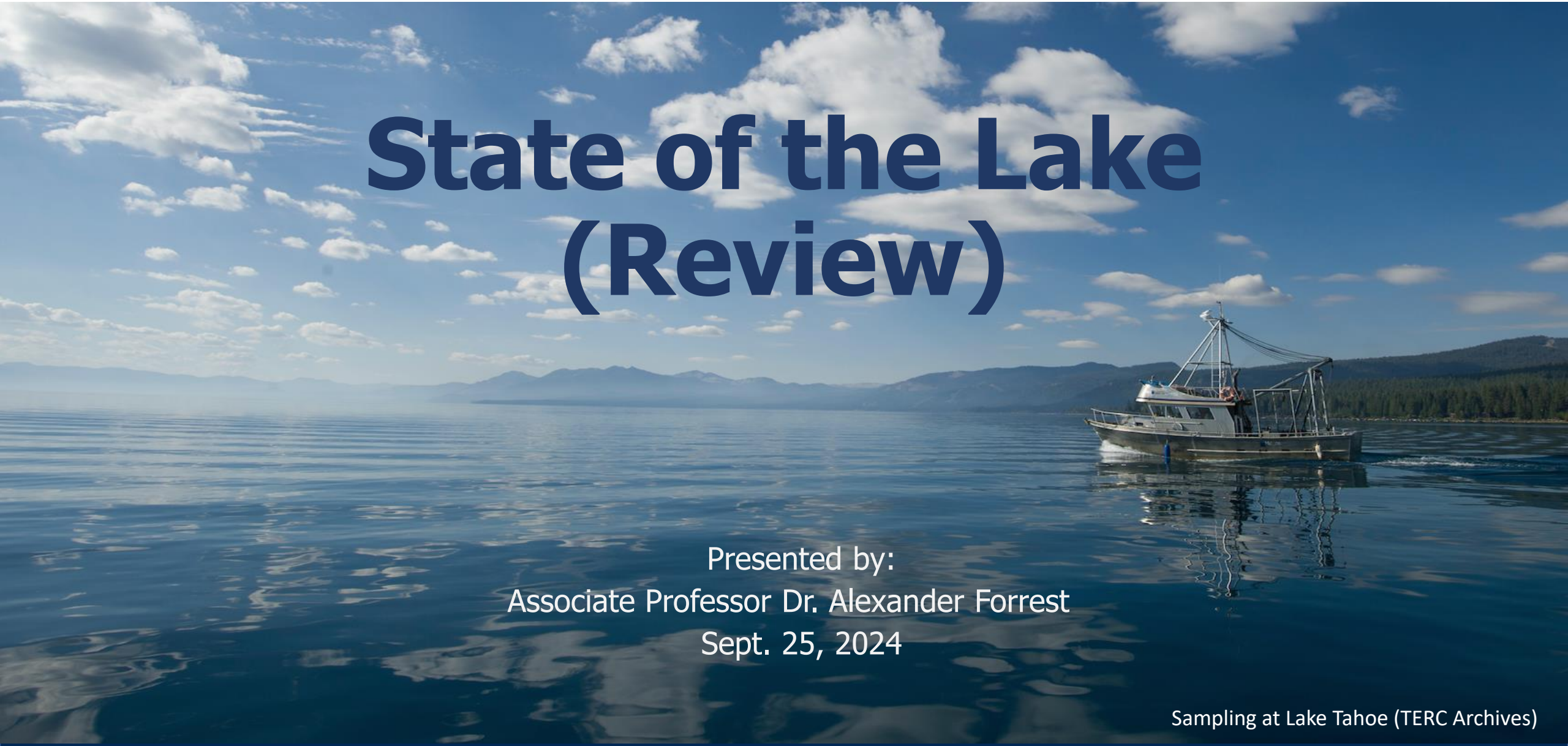
State of the Lake (Review)



Presented by:
Associate Professor Dr. Alexander Forrest
Sept. 25, 2024

Sampling at Lake Tahoe (TERC Archives)

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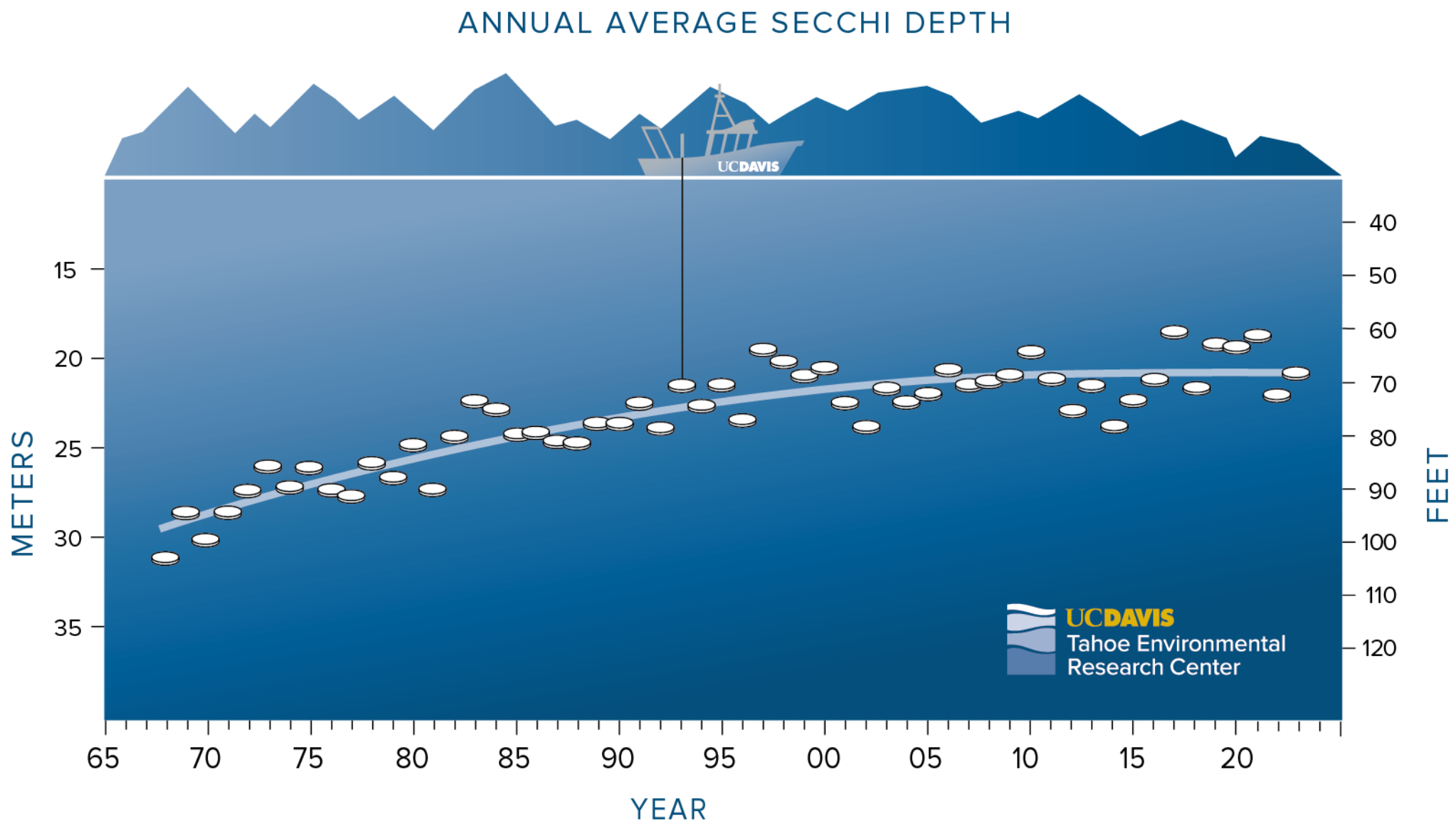

