Frank Wilhelm – limnologist (professor at UI)

At UI since 2007

- teach / research / train graduate students
- Publish peer-reviewed literature (science)

- Interests – lake management/surface water protection/remediation

Wide variety of projects

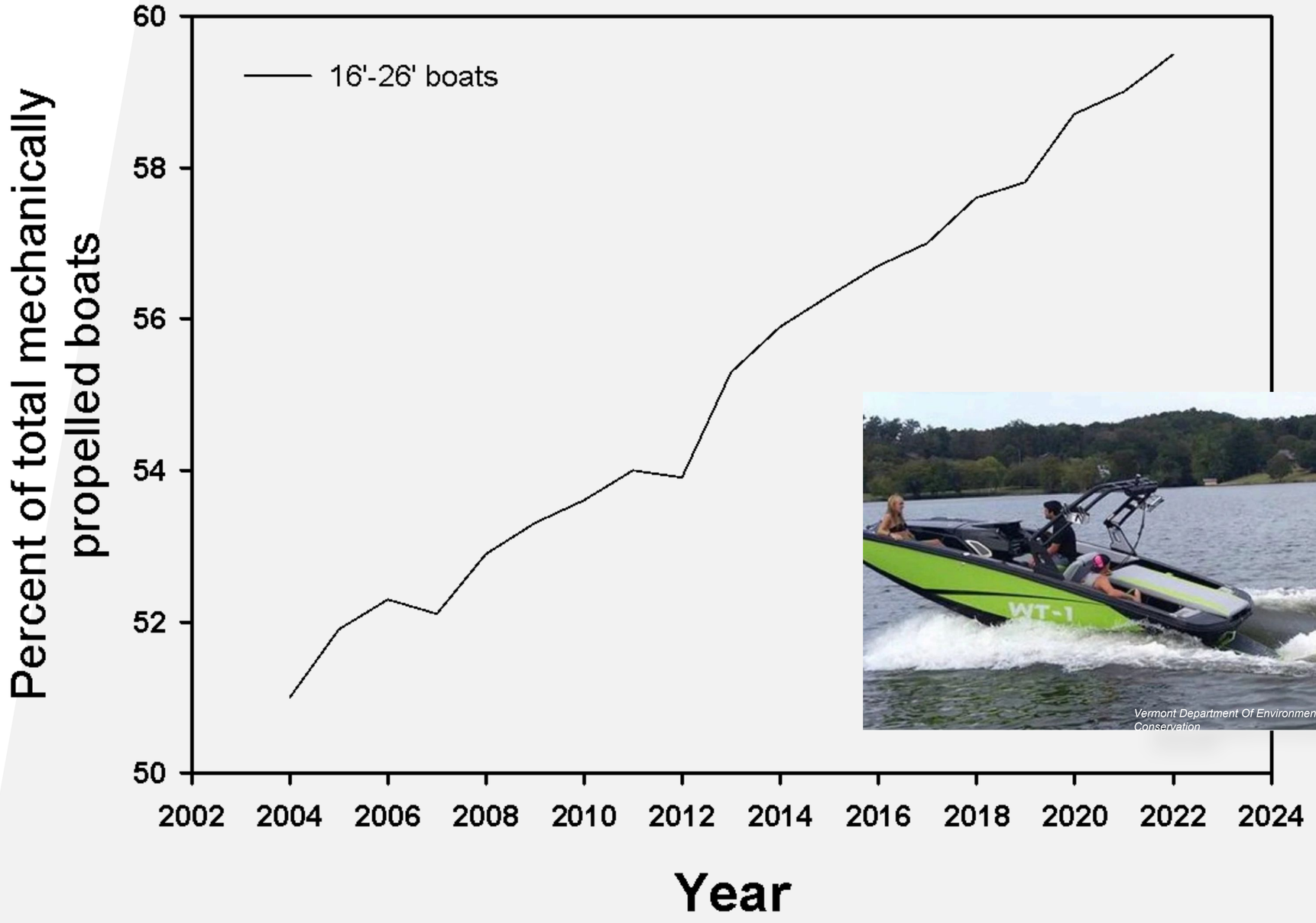
- Invertebrates
- Algal response to watershed landuse Cyanobacteria/nutrients
- Response of nearshore to disturbance

Expertise

- Response of nearshore to increased on-water traffic
- Harmful algal blooms
- Nutrient dynamics/budget

