

The Never-ending Story: 16 Years of Tempe Town Lake Water Chemistry



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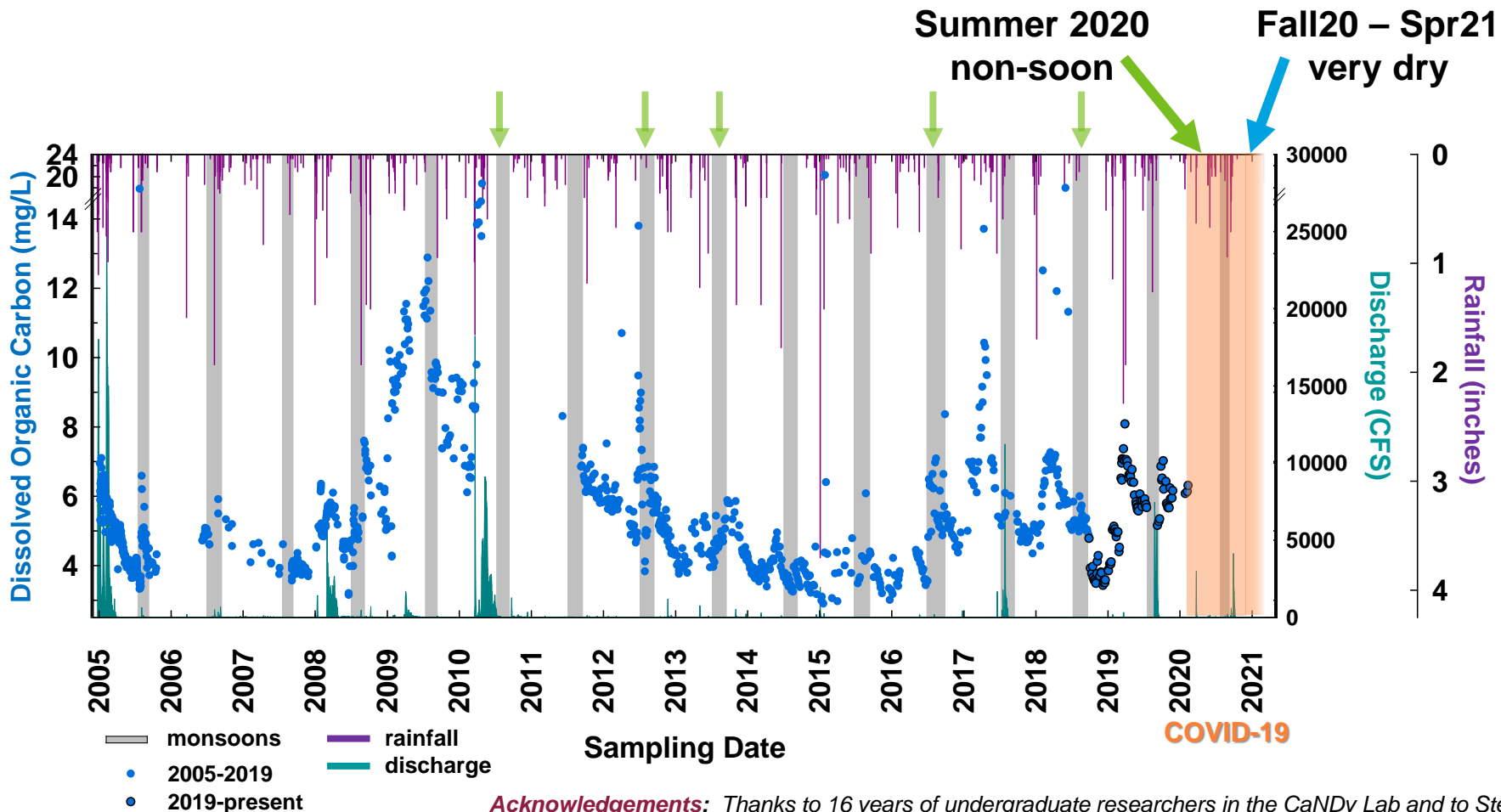
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TTL sampling: Twice-weekly grab samples, *in situ* dataSONDE(s)

