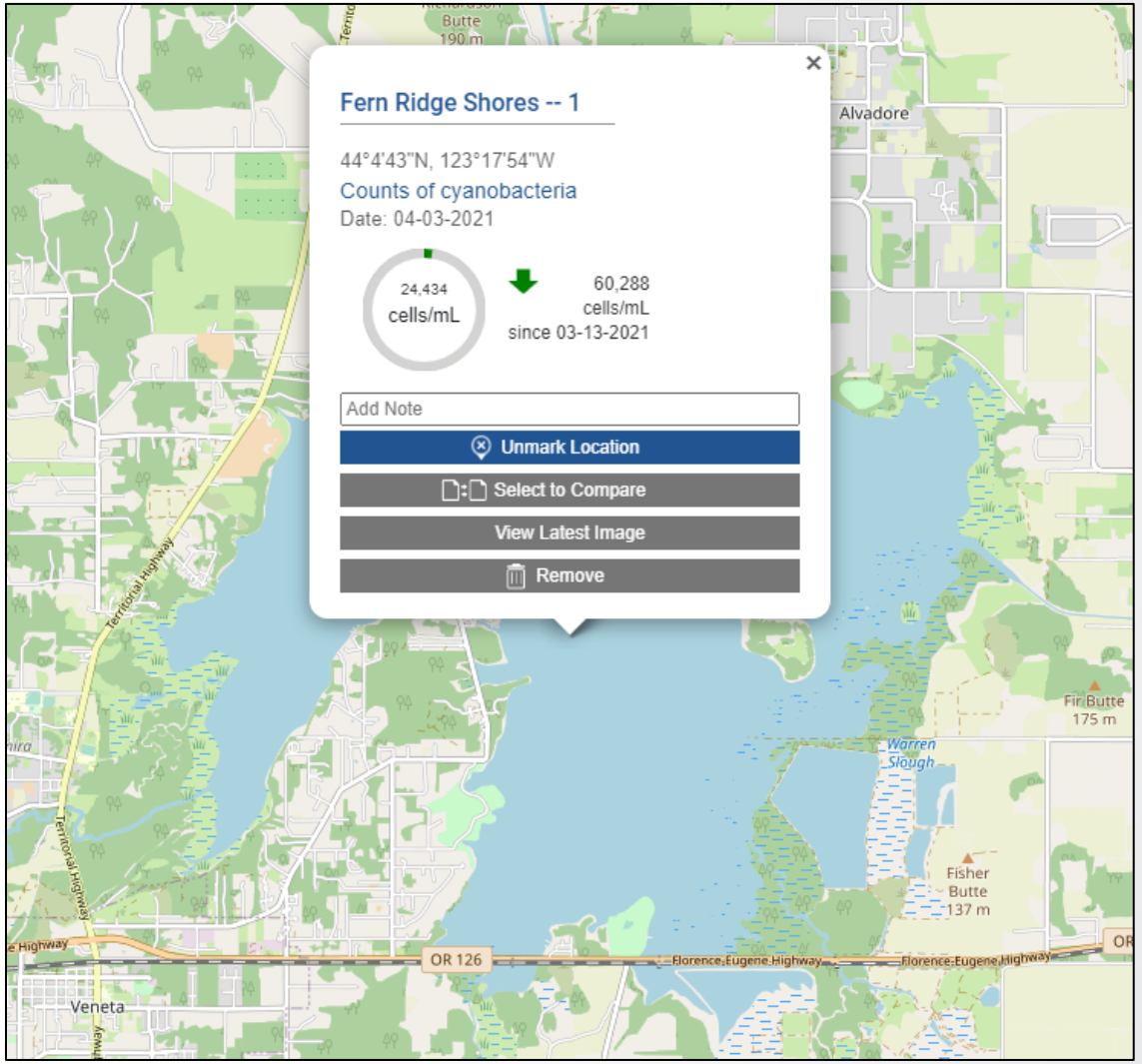


Web App - Access Latest CyAN Data



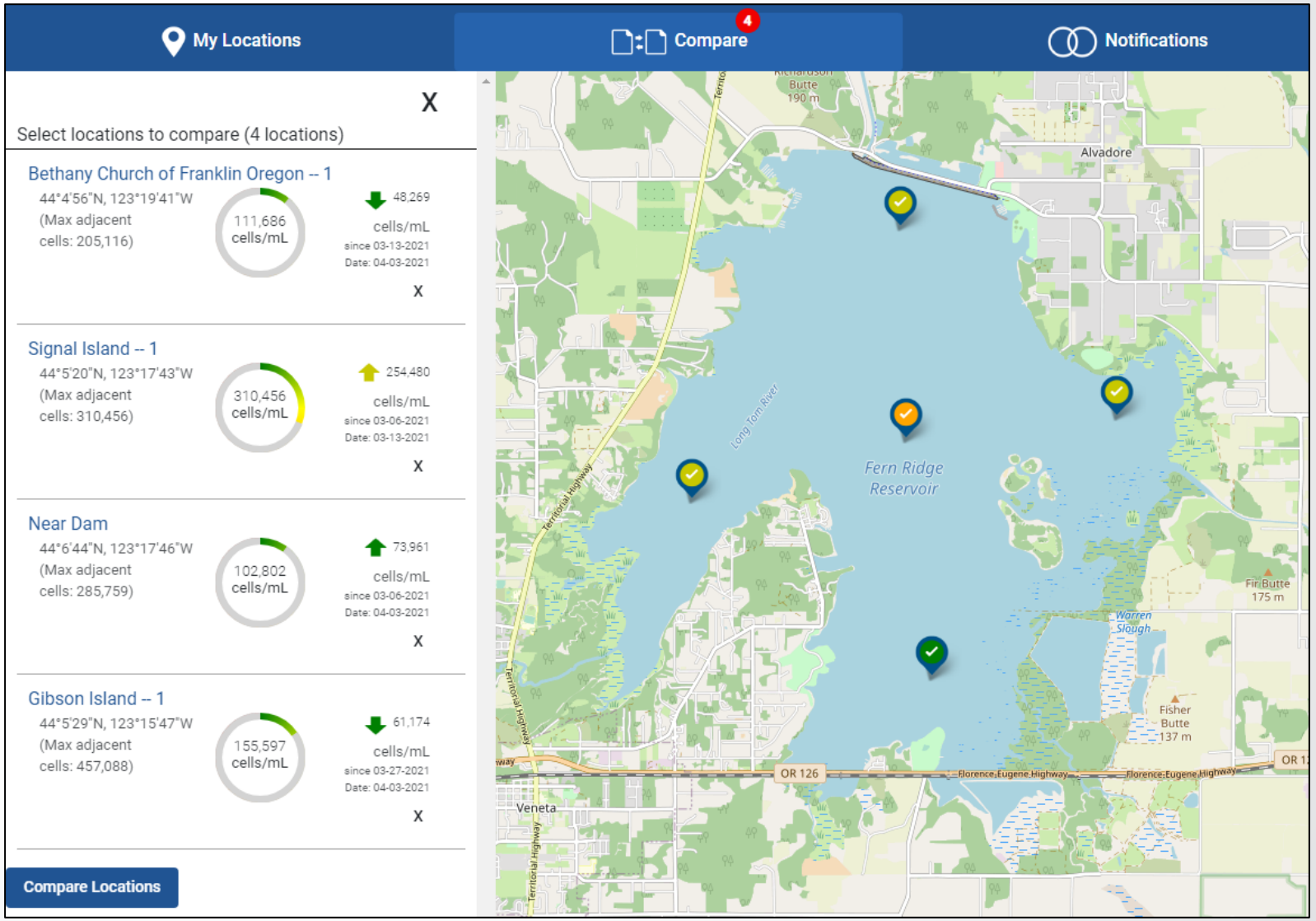
Mark Locations

- Add pins to a lake pixel
- Shows most recent value
- Trend relative to prior value
- Information associated with a single pixel