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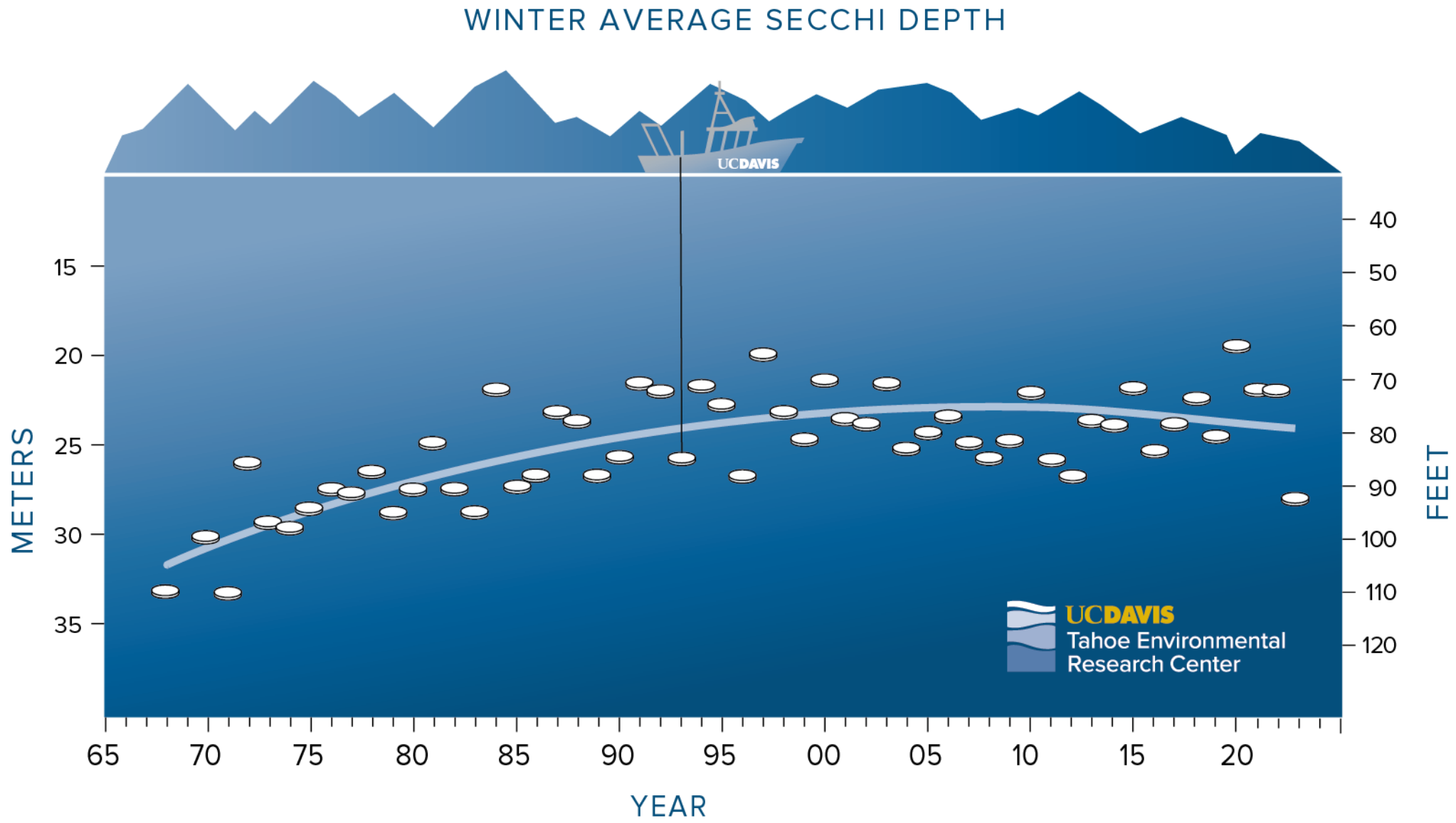
Annual Average Secchi



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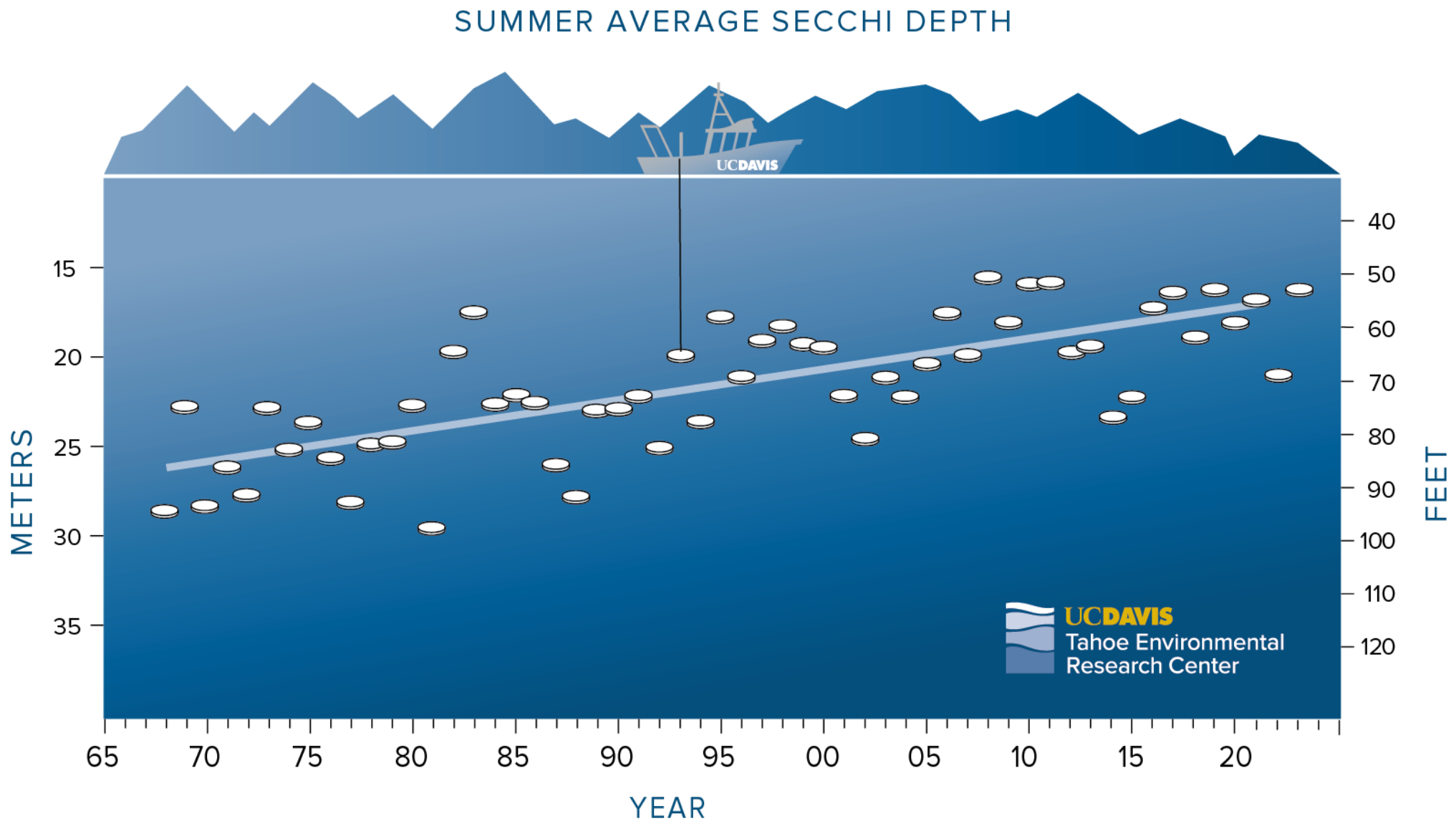
Winter Average Secchi



