

# Adirondack Lakes In A Warmer Future



Brendan Wiltse, PhD  
Senior Research Scientist



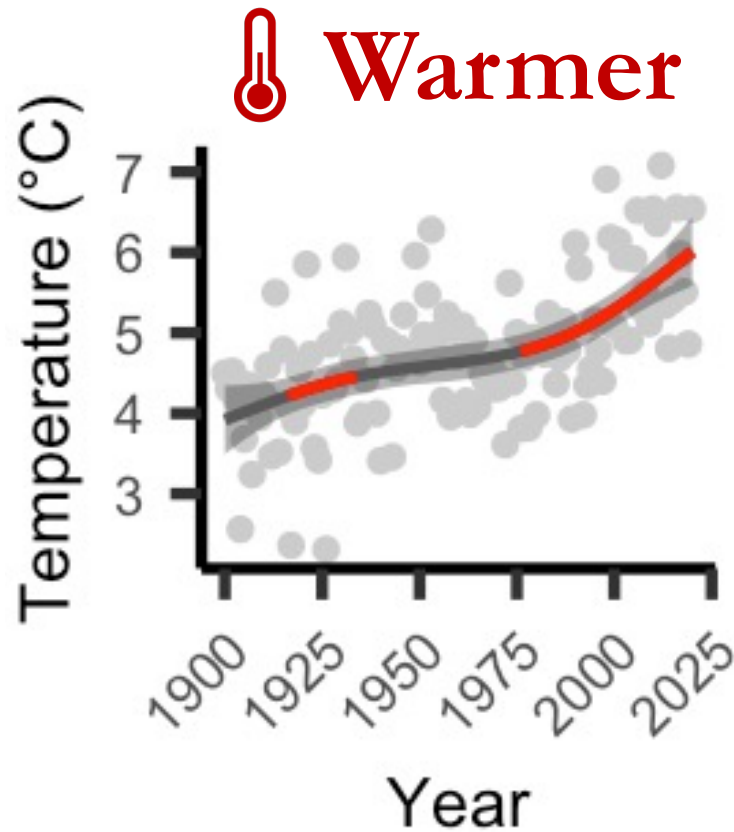
PAUL SMITH'S COLLEGE  
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[www.adkwatershed.org](http://www.adkwatershed.org)  
[bwiltse@paulsmiths.edu](mailto:bwiltse@paulsmiths.edu)

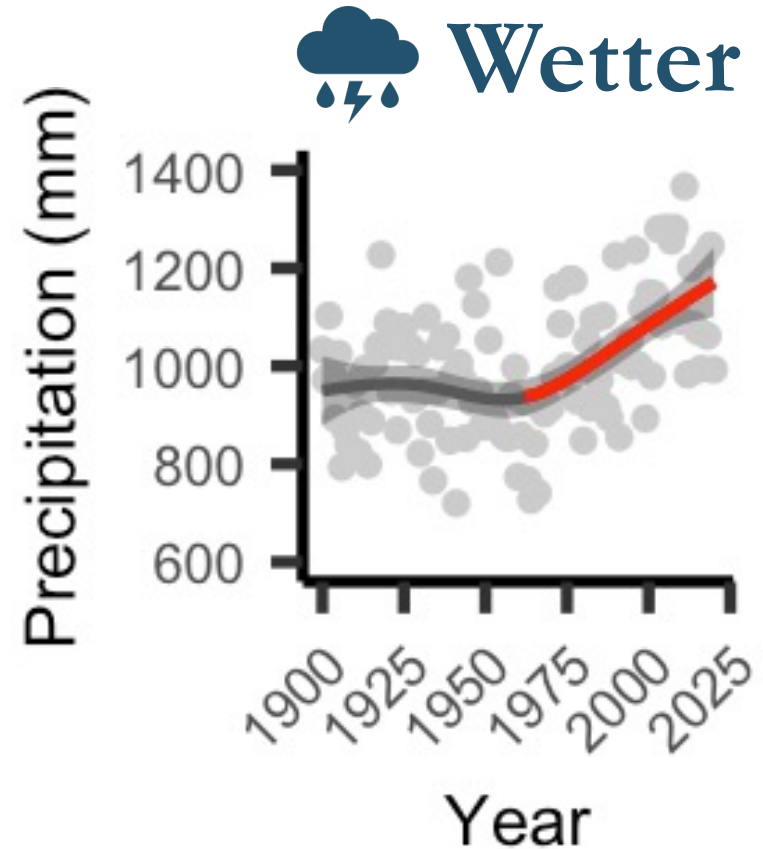
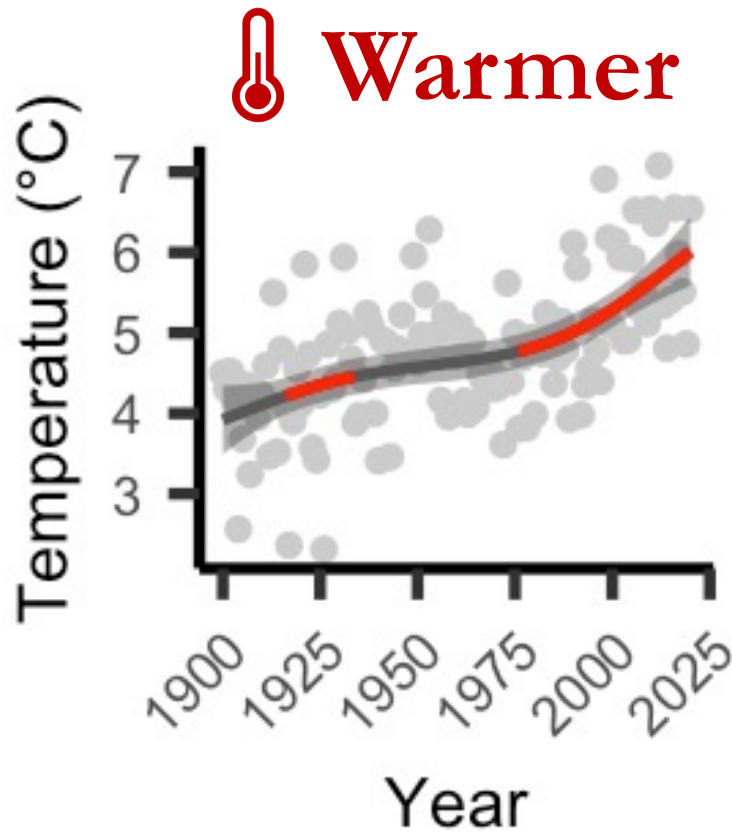