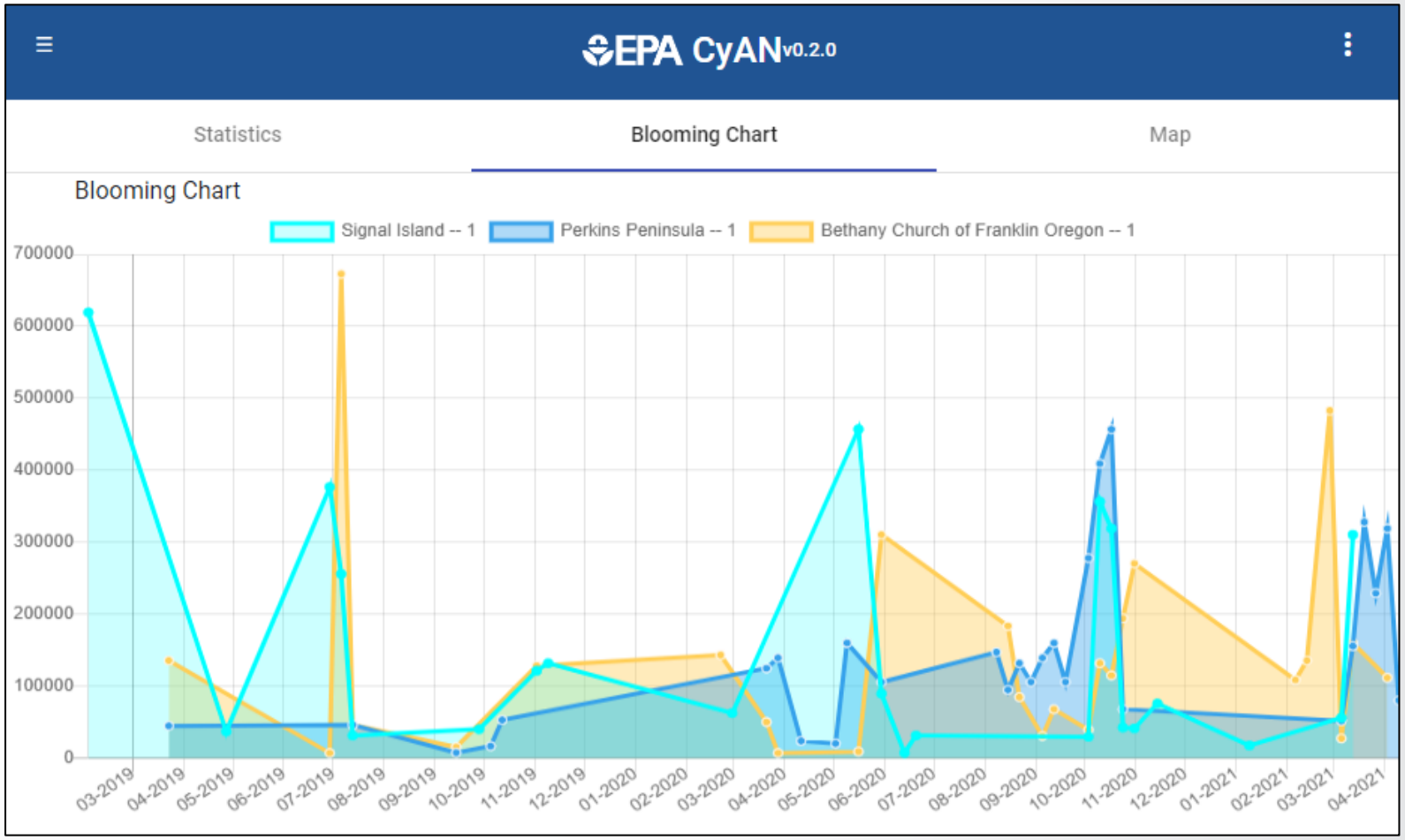
Compare Locations

- Locations in same or different waterbody
- Quick integrated view of waterbody data