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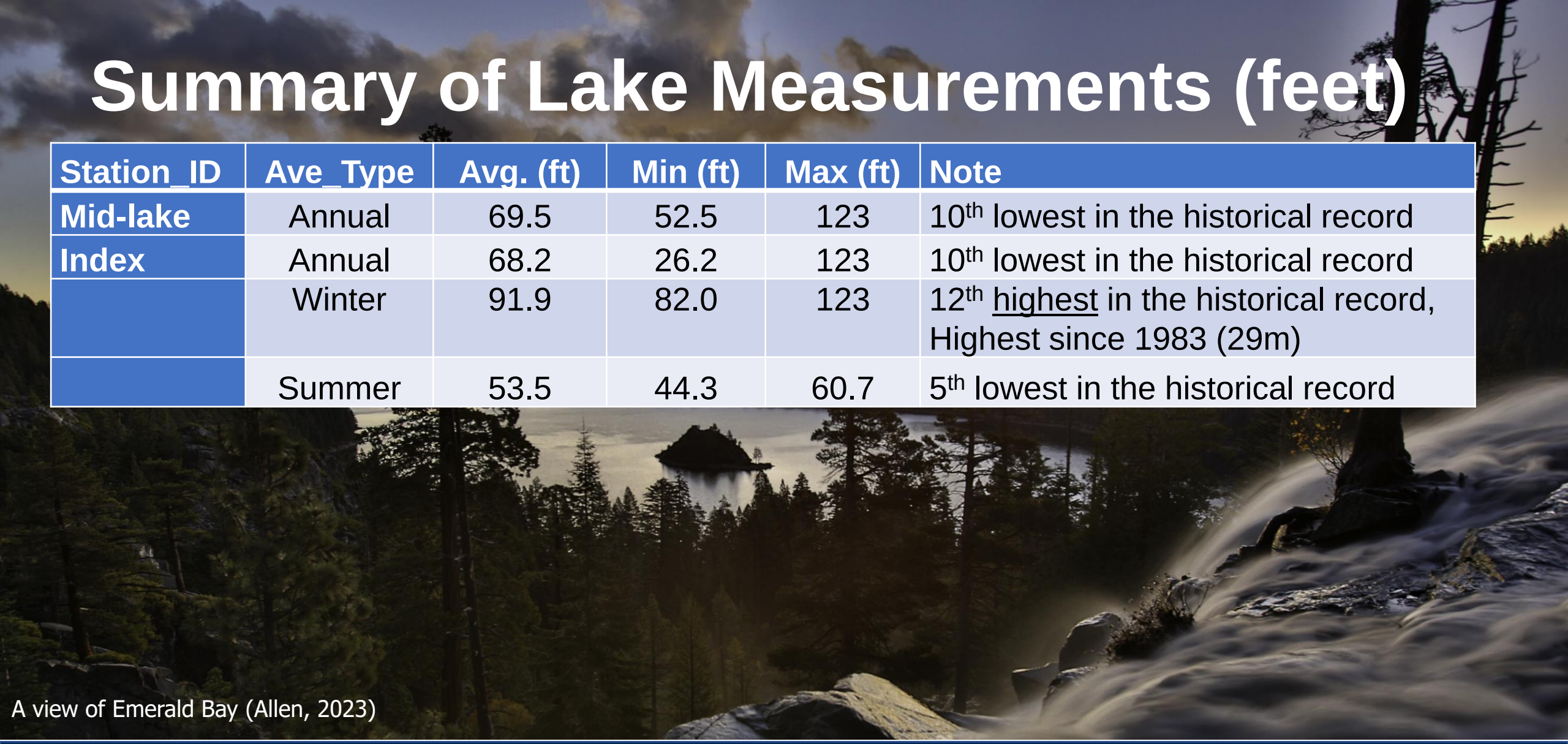
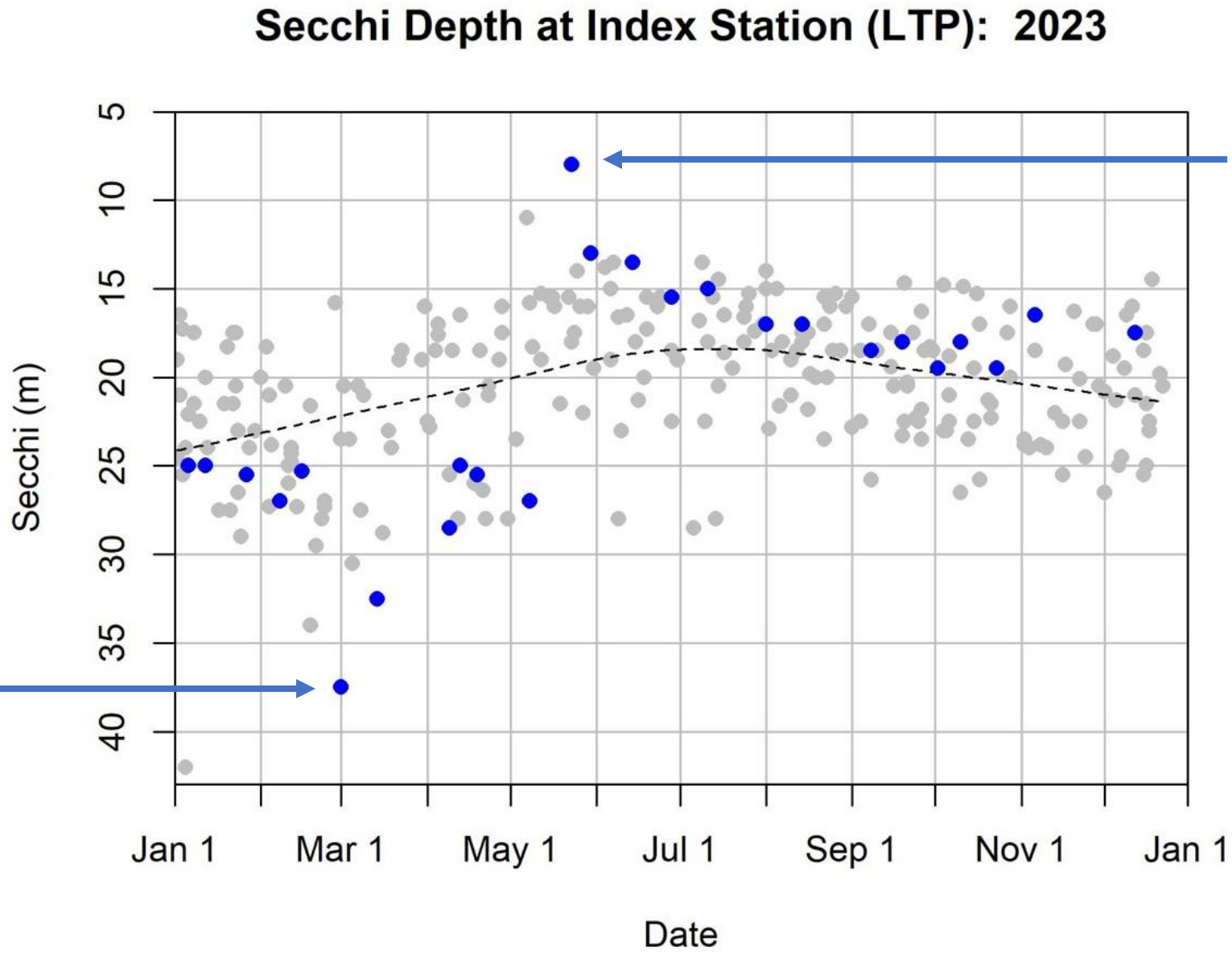
Summer Average Secchi

Summary of Lake Measurements (feet)

Station_ID	Ave_Type	Avg. (ft)	Min (ft)	Max (ft)	Note
Mid-lake	Annual	69.5	52.5	123	10th lowest in the historical record
Index	Annual	68.2	26.2	123	10th lowest in the historical record
	Winter	91.9	82.0	123	12th highest in the historical record, Highest since 1983 (29m)
	Summer	53.5	44.3	60.7	5th lowest in the historical record



A view of Emerald Bay (Allen, 2023)



Summer:

5th worst

on record

Winter:

12th best

on record

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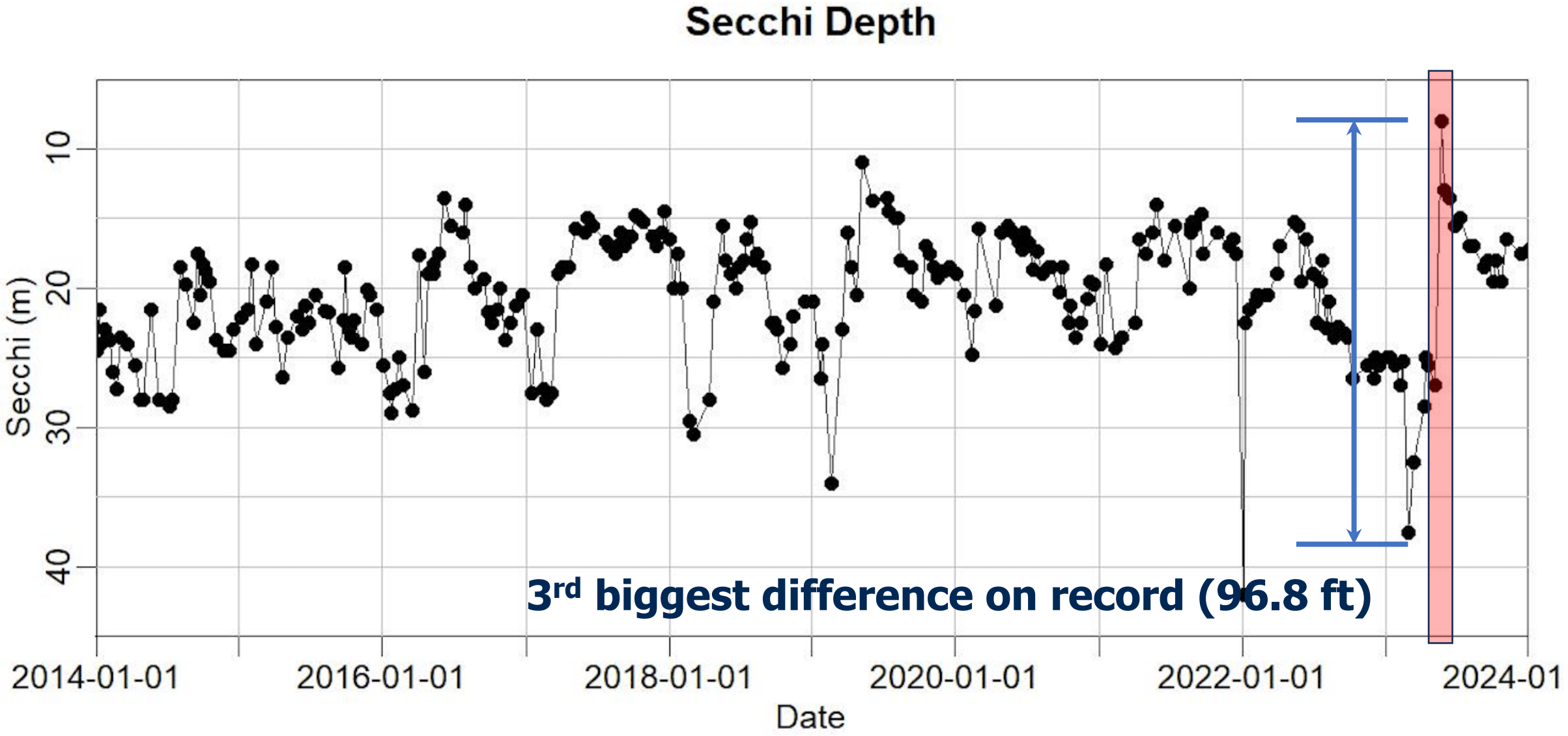
Seasonal Variation