TTL modeling: ARIMA time series, O₂/Ar saturation state, LakeMetabolizer

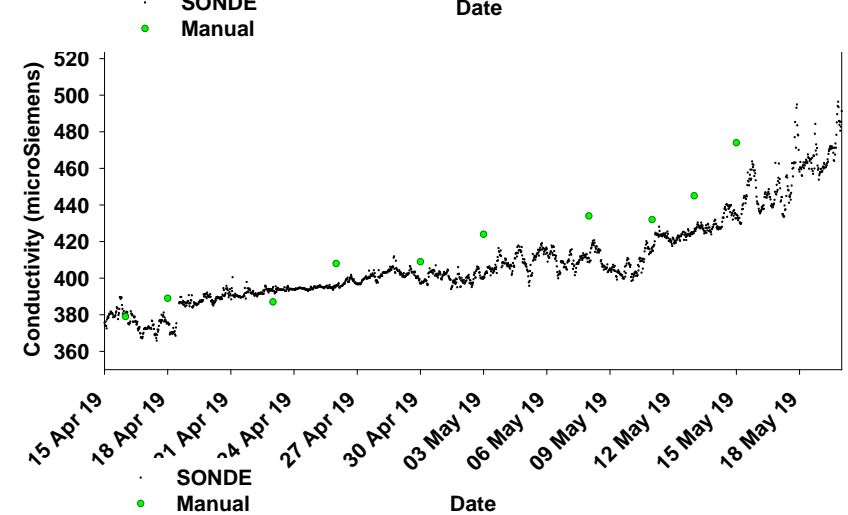
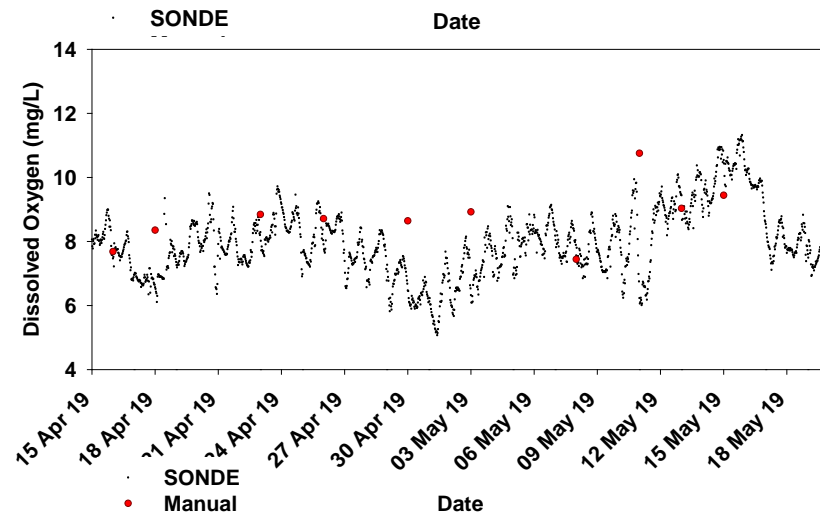
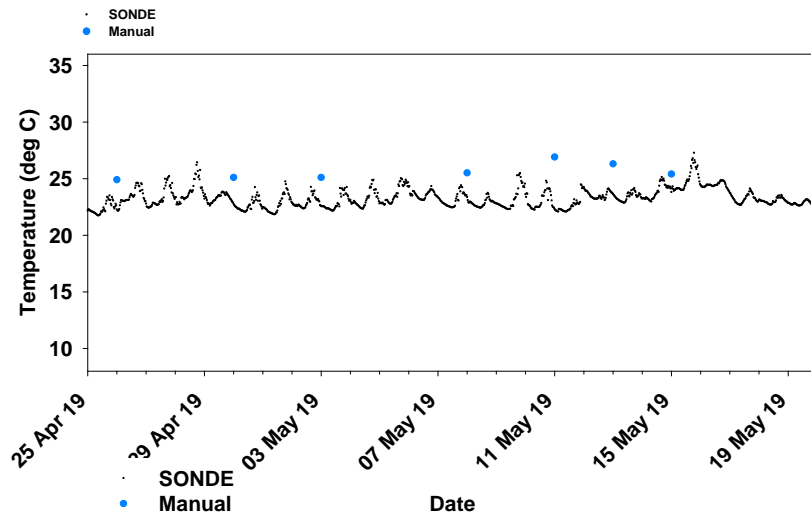