**How is the climate in the  
Adirondacks changing?**

# How is the climate in the Adirondacks changing?

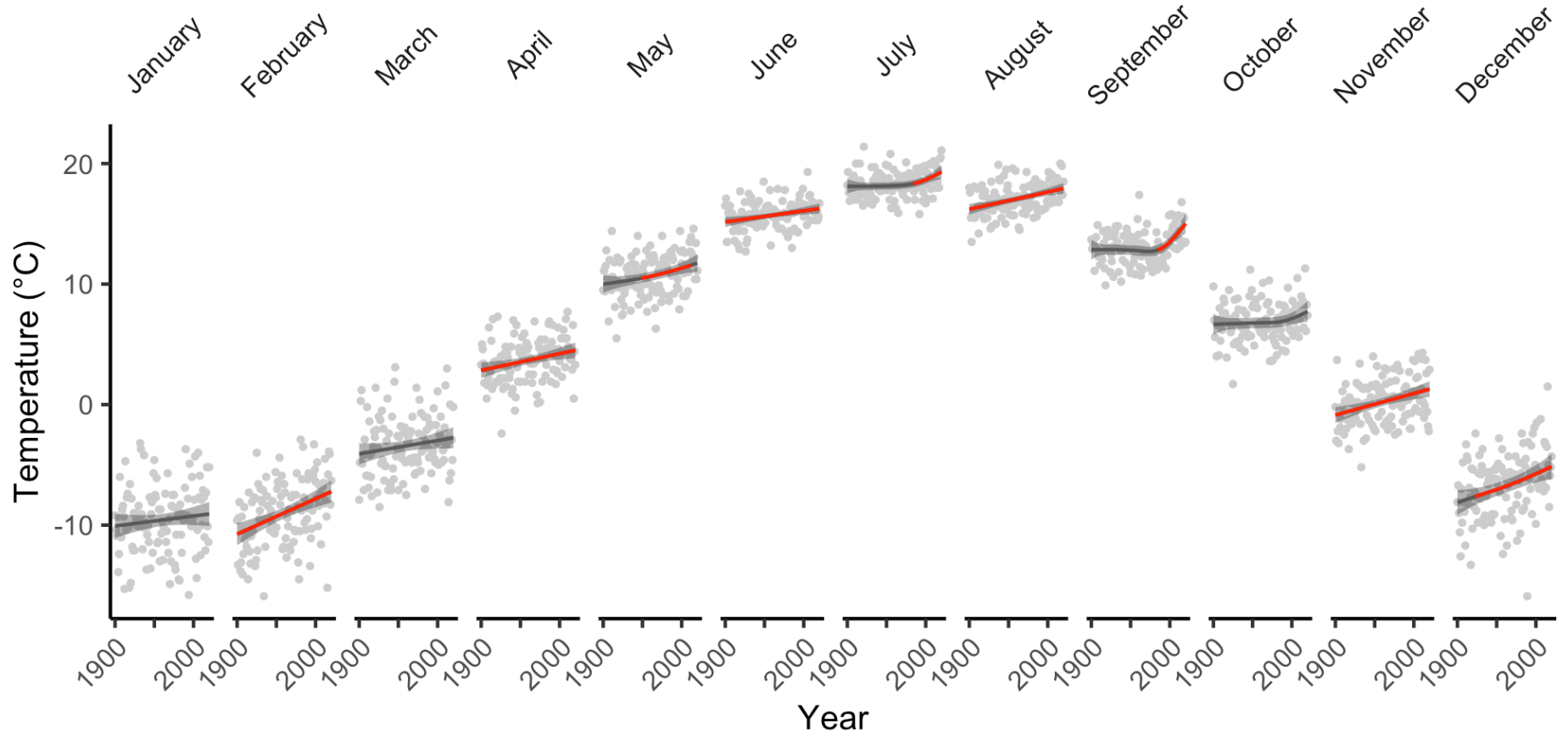


# How is the climate in the Adirondacks changing?