Compare Locations

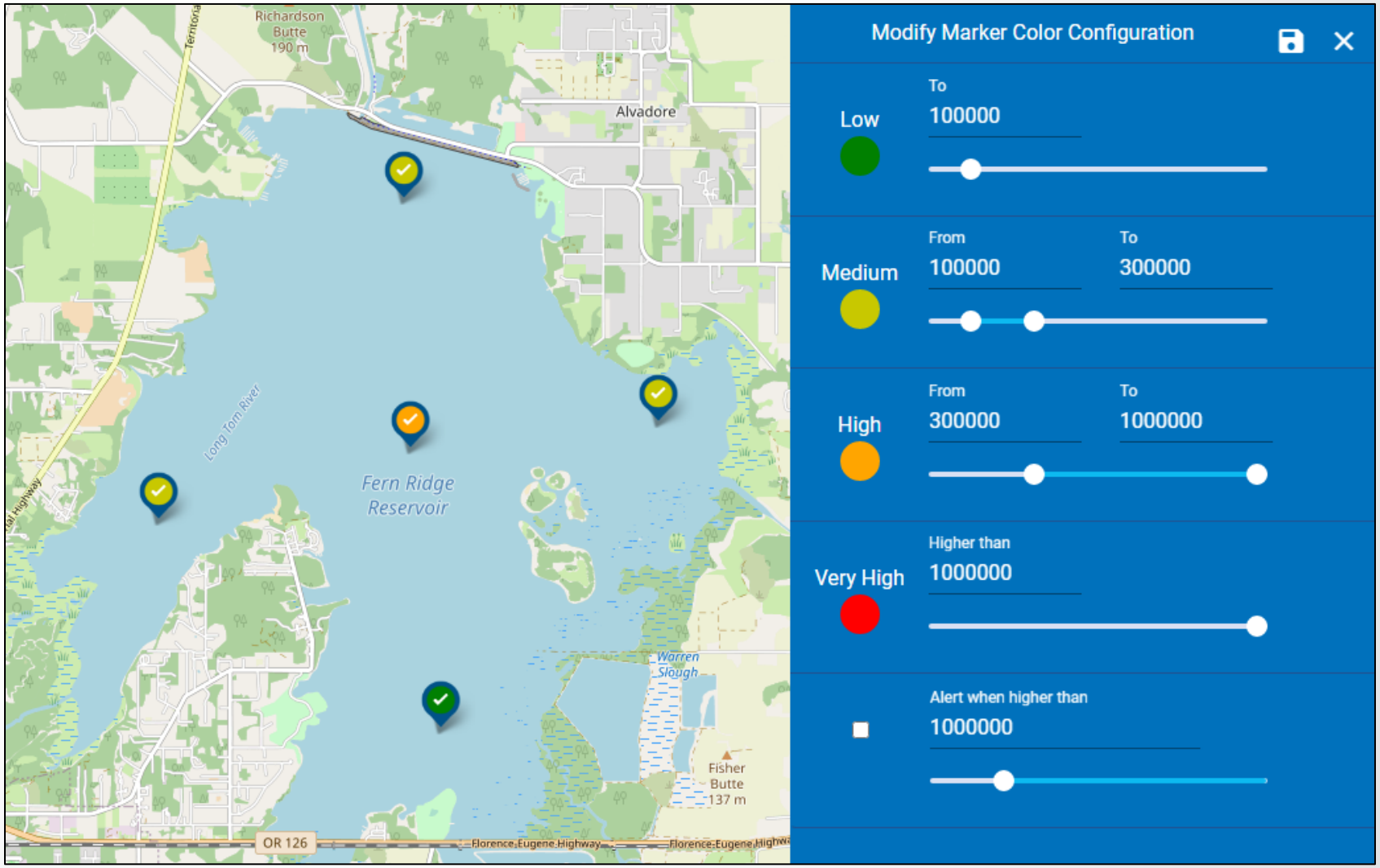
- Locations in same or different waterbody
- Quick integrated view of waterbody data
- View time series