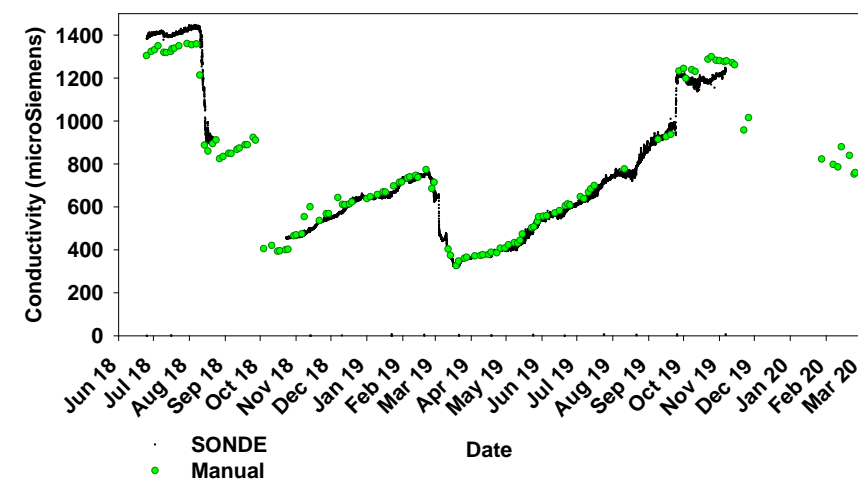
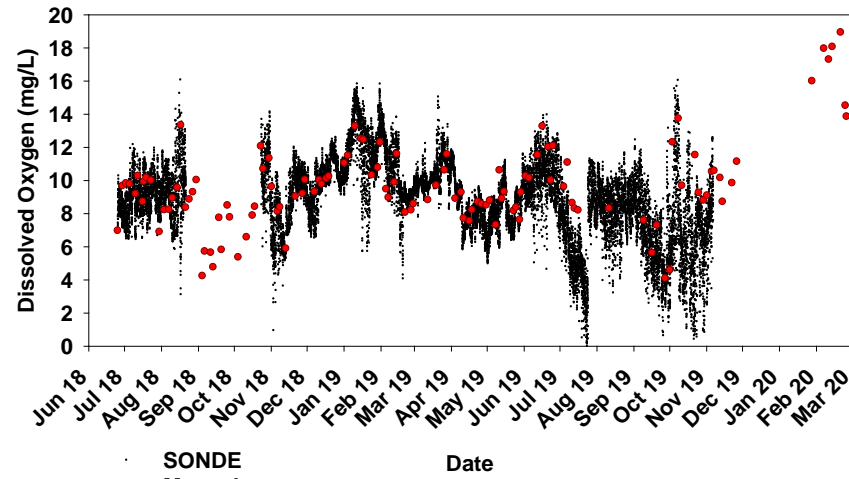
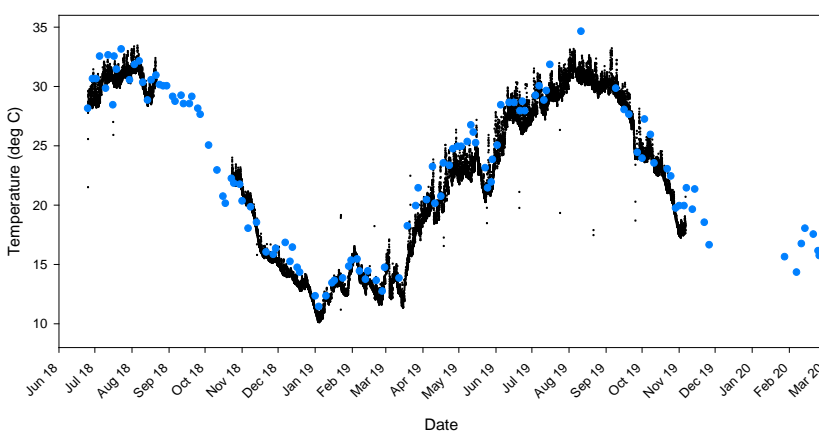
Reimagining the TTL time series as a tool for addressing social-ecological questions