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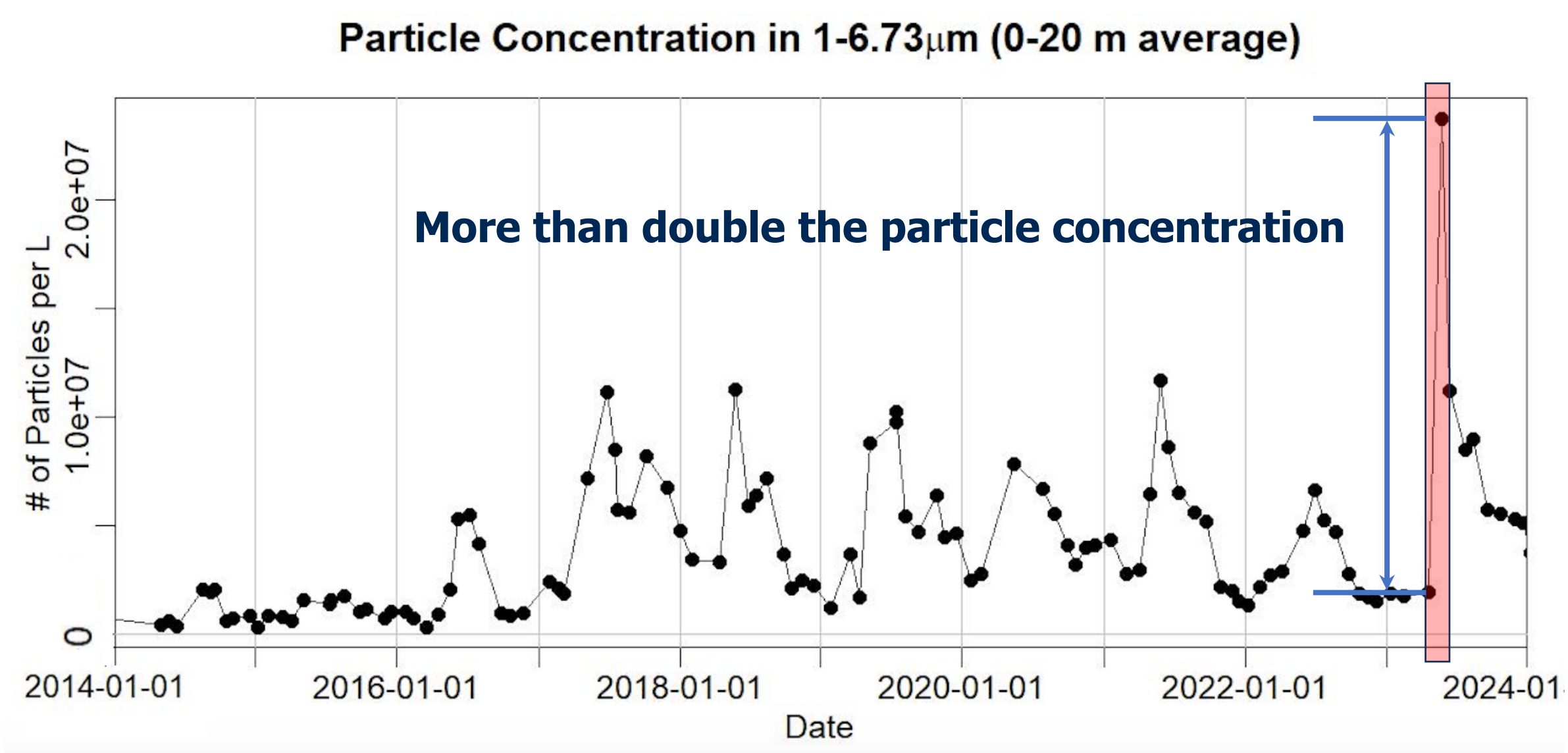
Decadal Trends



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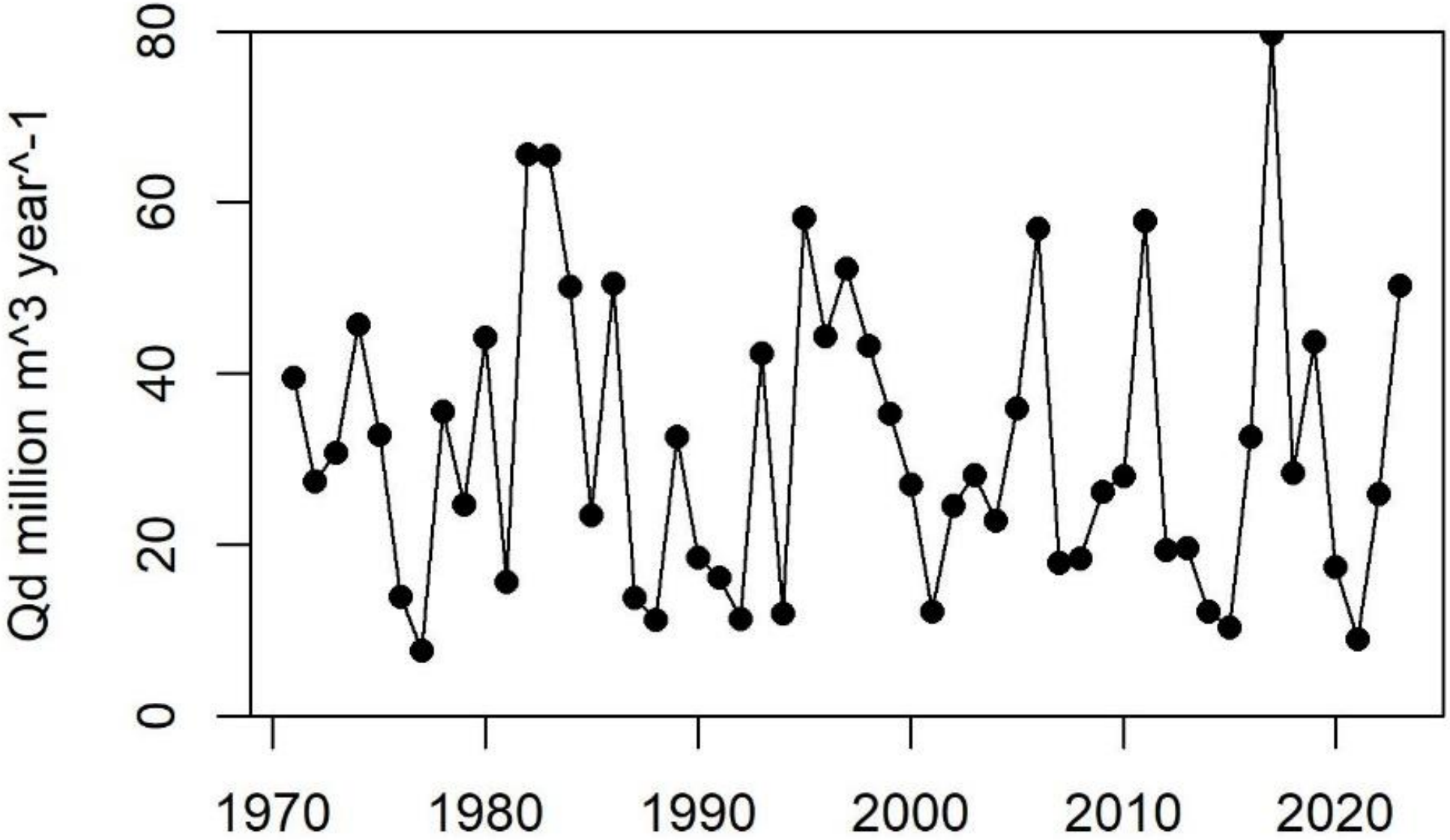
Particle Trends