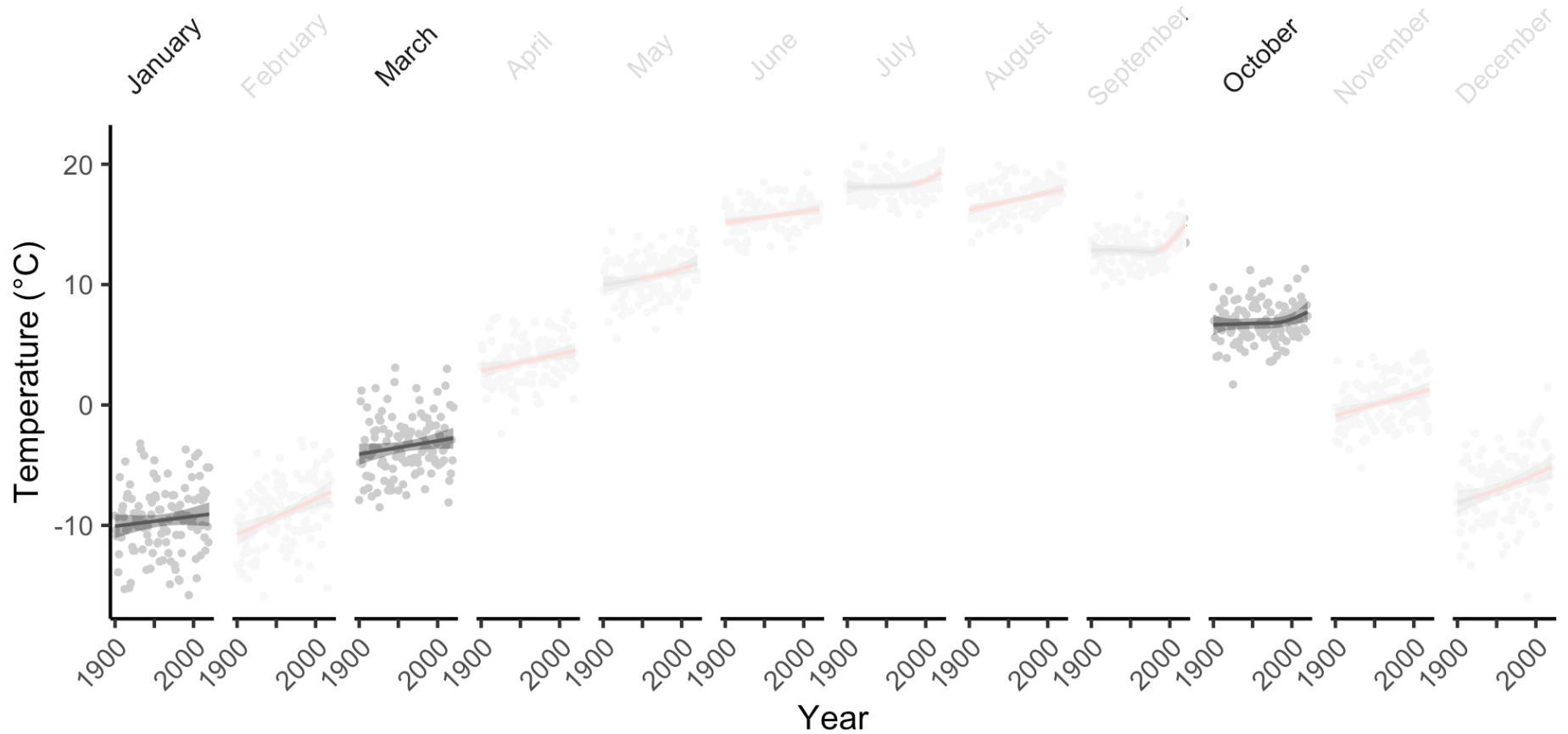




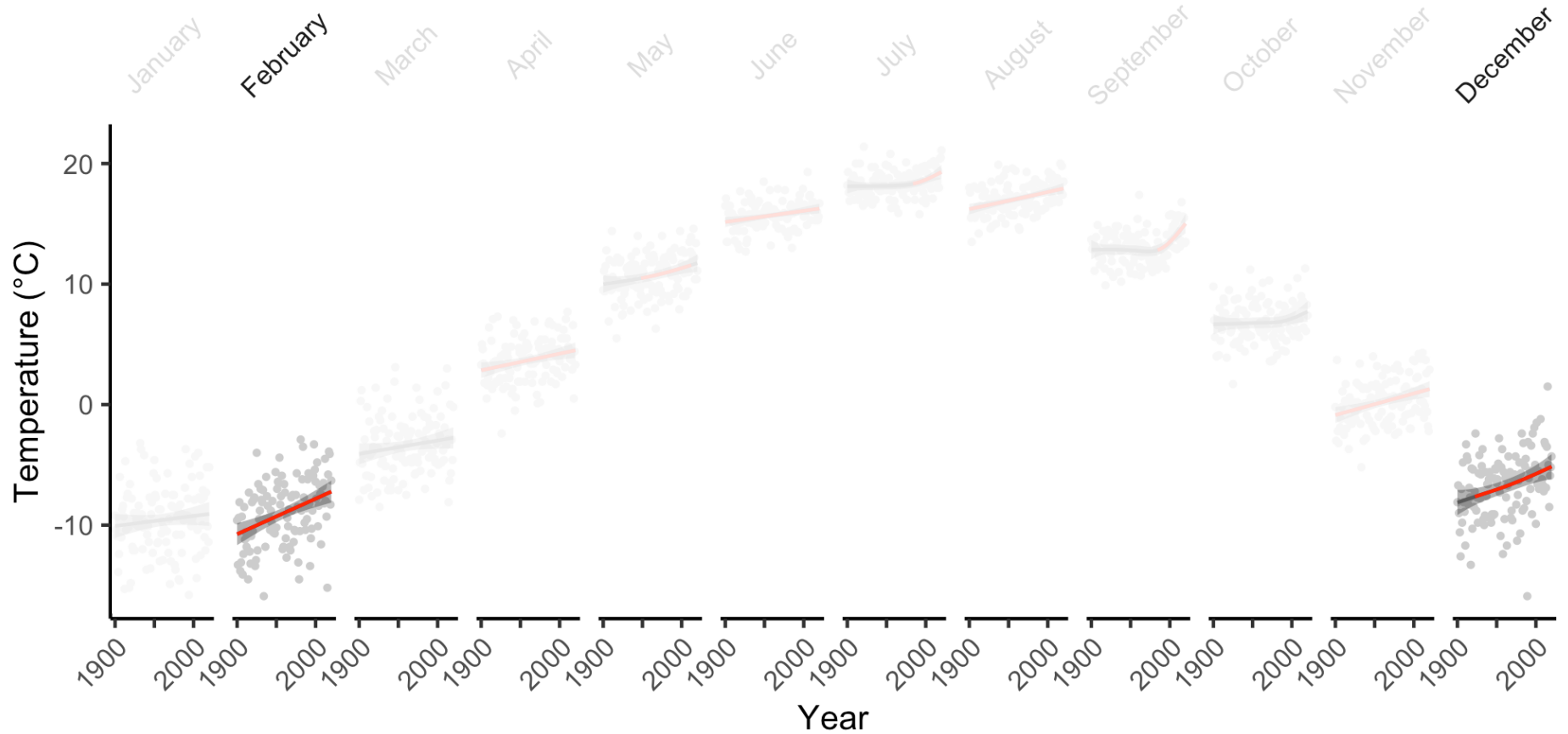
# Warming Isn't Uniform



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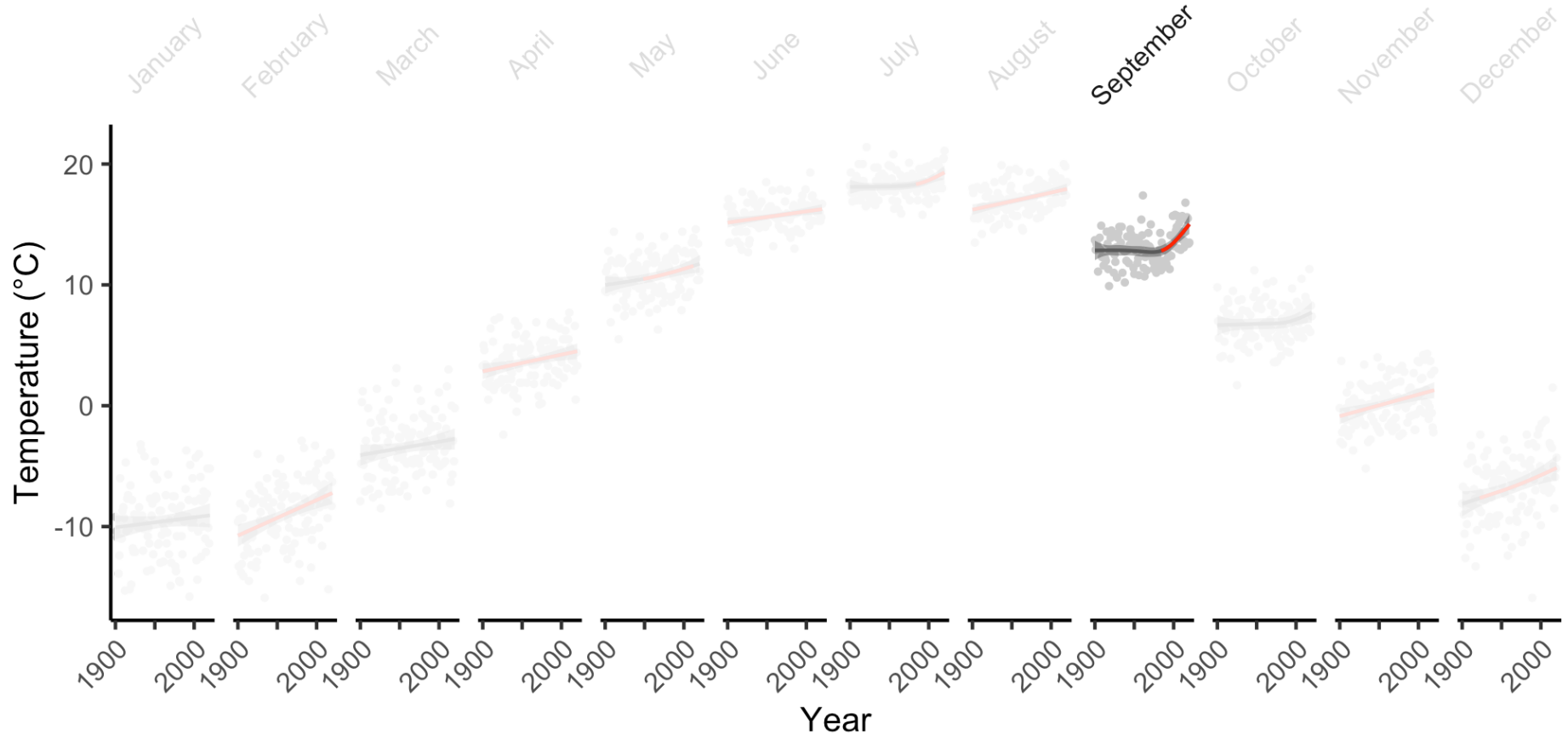