- Seasonal variation
- Inter-annual variation in drought/storms
- Ecosystem services
- Effects of management decisions vs. ecological processes
- Human perceptions of TTL value, water quality, sense of place, etc.

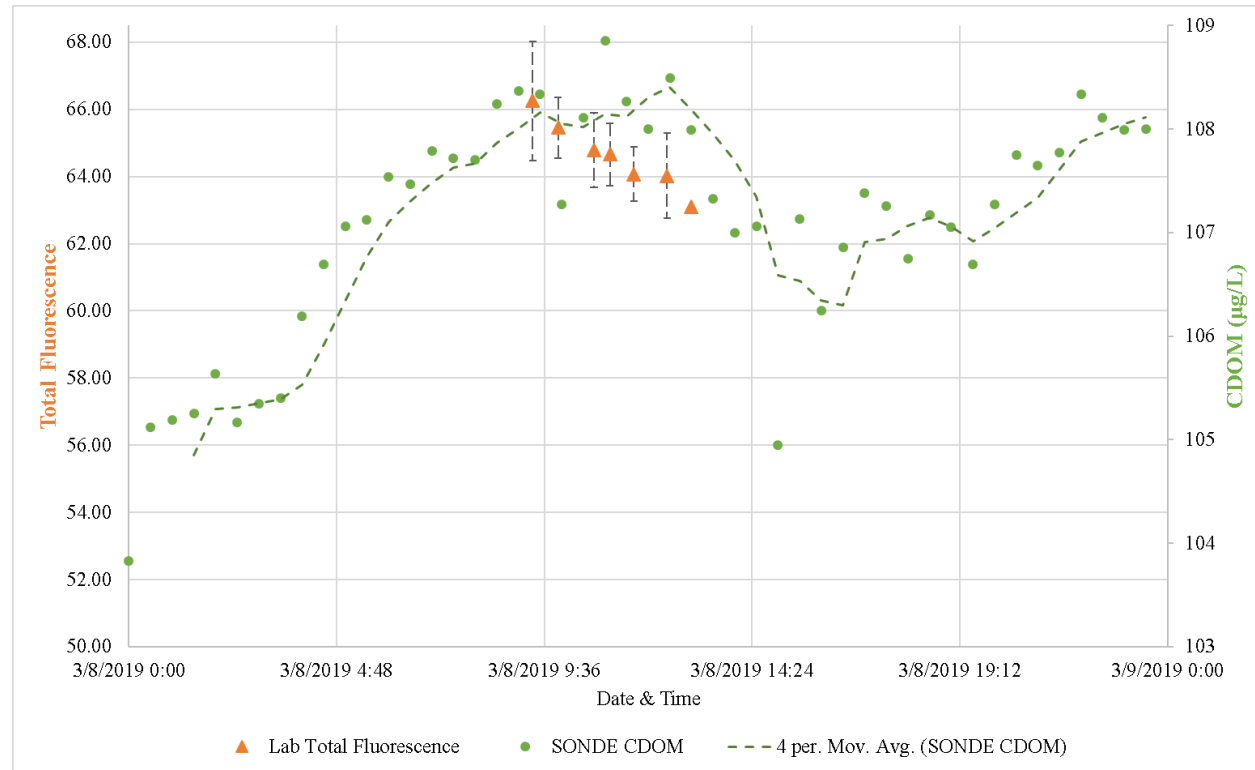
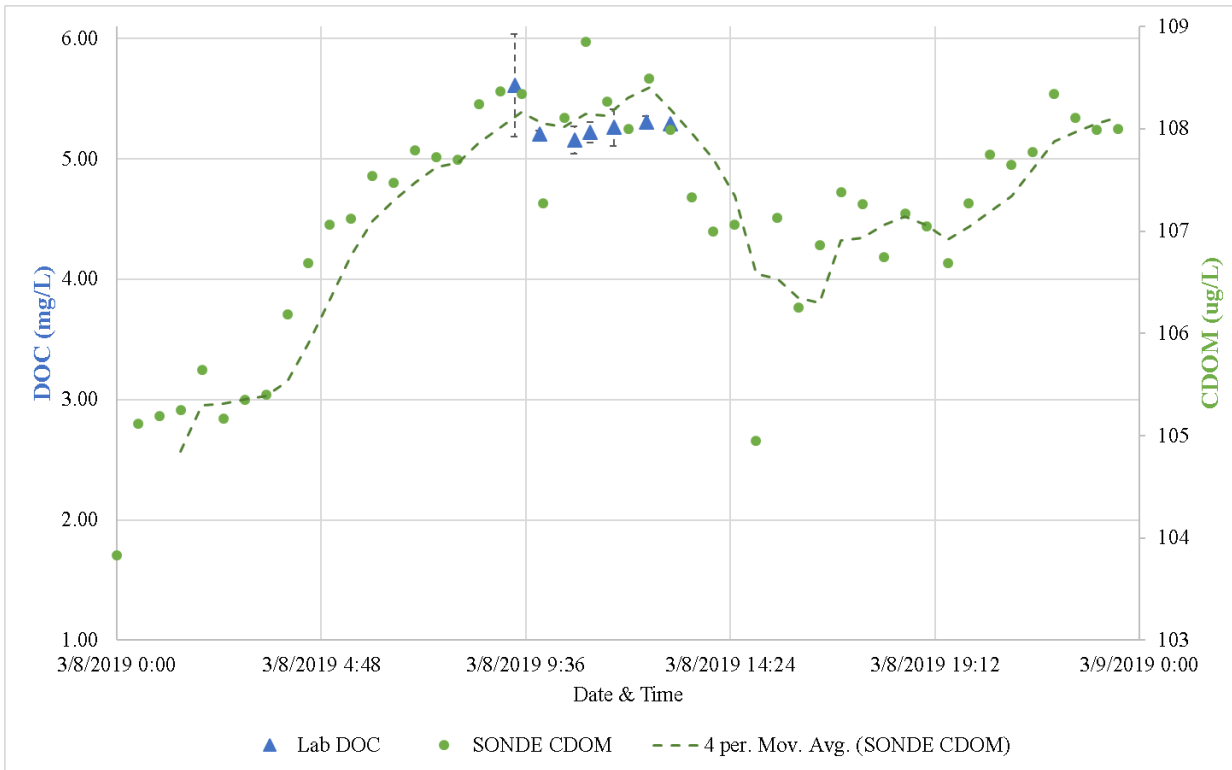
Acknowledgements: Thanks to 16 years of undergraduate researchers in the CaNDy Lab and to Stevan, Quincy, Sally, and the CAP analytical team for all their help!