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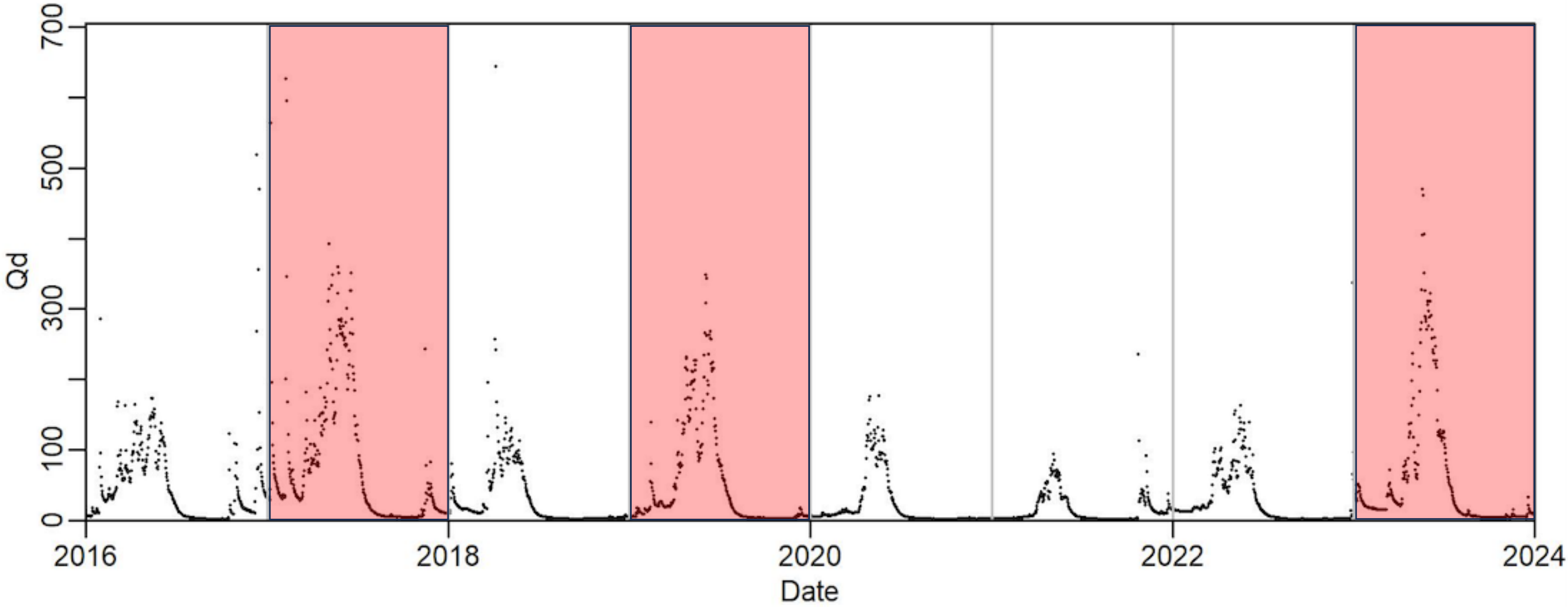
Blackwood Streamflow



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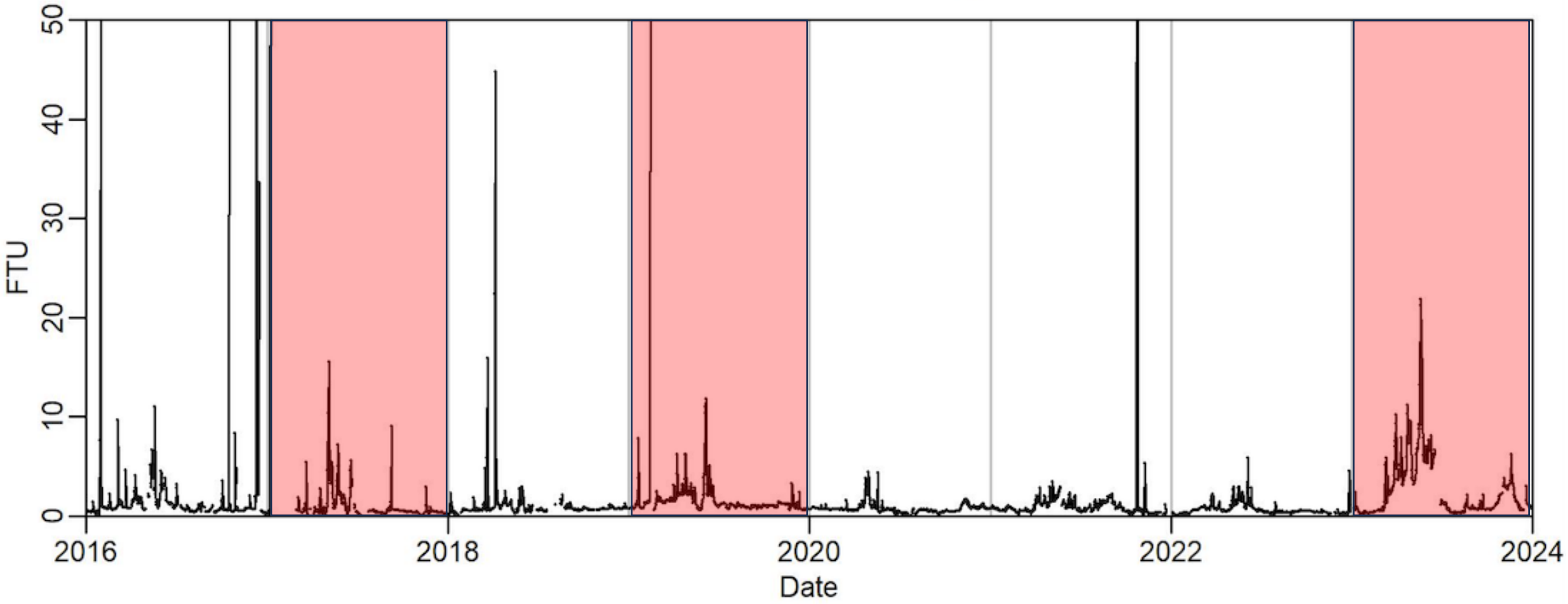
Blackwood Discharge



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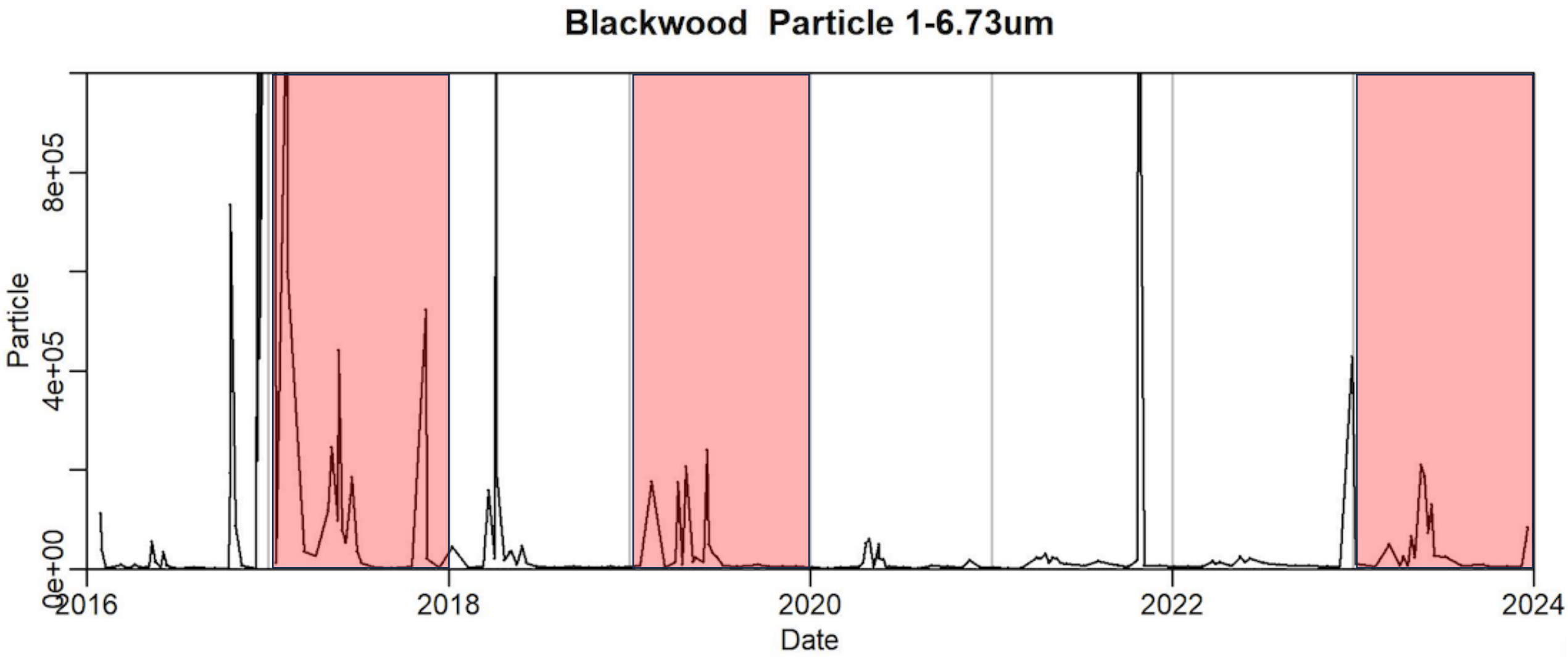
Blackwood Turbidity