Adjust Color Thresholds

Can be adjusted to levels of concern

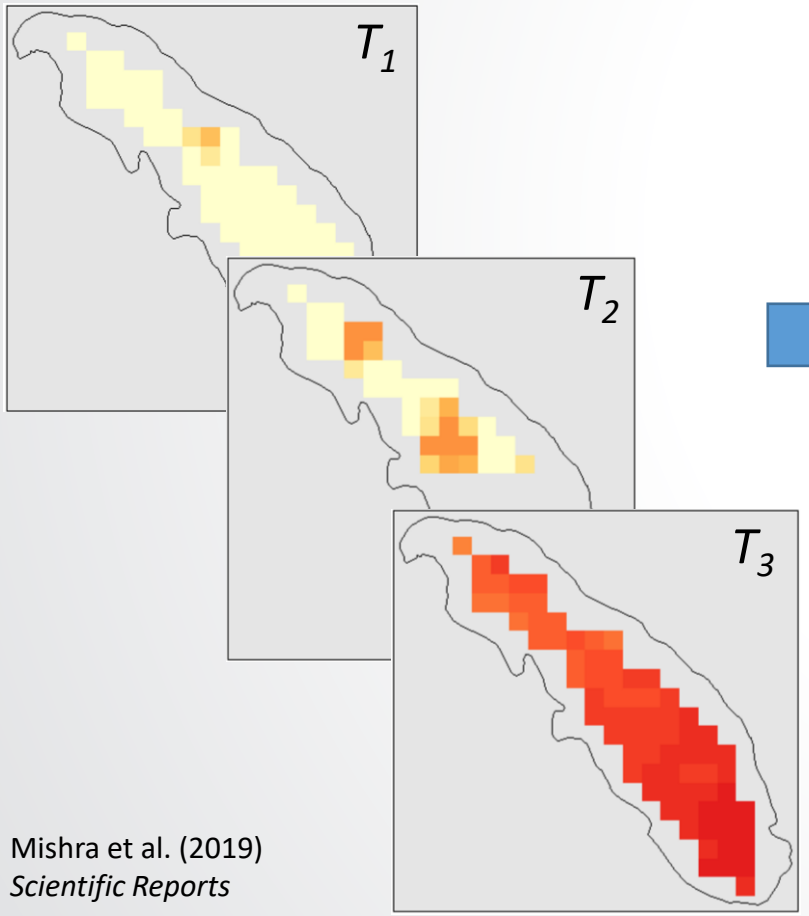
Custom threshold for an alert



Using CyAN and National Field Surveys to Assess Microcystin Risk

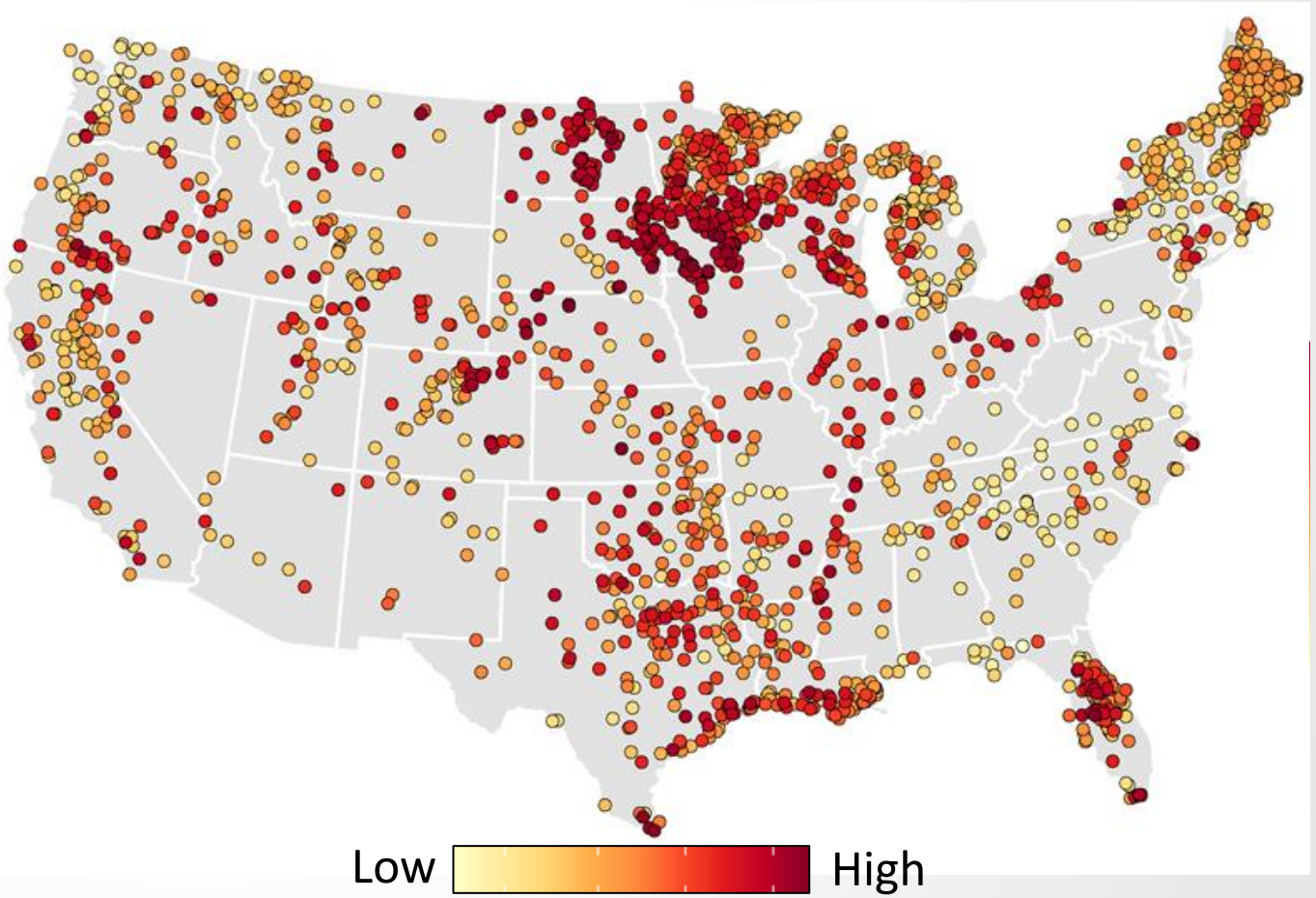