SONDE-Meter comparisons



Good agreement between sonde (black) and meters (colors).
Strong diurnal pattern in **Temp** and **Oxygen** but not **conductivity**.

SONDE-lab comparisons



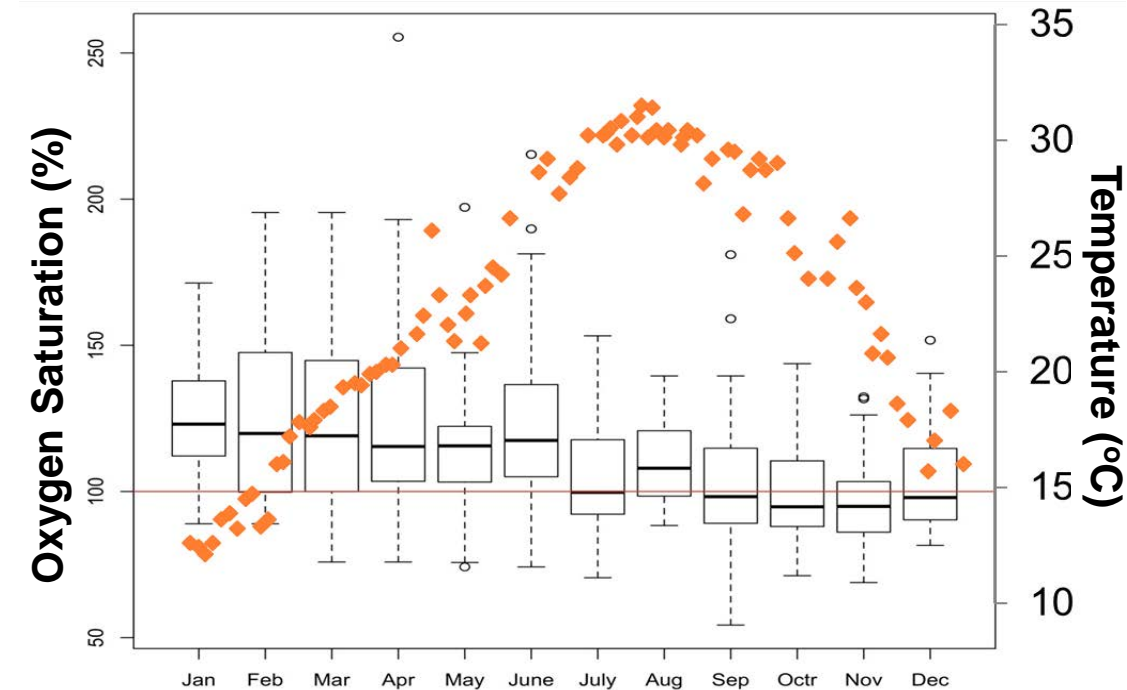
2-hour grab samples (triangles) for DOC and Fluorescence, 30-minute sonde CDOM data (circles).

- **General correspondence is excellent**

A bit of Oxygen data...

O₂ Saturation State

- *Oversaturated in warming months* due to primary production **and** physical processes
- *Near-equilibrium in cooling months*



The lake warms faster than it degasses and becomes oversaturated