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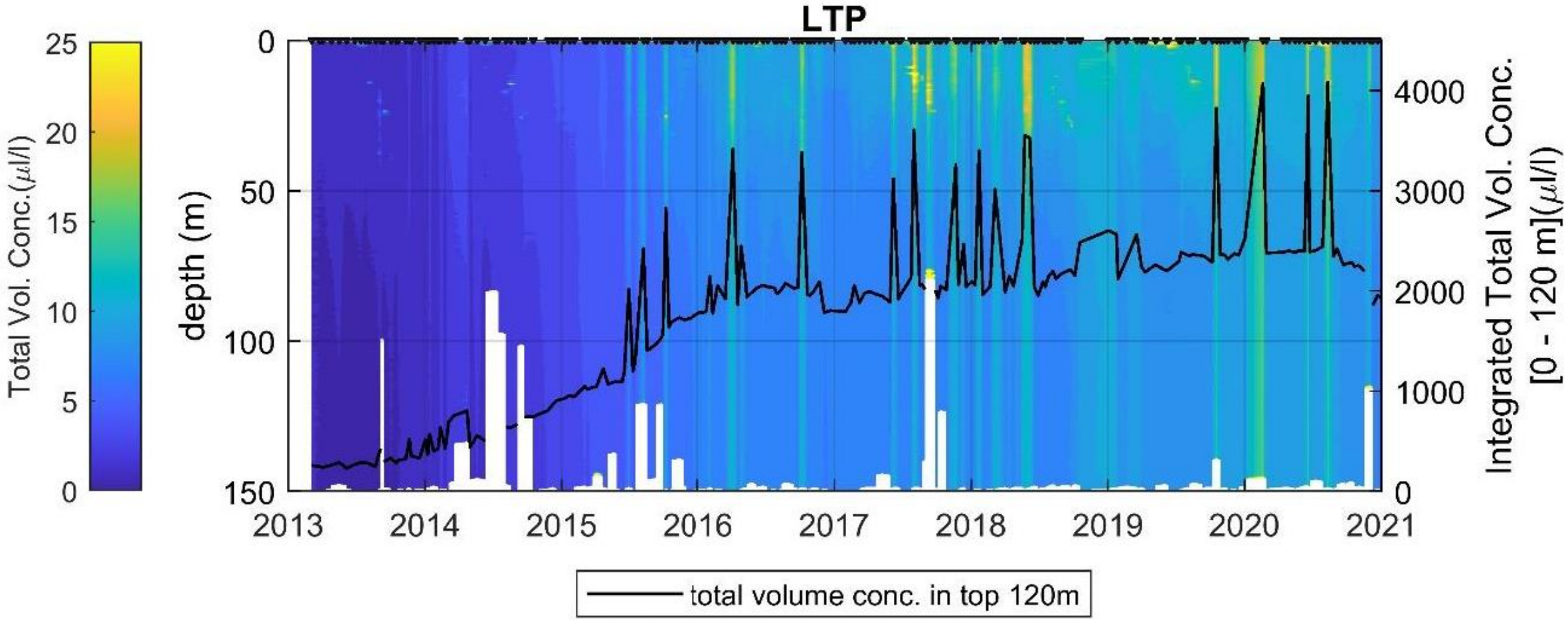
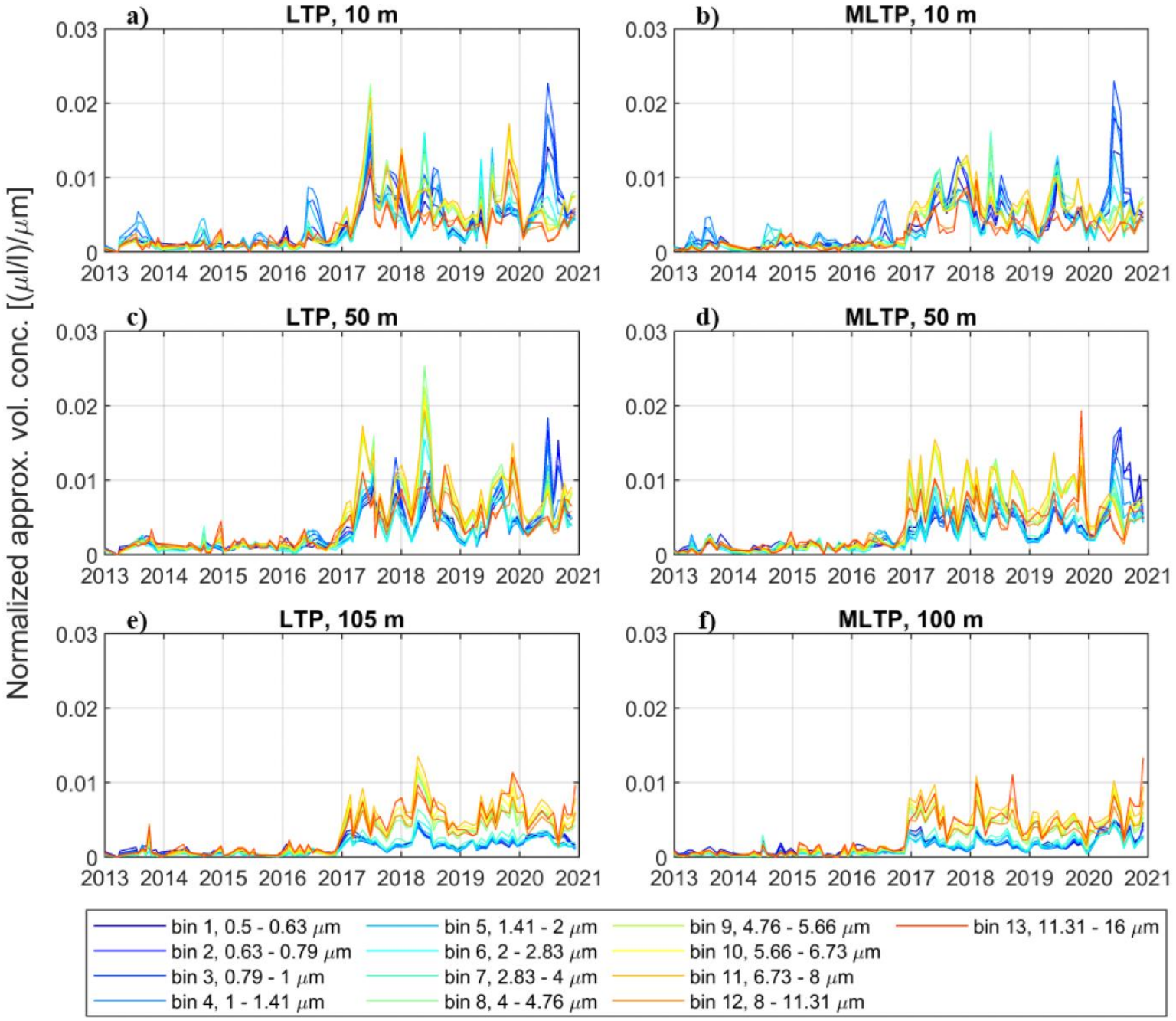
Blackwood Fine Particles

Long-term Background Conditions



Fine Particles

- Increasing fine particles present at all depths
- Mechanism unclear
- Important to understand for long term change



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Changing Conditions

Sampling on Lake Tahoe during the Caldor wildfire event (Shohei Watanabe, UC Davis TERC)

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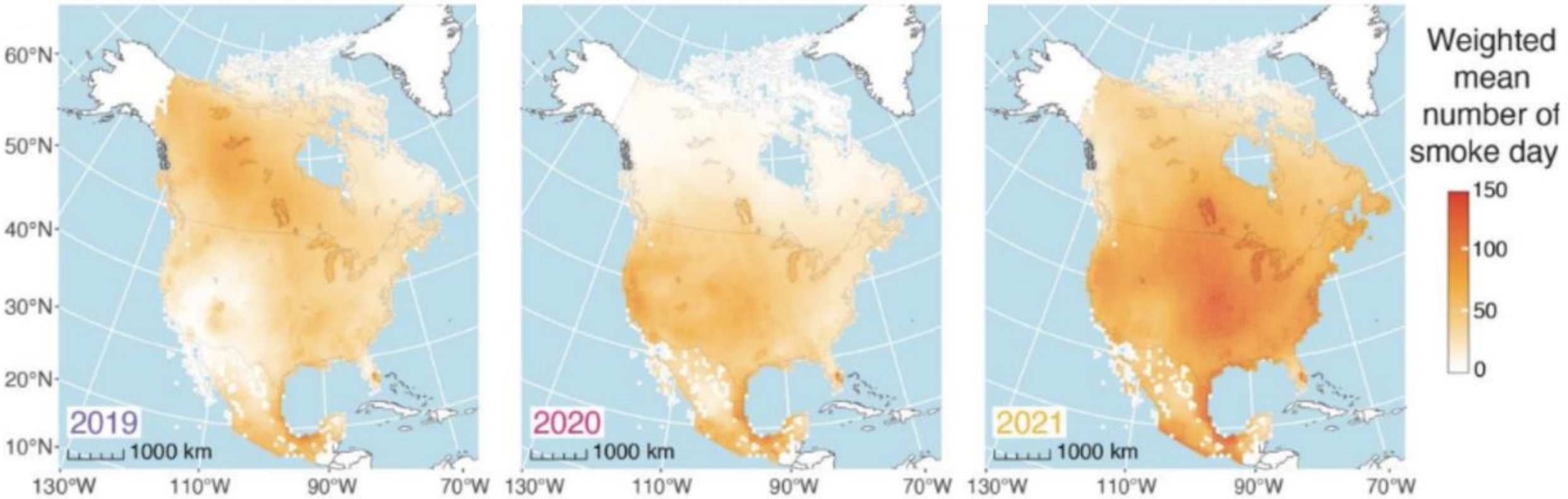