Summarize CyAN Data for Summers

Weekly Imagery



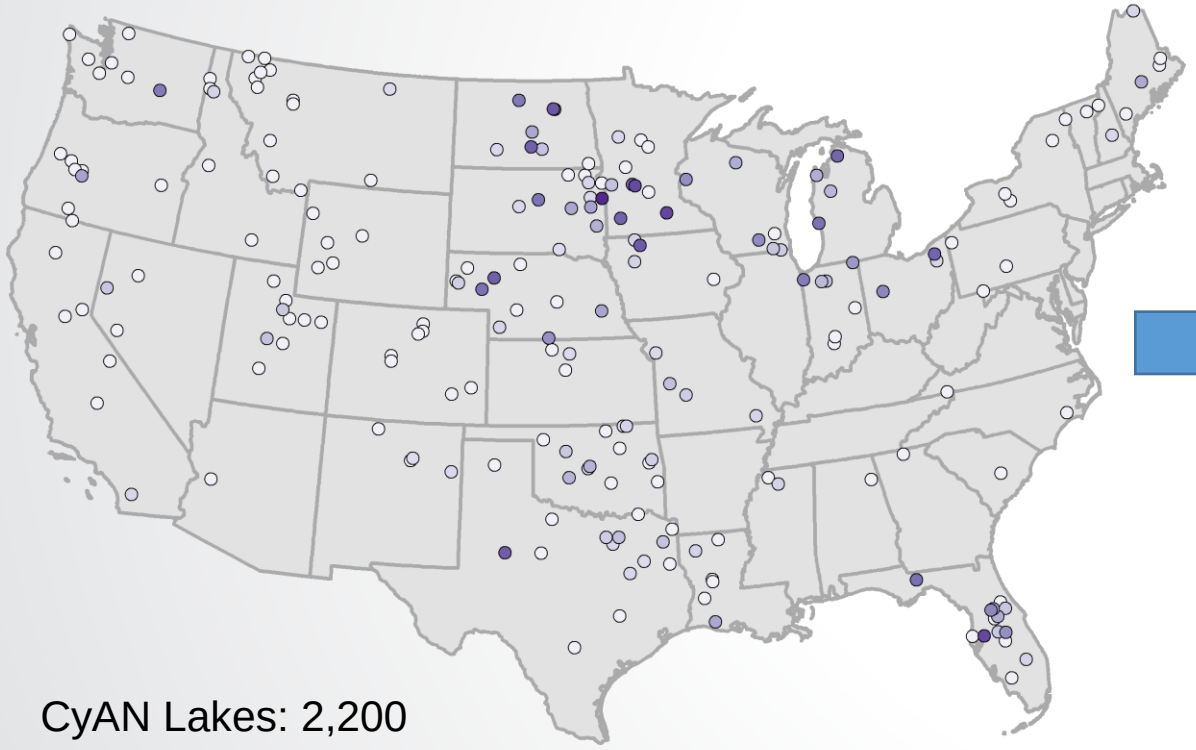
Mishra et al. (2019)
Scientific Reports

CyAN Summer Bloom Magnitude

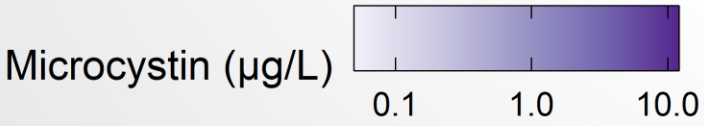


Lakes with Field Microcystin Data