Context

- Response of aquatic resources to increased # of humans and recreational use

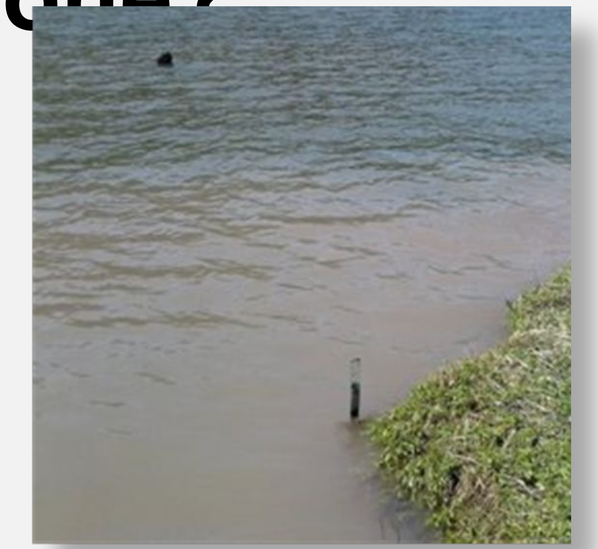


Vermont Department Of Environmental Conservation / Vermont Department Of Environmental Conservation

Data from US Coat Guard annual reports for all of US. Approx. 11,000,000 boats

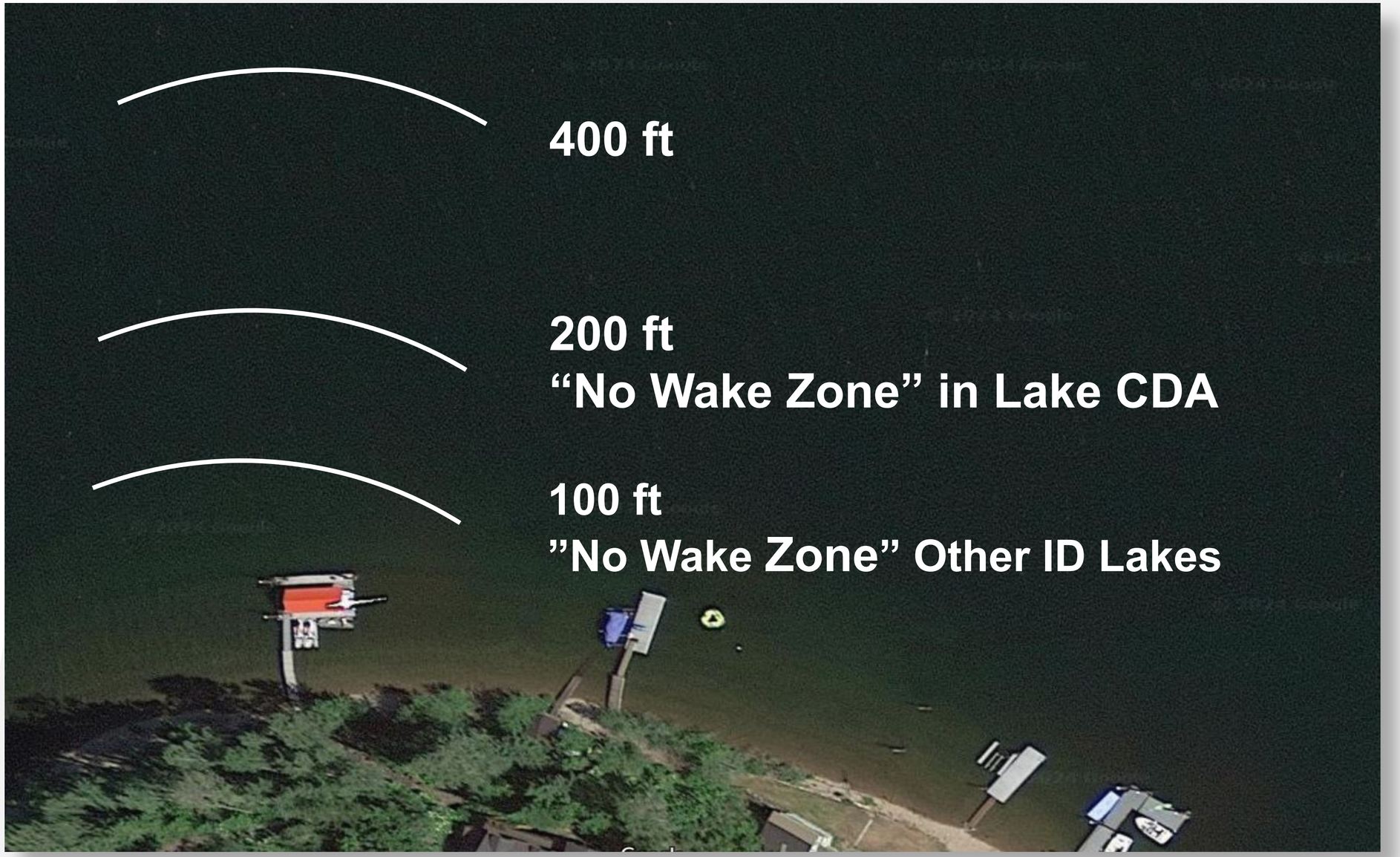
My interest:

- What happens in the nearshore zone?
  - Sediments
  - Nutrients
  - Metals



- With different boat types/weather types & substrate types

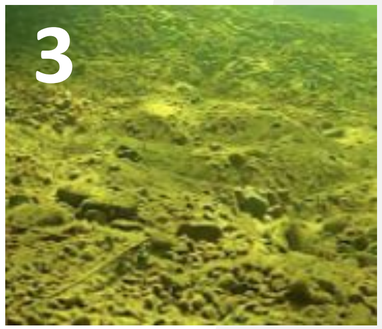
Our approach



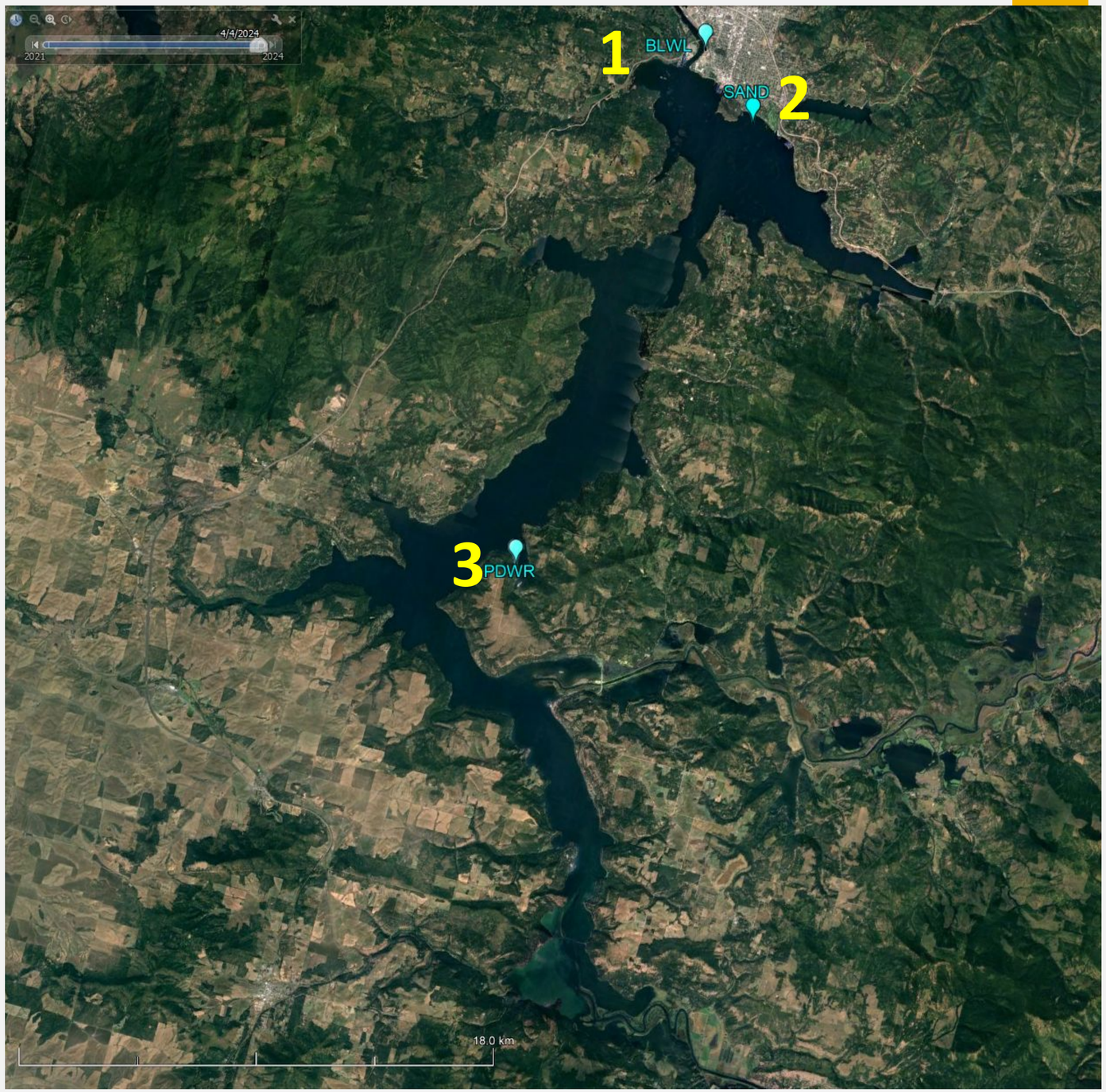
Substrate types

Fine – Blackwell (BLWL)

Small gravel – Sanders Beach (SAND)



Cobble – Powderhorn Bay (PWDR)