Brahney et. al., 2024

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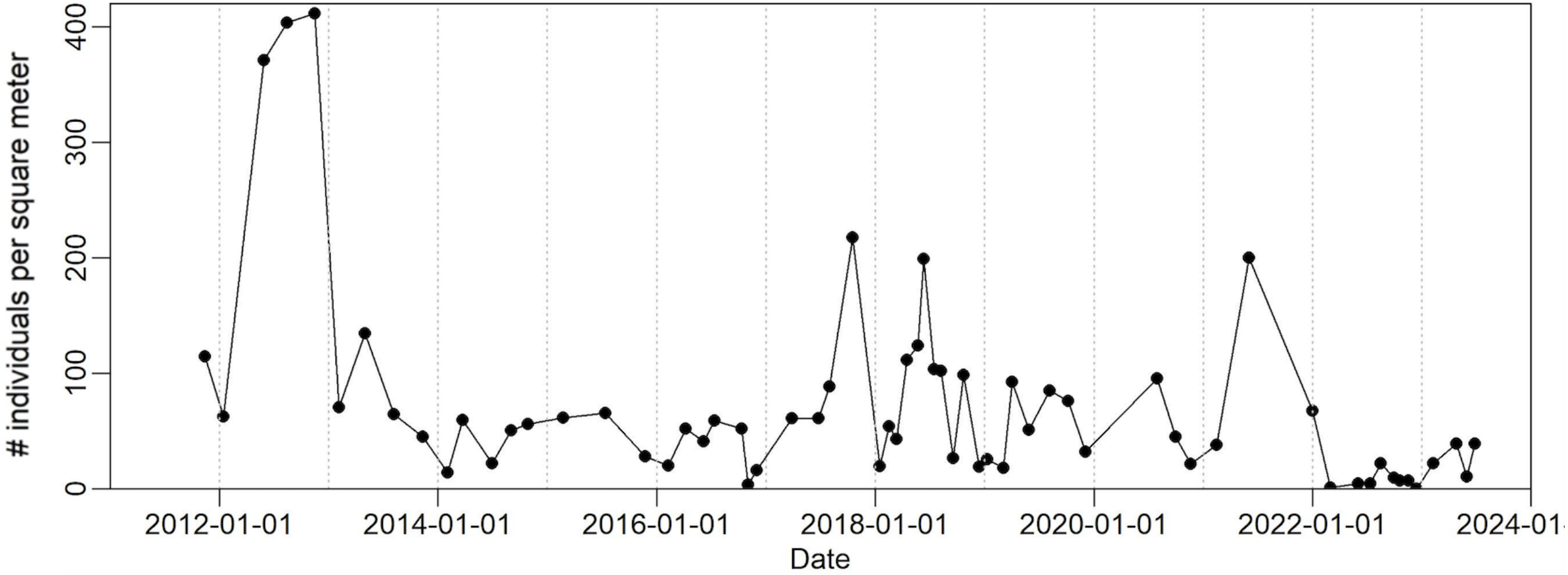
Lake Smoke Days



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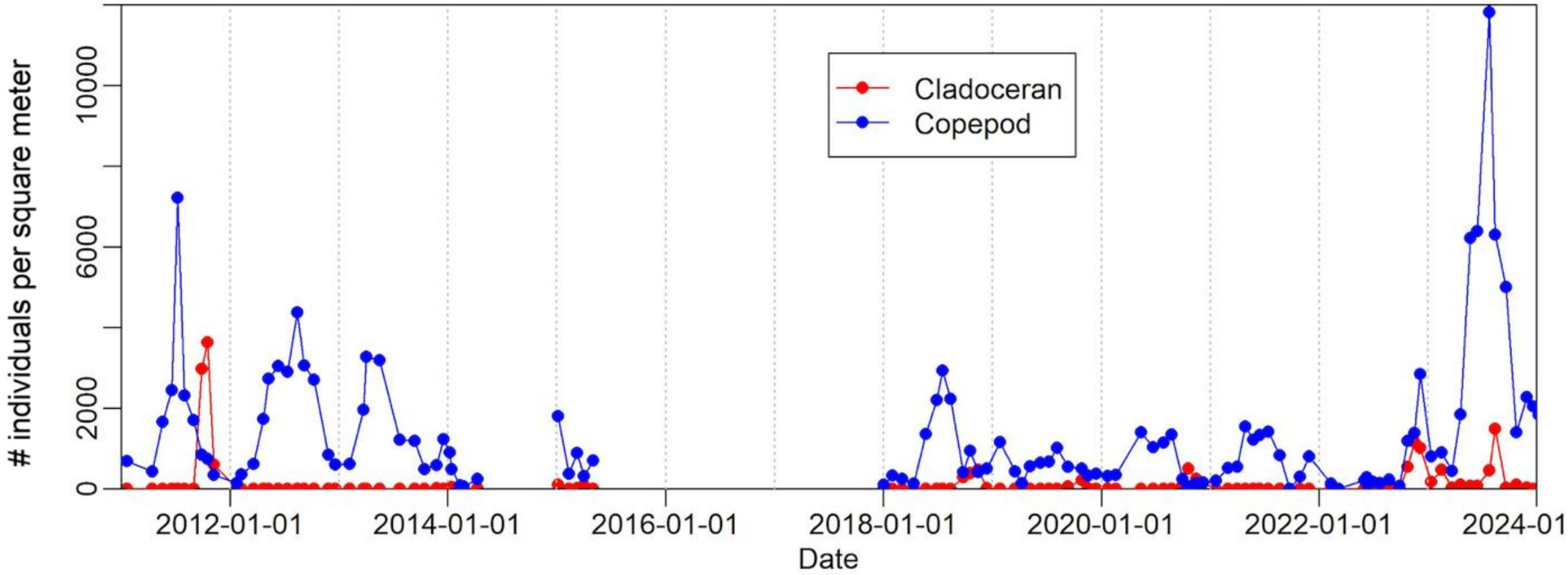
Mysis Count



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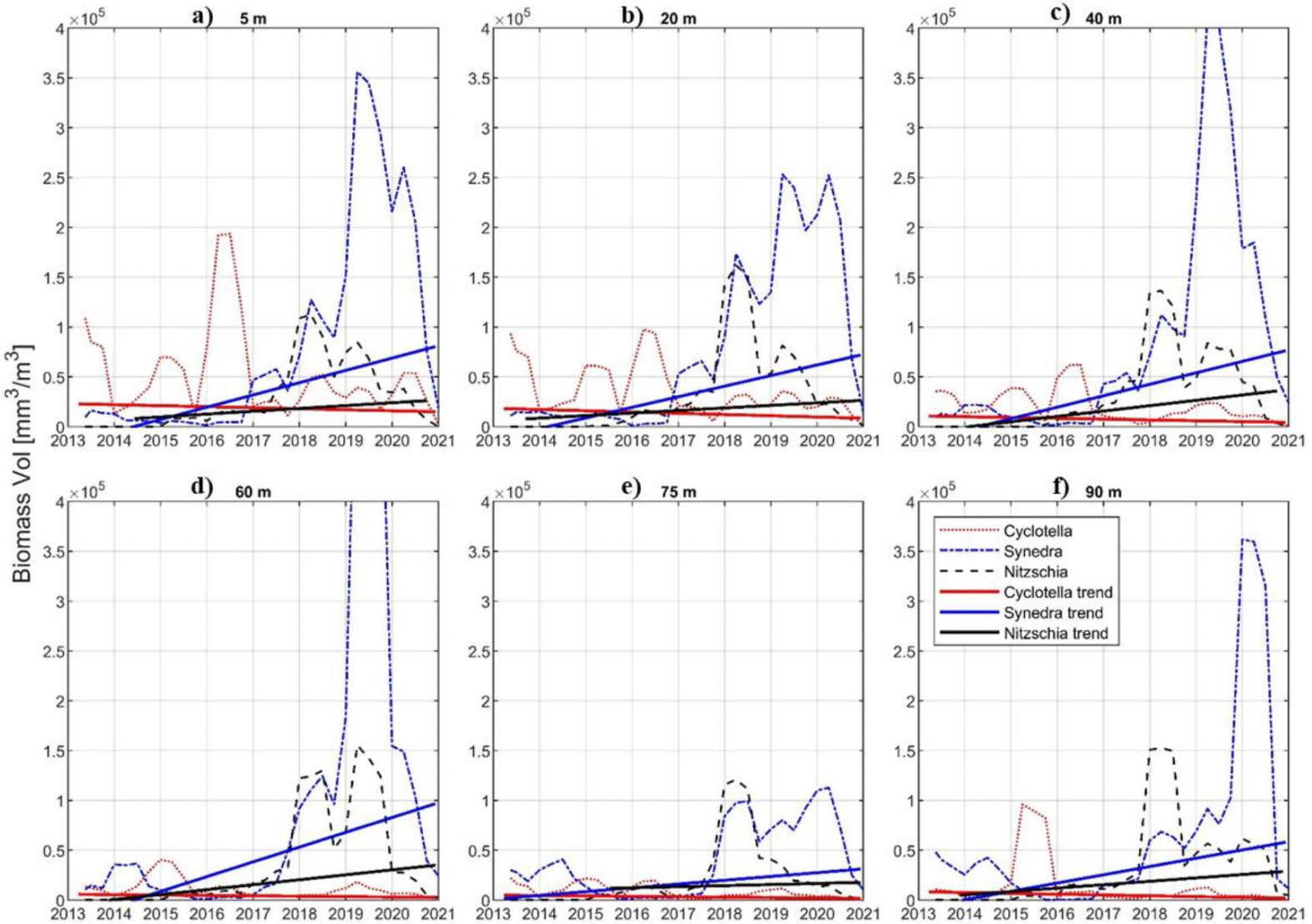
Zooplankton