# Warming Isn't Uniform

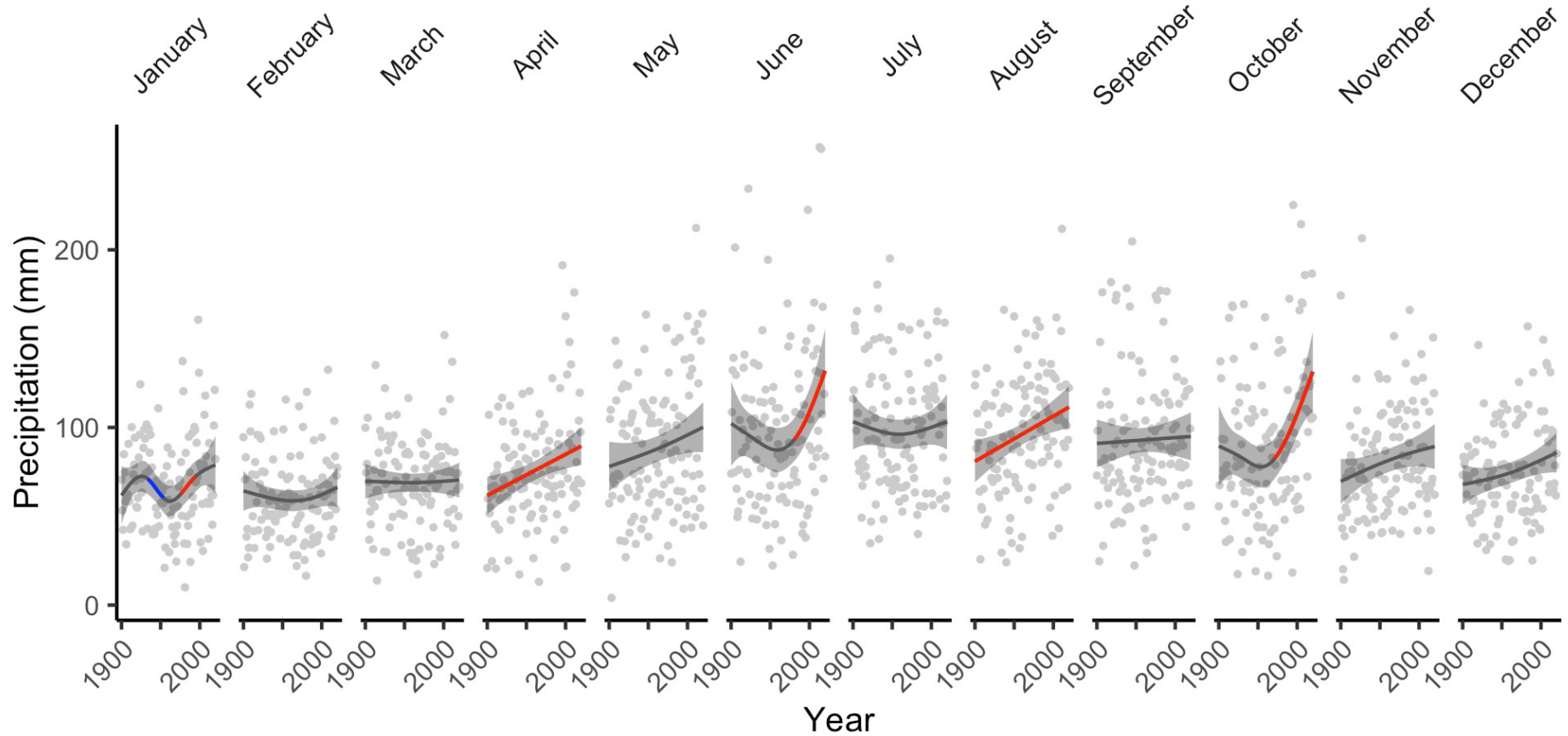




# Warming Isn't Uniform



# Precipitation Is More Complex

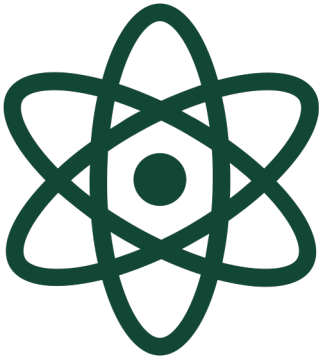


# How Does This Affect Adirondack Lakes?

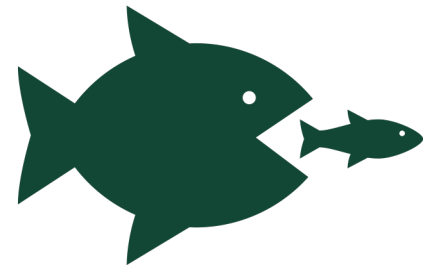


# How Does This Affect Adirondack Lakes?

Physics



Fish







3 Weeks Less Ice  
Cover Since 1903

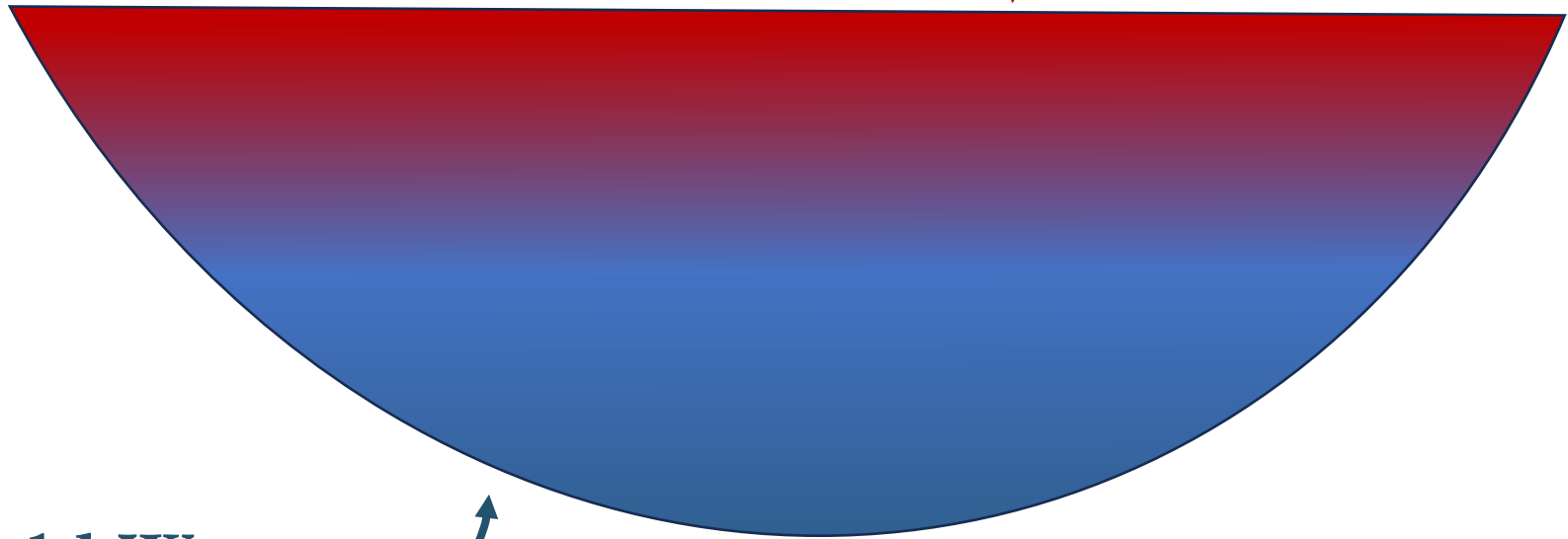


Less Ice



Prolonged Stratification

Warm Water  
On Top



Cold Water  
On Bottom

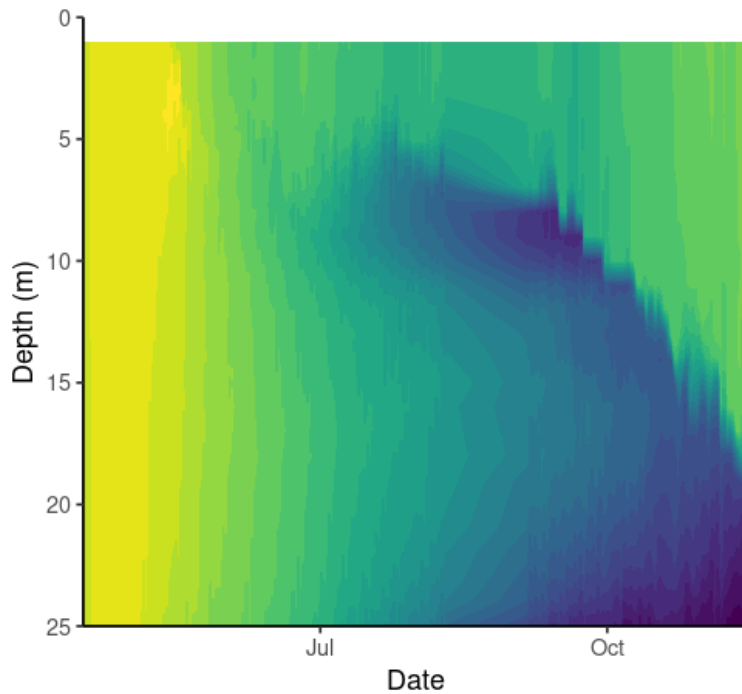




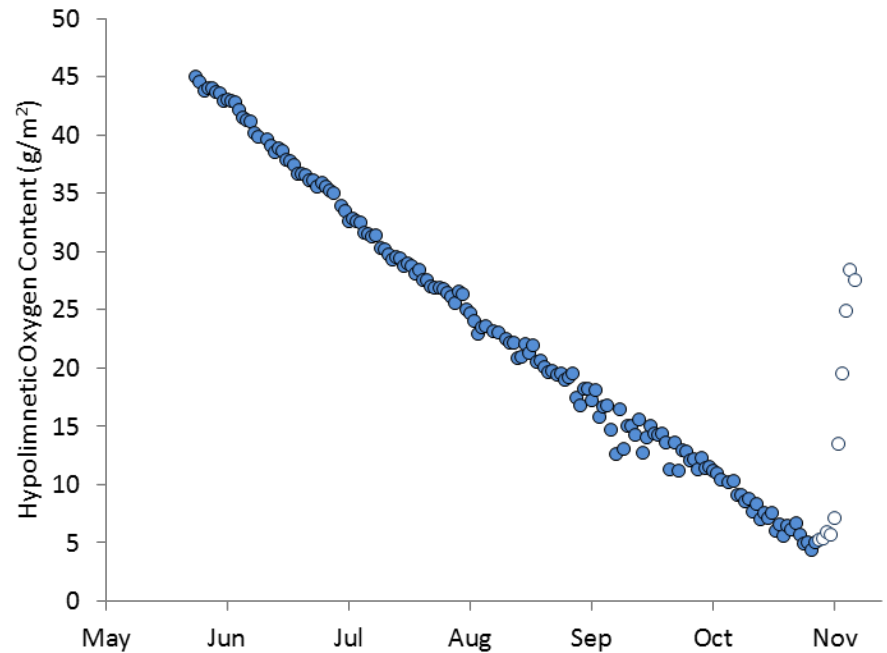
# Prolonged Stratification



## Less Oxygen



Dissolved Oxygen (mg/L)