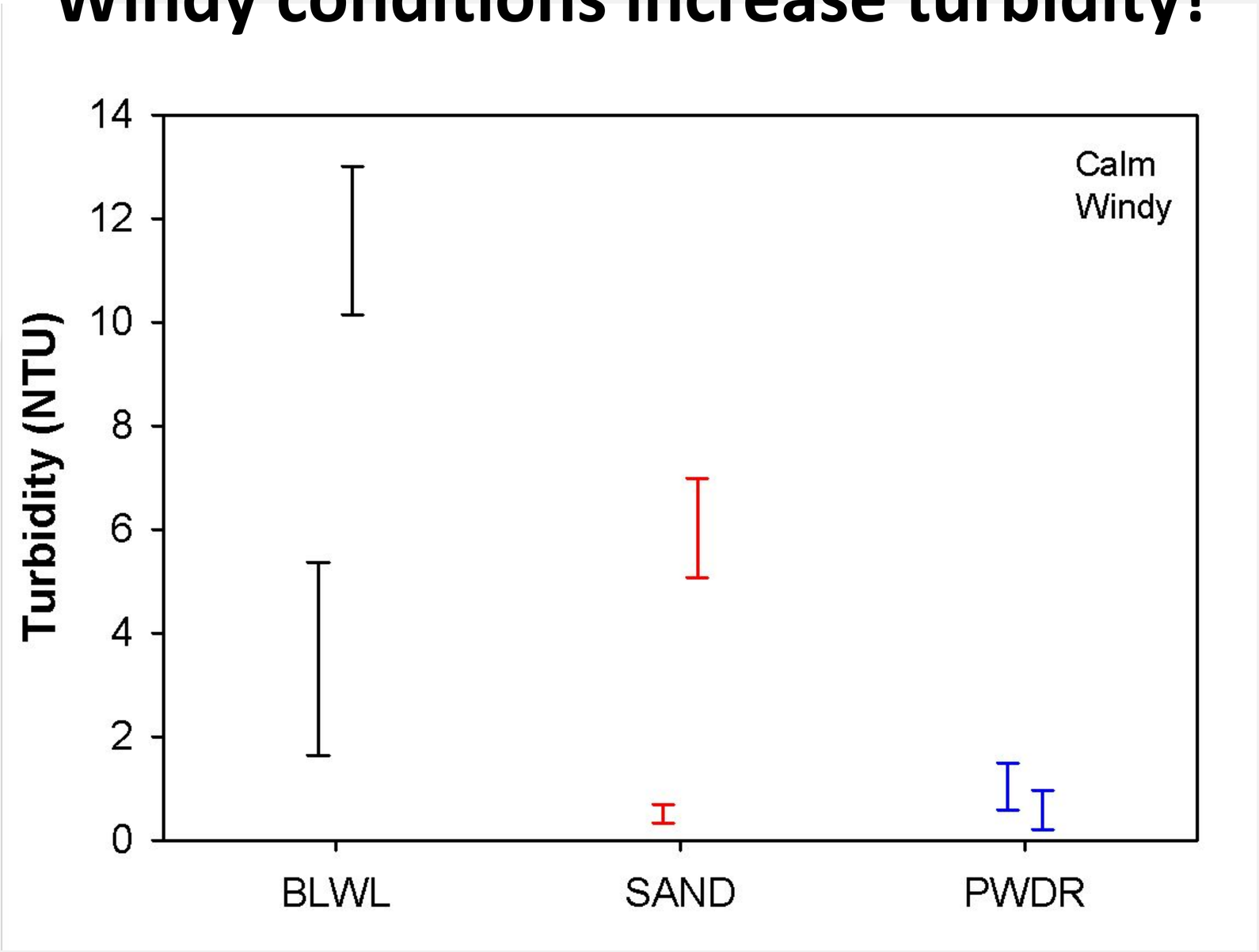
Study design

- 3 boat-types

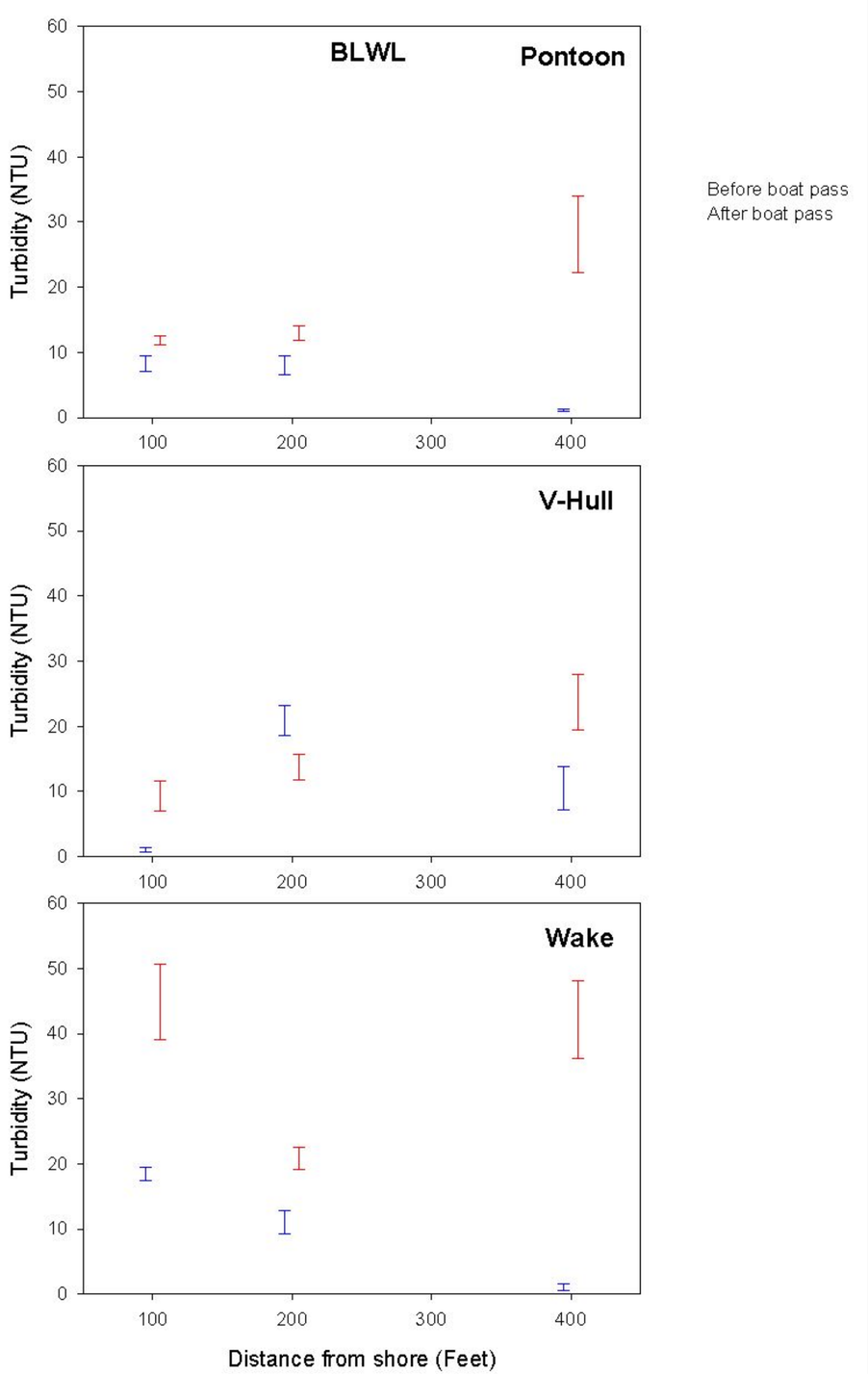
V-hull **Pontoon** **Wake**

- Sample before and after (DP/TP, DM/TM), turbidity, and wave height

Windy conditions increase turbidity!