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Phytoplankton

Plastics and litter on the beach (TERC Archives)

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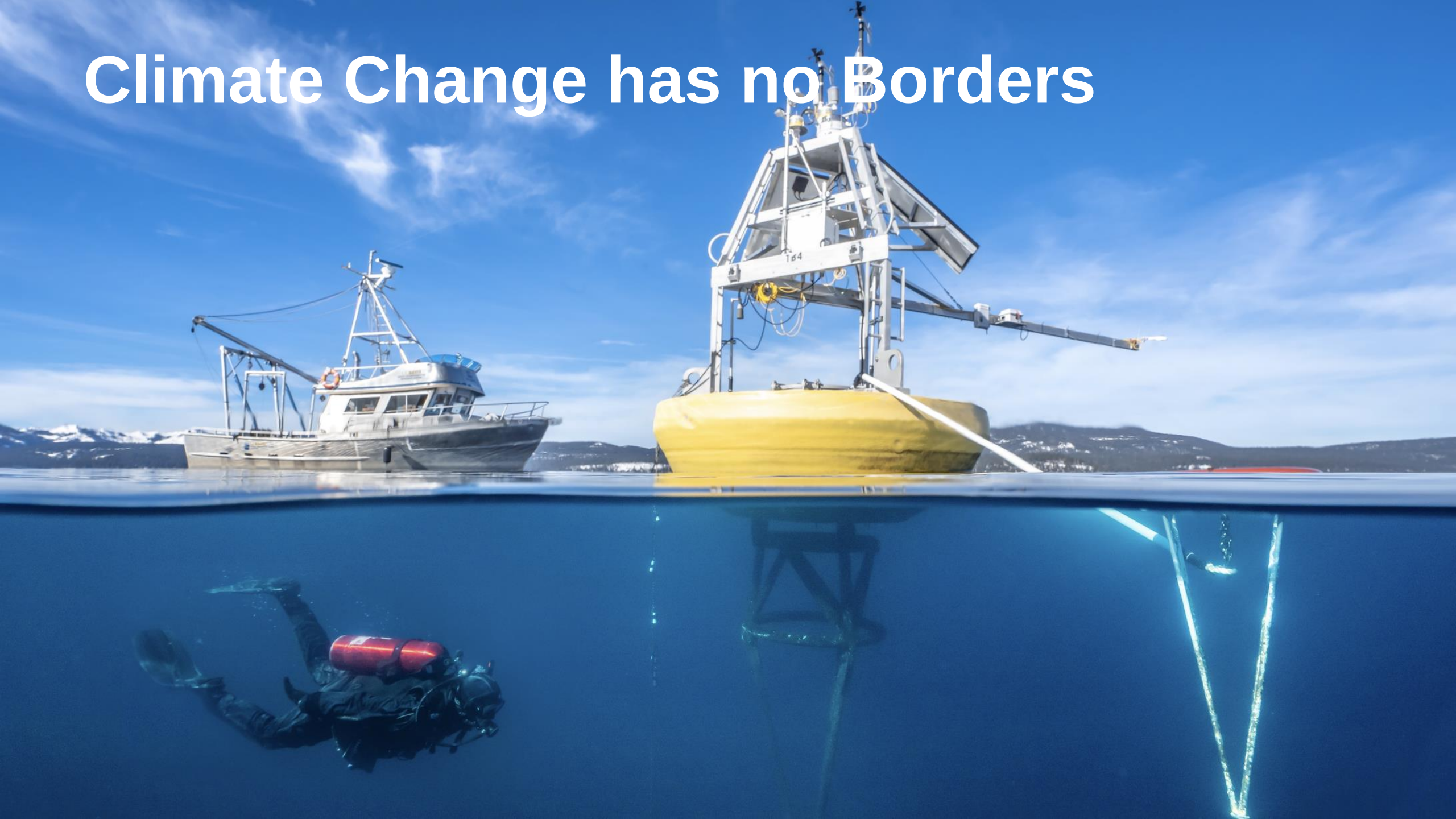
Microplastics

Climate Change has no Borders

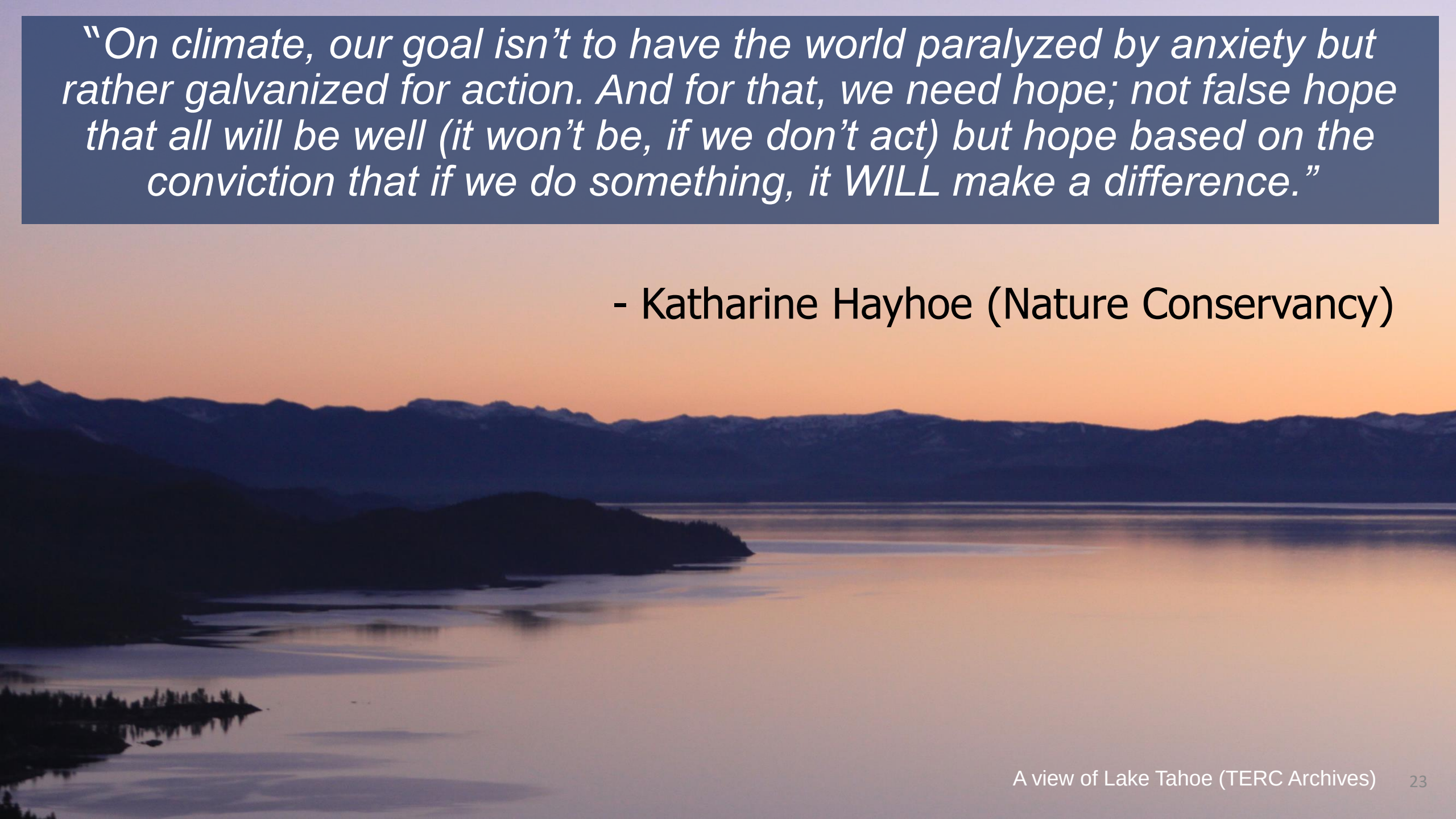


Key Questions focused on Climate Change?

- How does climate change drive ecosystem shift?
- How does climate change affect lake clarity?
- What role does climate change play with aquatic invasive species?
- How does climate change affect atmospheric deposition and nutrient levels?
- How does climate change affect forest health?
- What new technologies can be used to study climate change?
- How can Lake Tahoe be used to study climate change outside of the basin?
- How can we train the next generation to help mitigate the impacts of climate change?

"On climate, our goal isn't to have the world paralyzed by anxiety but rather galvanized for action. And for that, we need hope; not false hope that all will be well (it won't be, if we don't act) but hope based on the conviction that if we do something, it WILL make a difference."

- Katharine Hayhoe (Nature Conservancy)



A view of Lake Tahoe (TERC Archives)

Questions?

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Working on Lake Tahoe (TERC Archives)