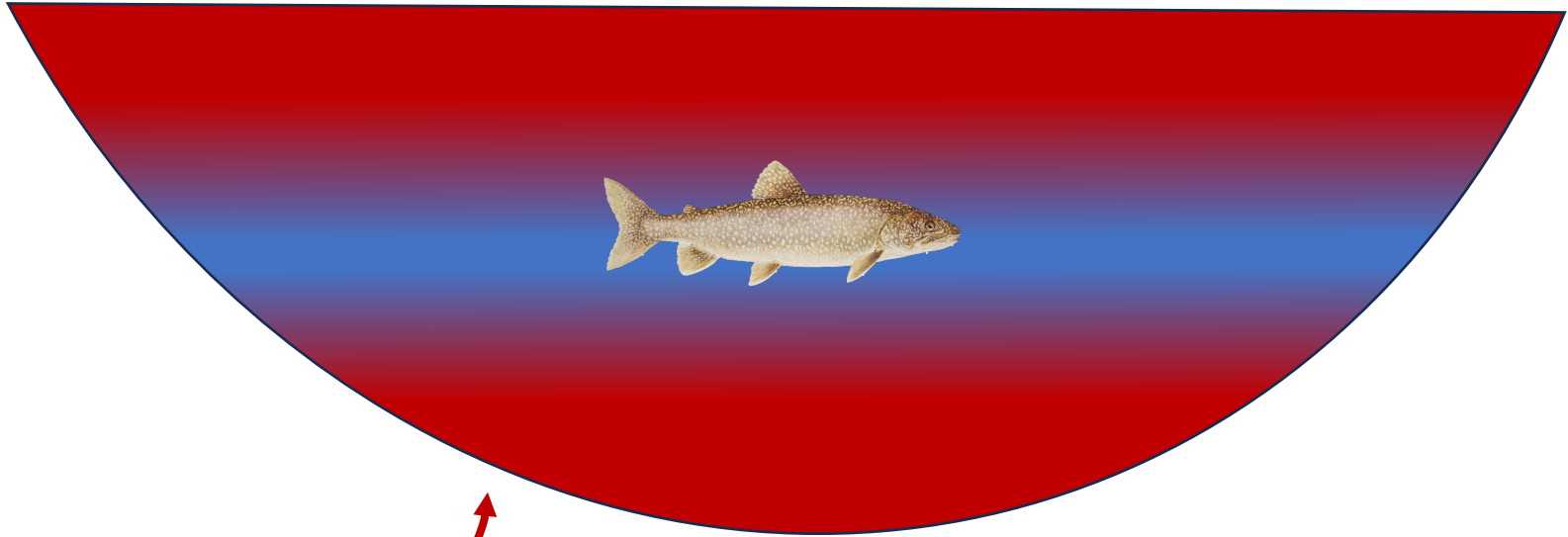


# Prolonged Stratification



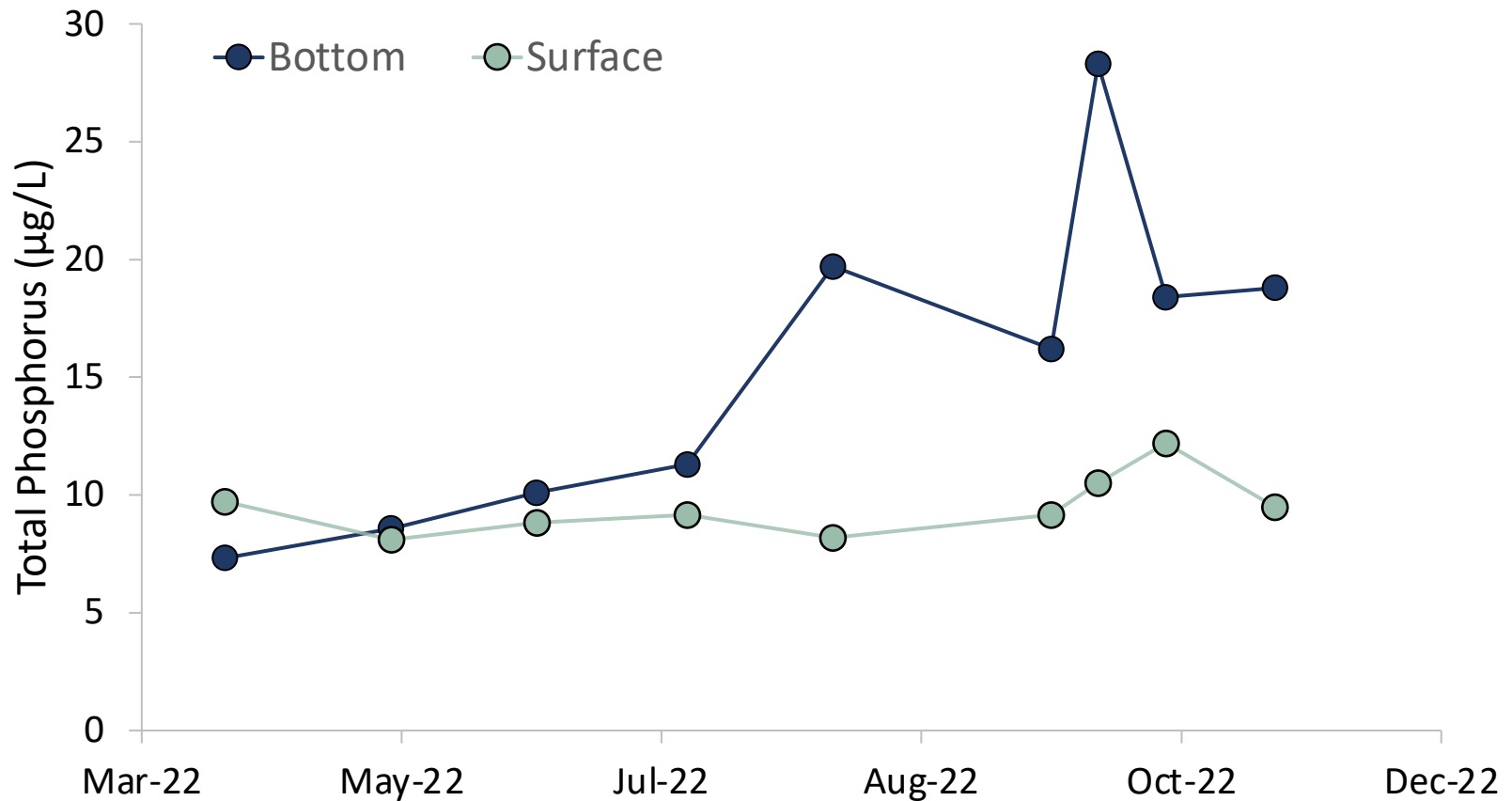
## Less Oxygen

Too Warm



No Oxygen

Less Oxygen  
↓  
More Nutrients





# More Rain



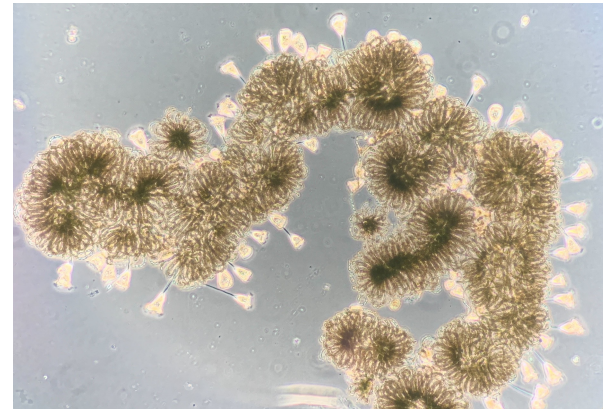
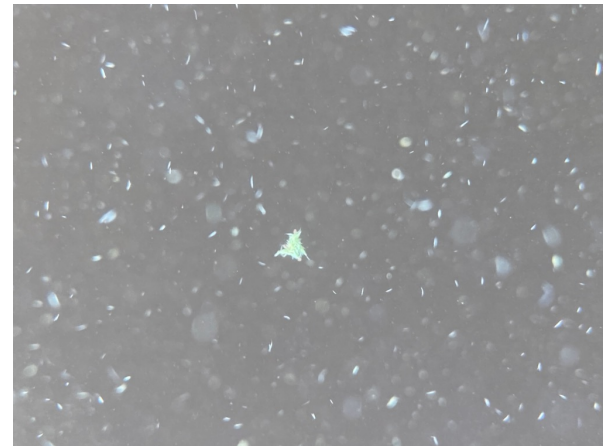
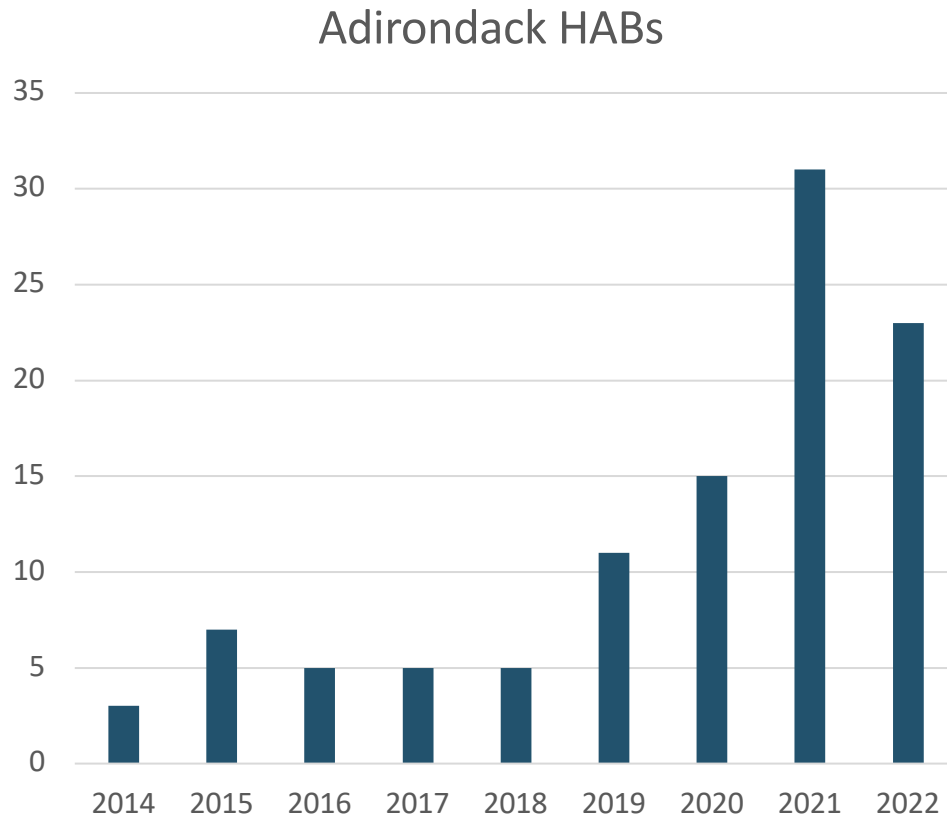
# More Nutrients