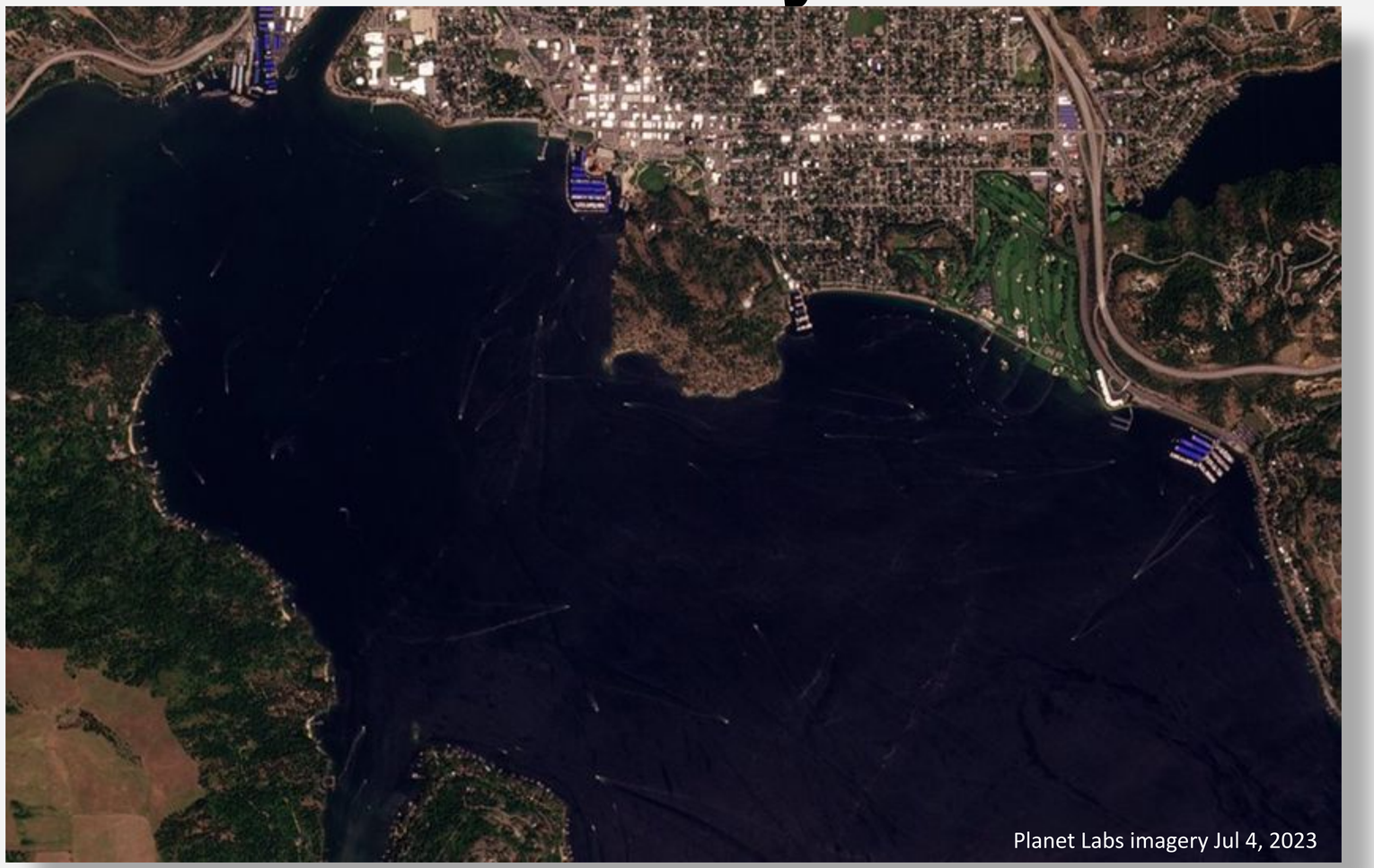


Boats also increase turbidity – as much as or > than wind (3X)



Satellite imagery to count boats

- disturbance of water on 'nice clam' days when lake would normally recover from windy days



Acknowledgements

- Kootenai County
- Idaho Department of Environmental Quality
- Bay Watchers
- Private landowners
- Under- and graduate students