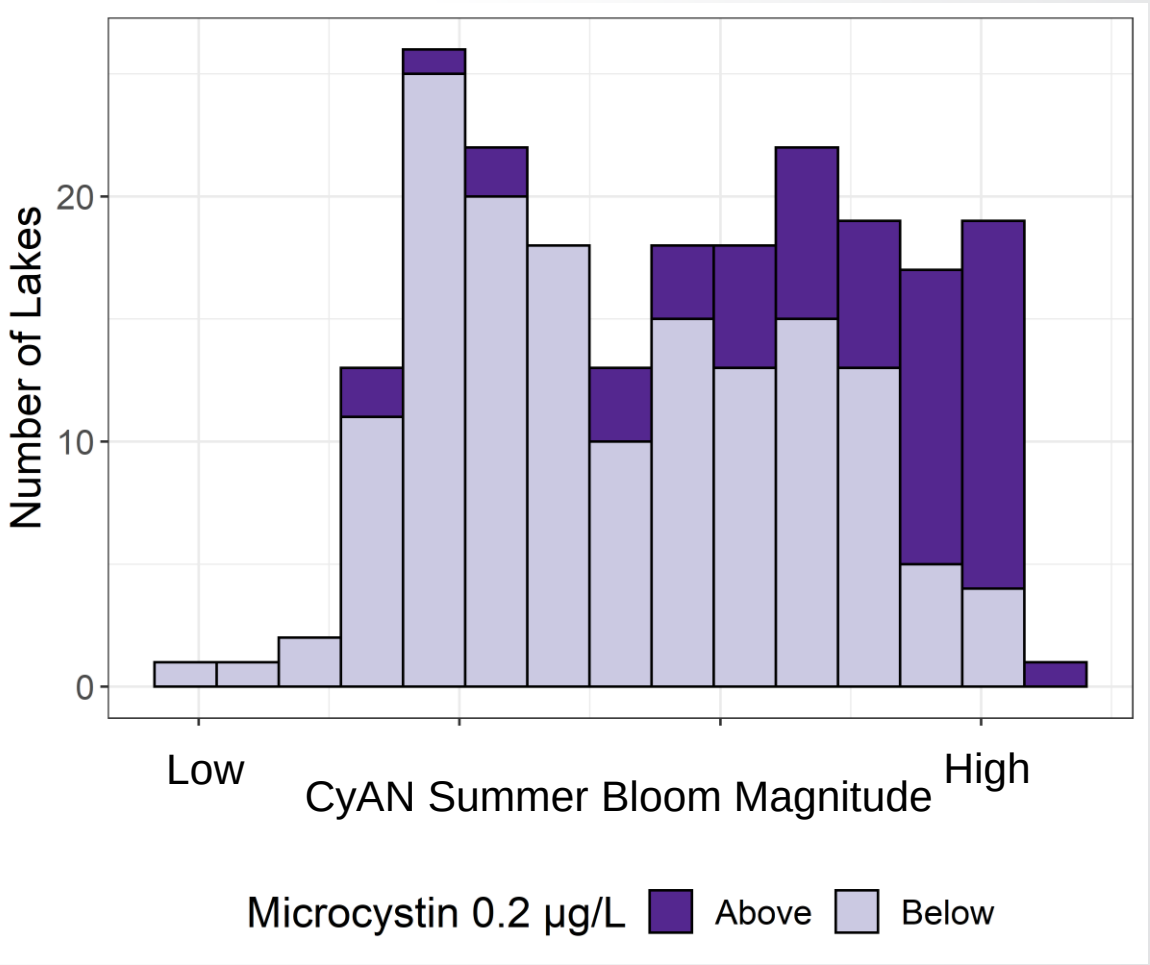
Summer field survey concentration



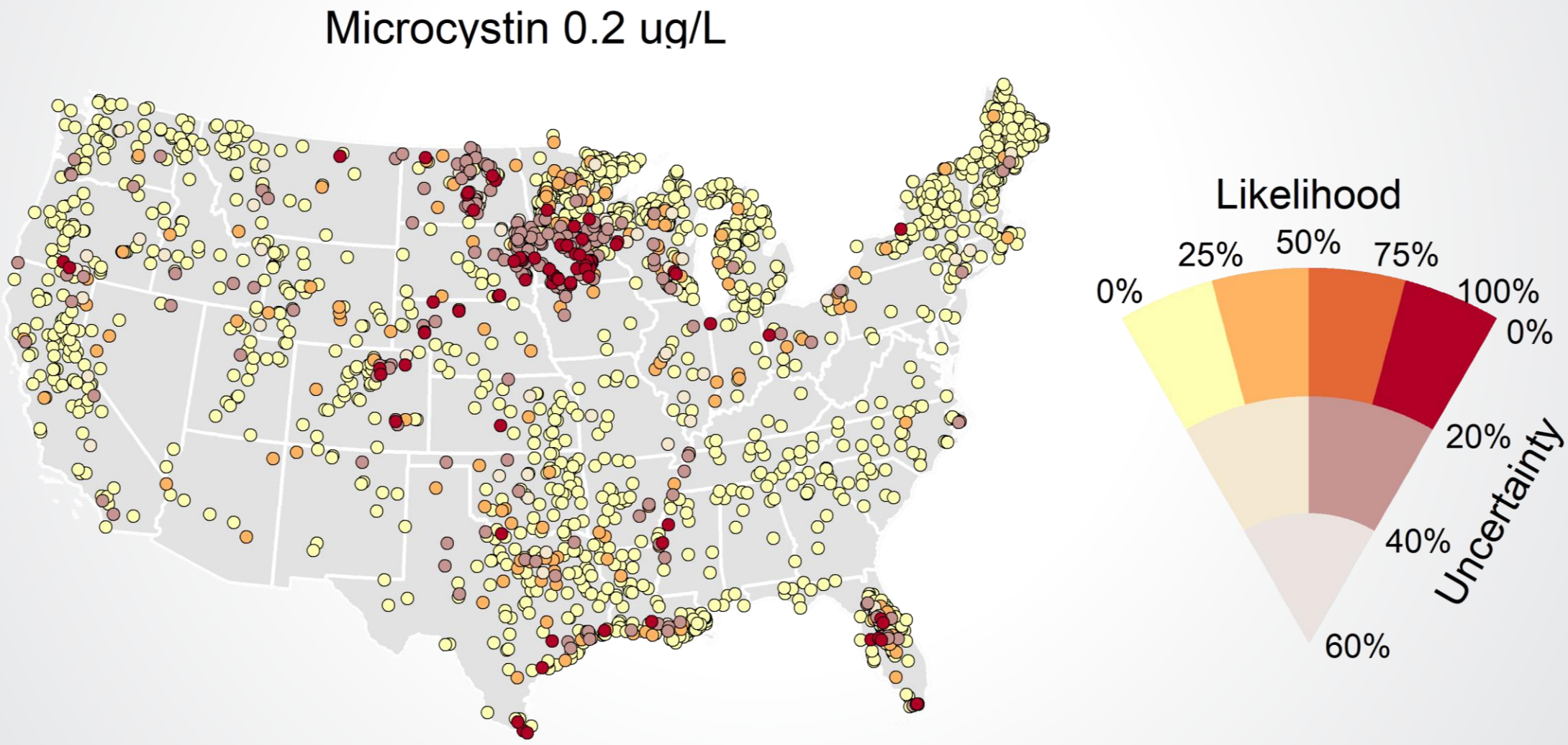
CyAN Lakes: 2,200
CyAN-NLA Lakes: 210



Categorized based on threshold



Likelihood of Threshold Exceedance



Thank you!

Questions?

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CyAN Web App Development

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Comprehensive Monitoring and Analysis of Dynamics of Harmful Algal Blooms Regional Applied Research Efforts Project