# More Nutrients

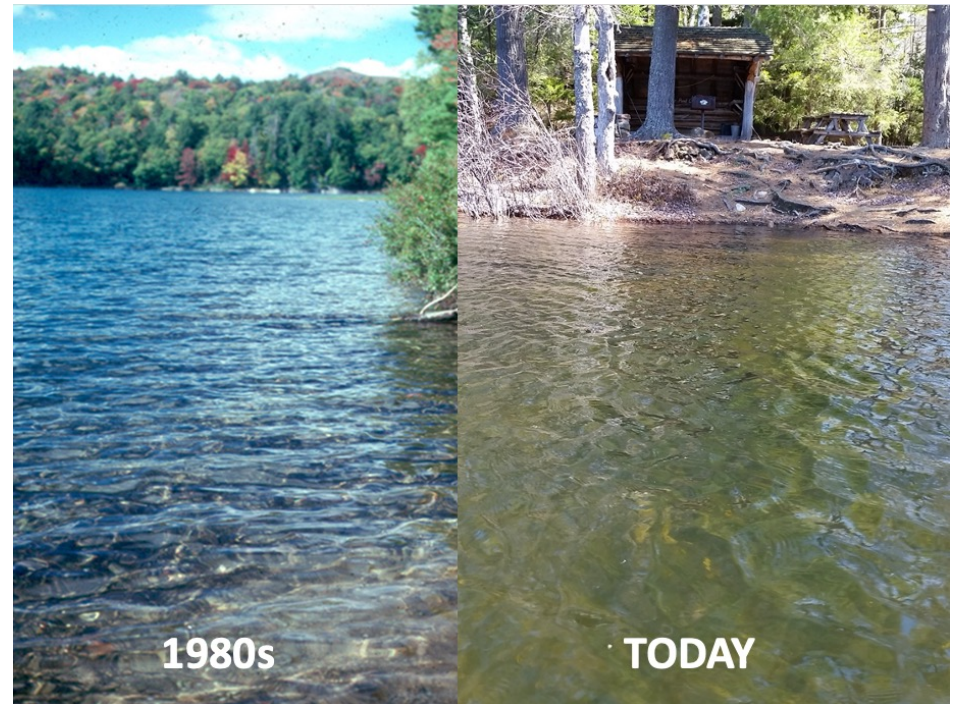
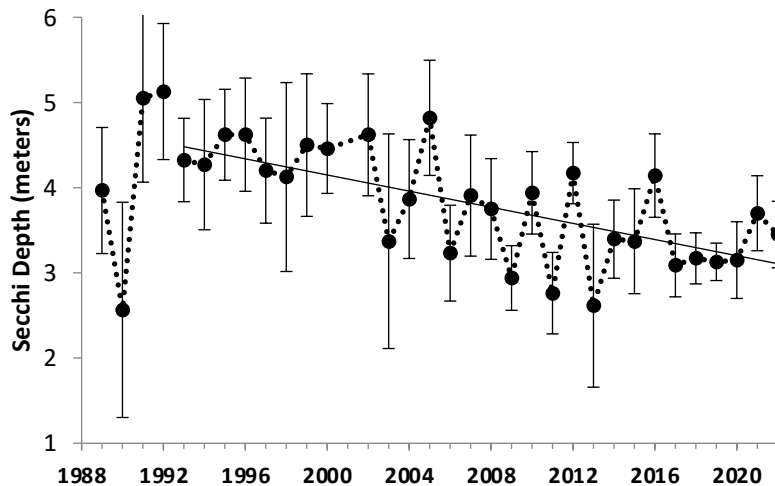


# More Harmful Algal Blooms



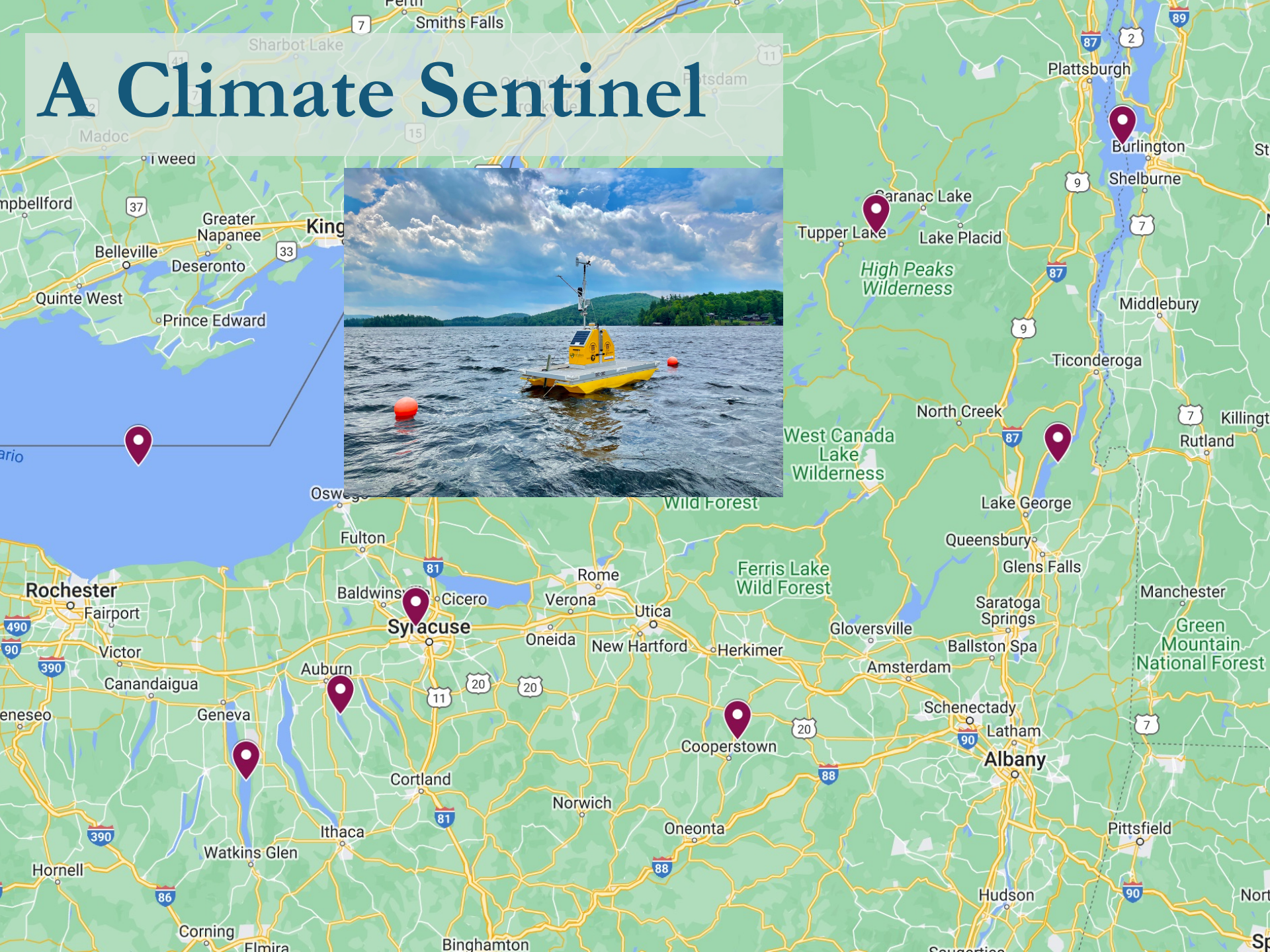


# Acid Rain Recovery + Warming + Wetting ↓ Lake Browning





# A Climate Sentinel







# Profile Data

Parameter Selection

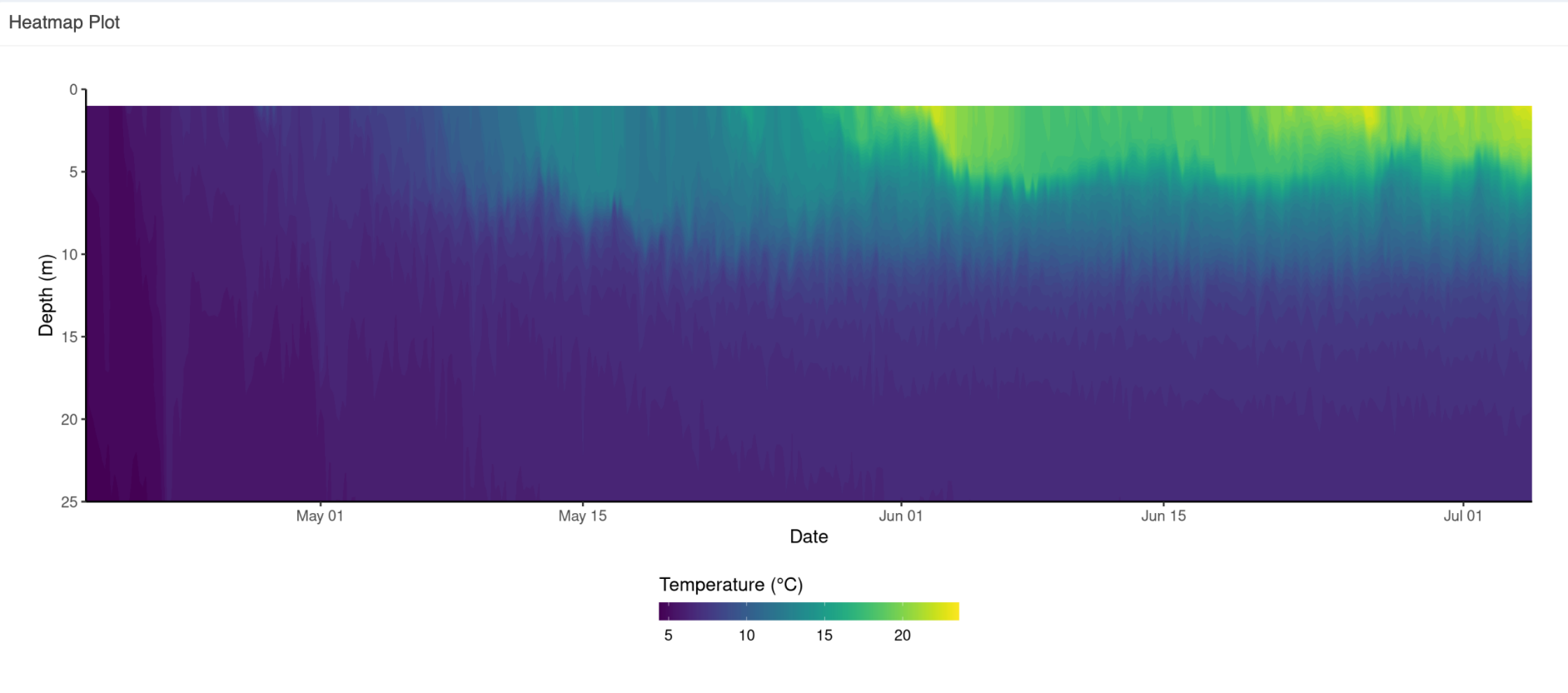
Parameter Information

Parameter

Temperature (°C)

Select Date Range

2022-04-16to2023-07-05



# Profile Data

Parameter Selection

Parameter Information

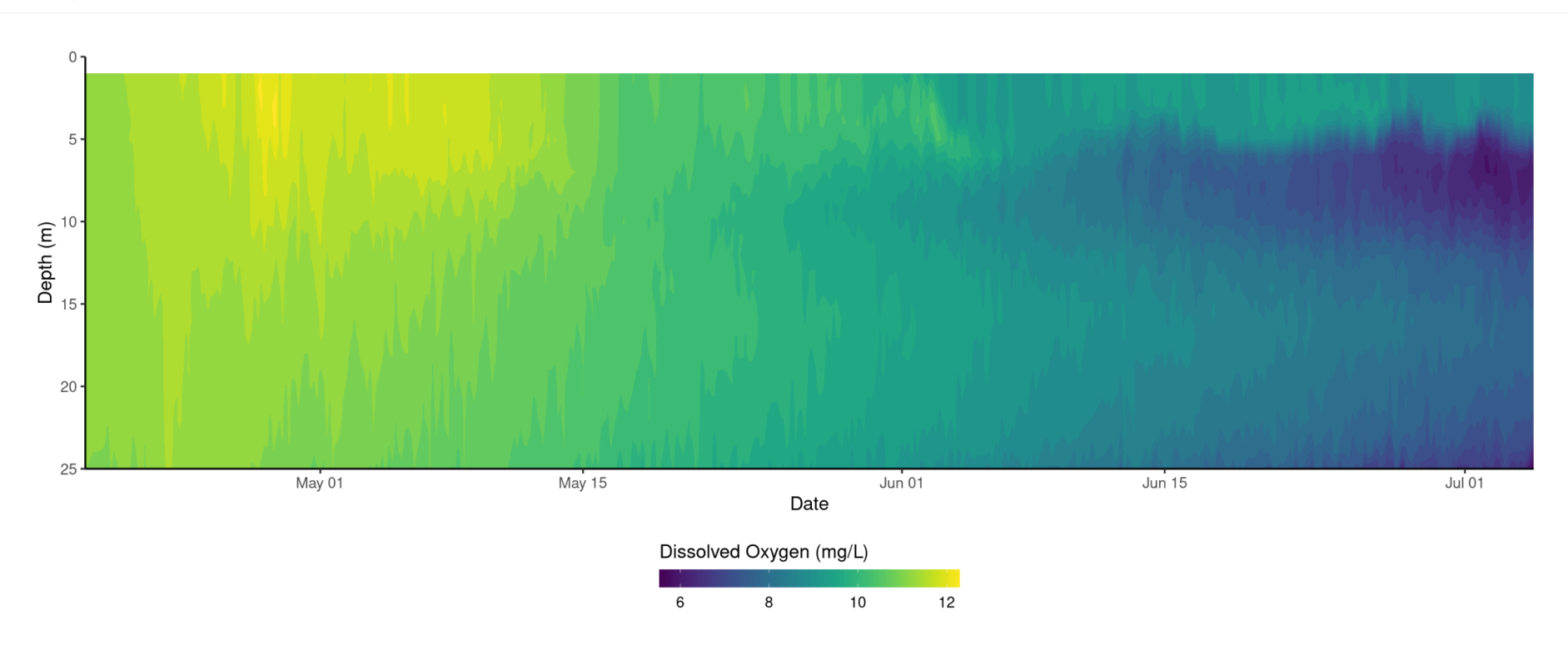
Parameter

Dissolved Oxygen (mg/L)

Select Date Range

2022-04-16to2023-07-05

Heatmap Plot





# Profile Data

Parameter Selection

Parameter Information

Parameter

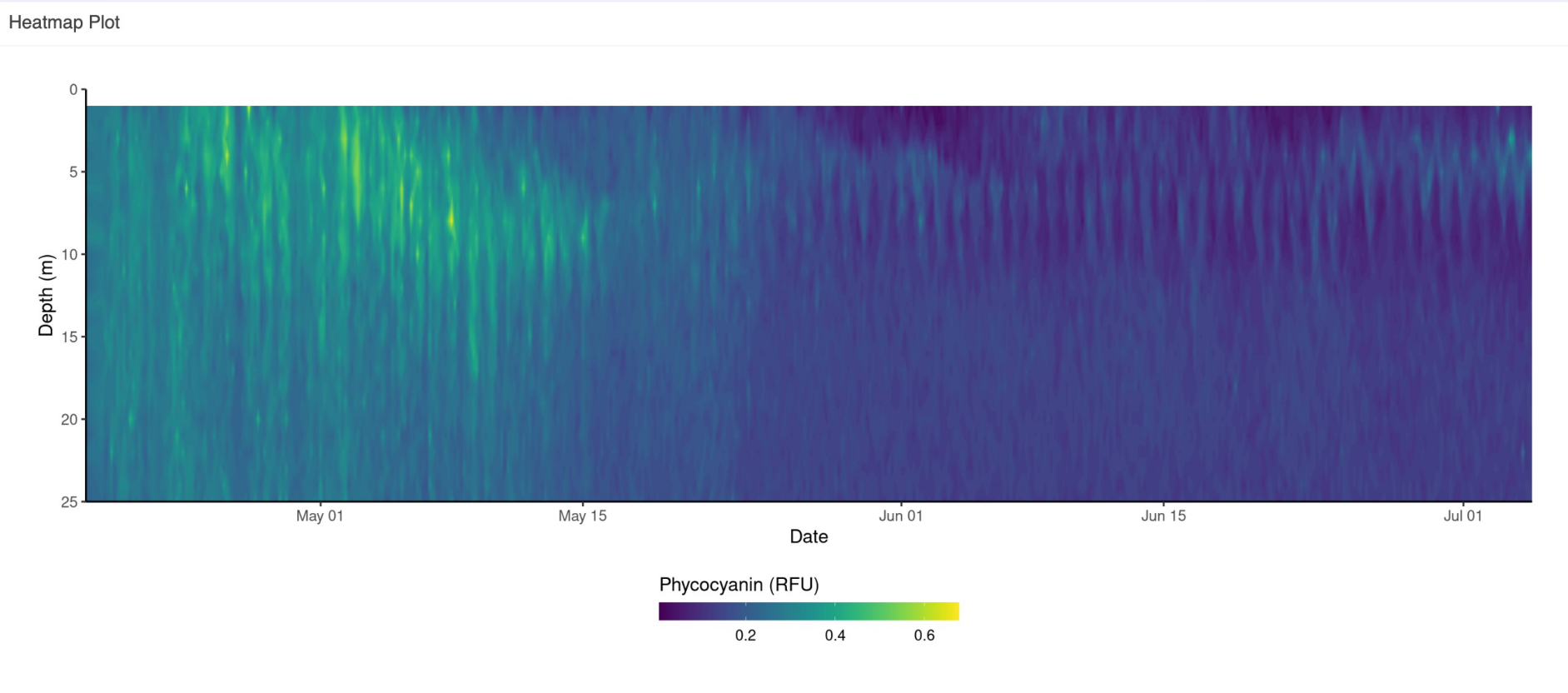
Phycocyanin (RFU) ▼

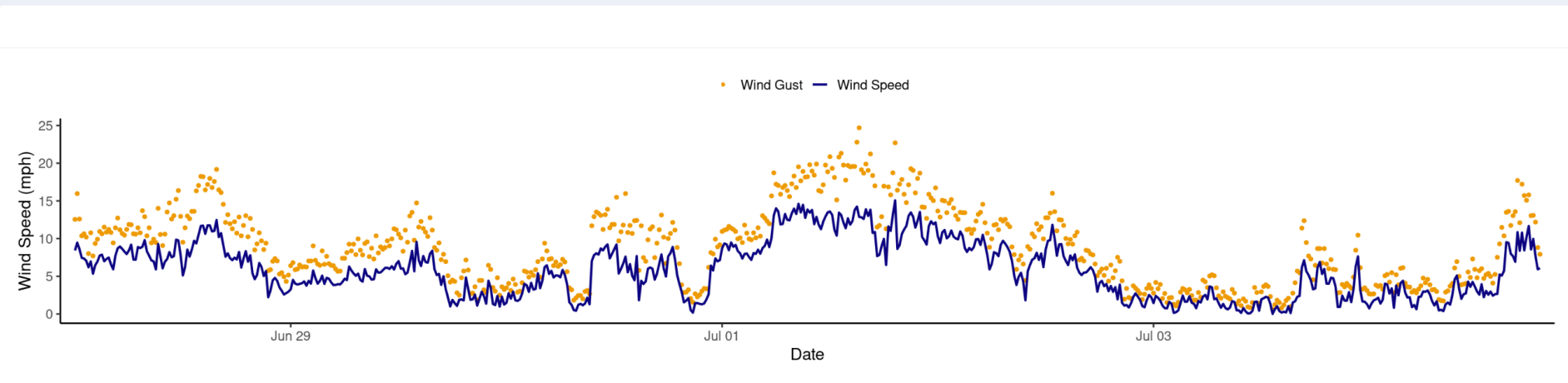
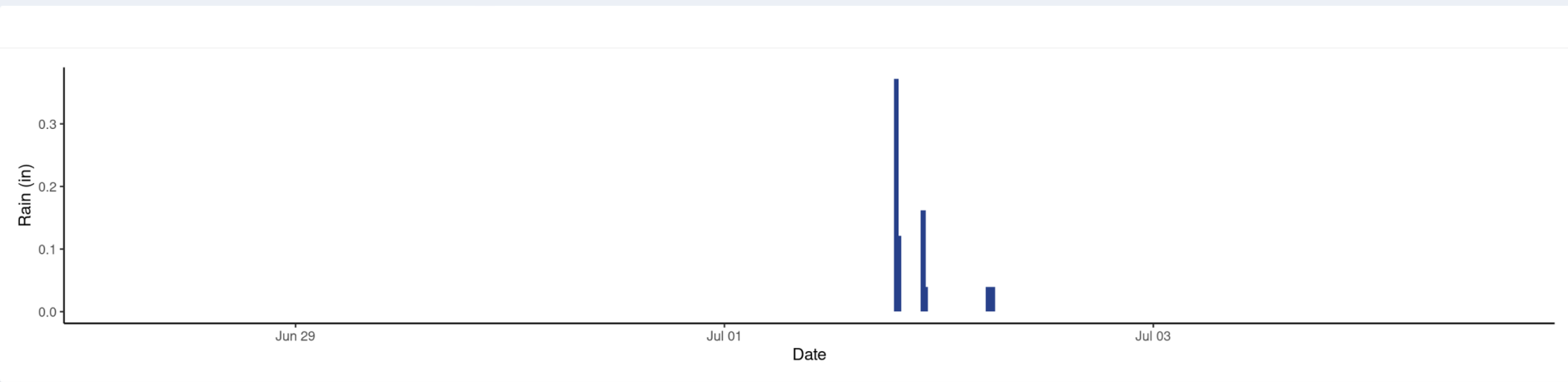
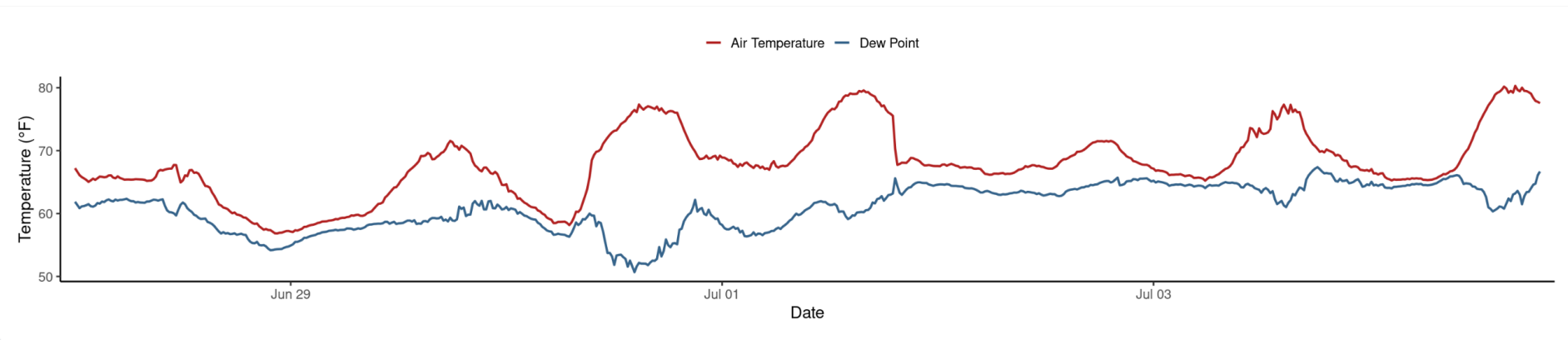
Select Date Range

2022-04-16

to

2023-07-05







# A HAB Early Warning System



# How Is Climate Change Affecting Adirondack Lakes?

- Less Ice Cover
- Warmer Water
- Prolonged Stratification
- Less Oxygen
- Reduced Habitat for Cool/Coldwater Fish
- More Nutrients
- More Harmful Algal Blooms





# Thank You

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