

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



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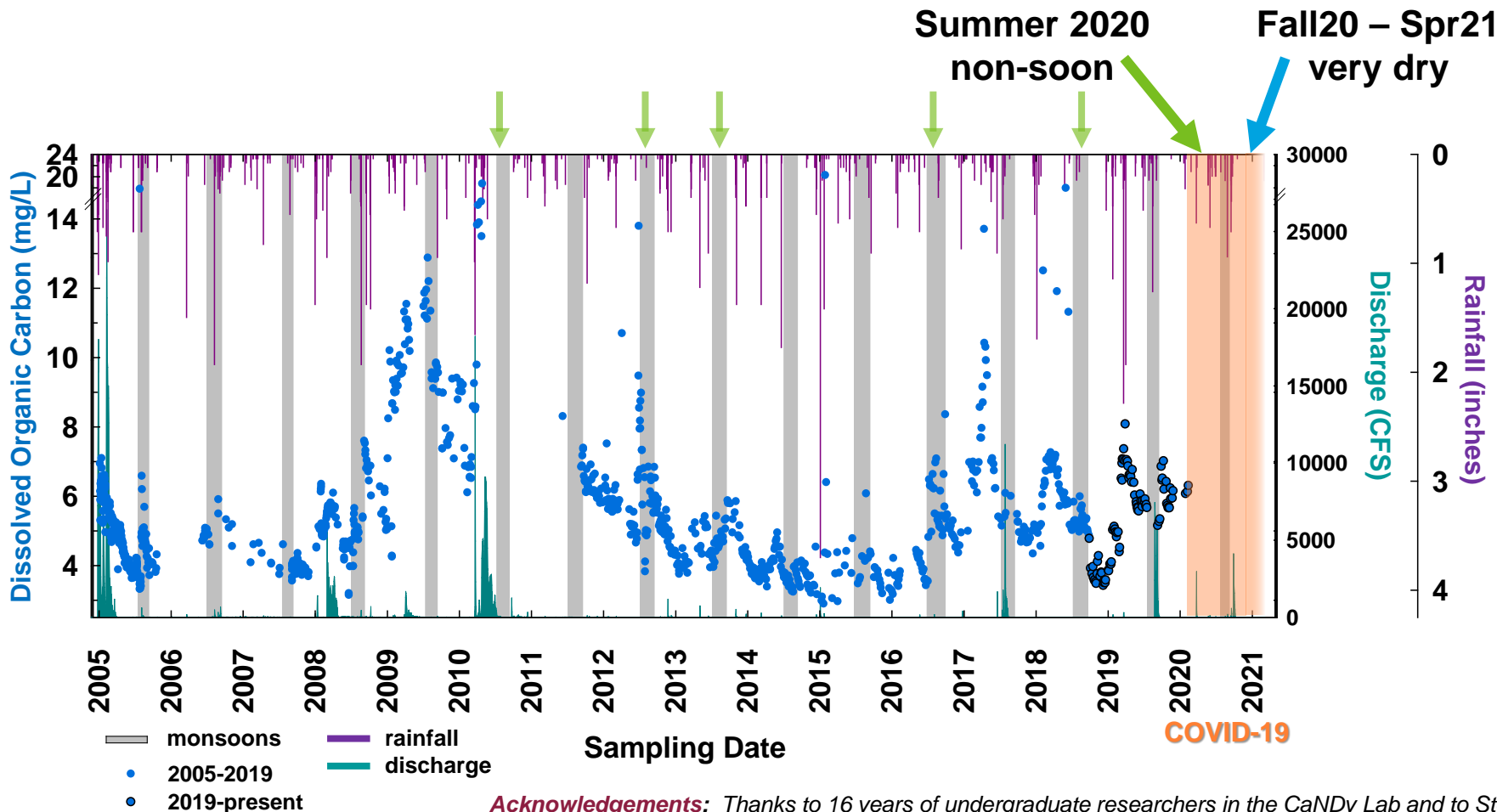
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**TTL sampling:** Twice-weekly grab samples, *in situ* dataSONDE(s)

**TTL modeling:** ARIMA time series, O<sub>2</sub>/Ar saturation state, LakeMetabolizer

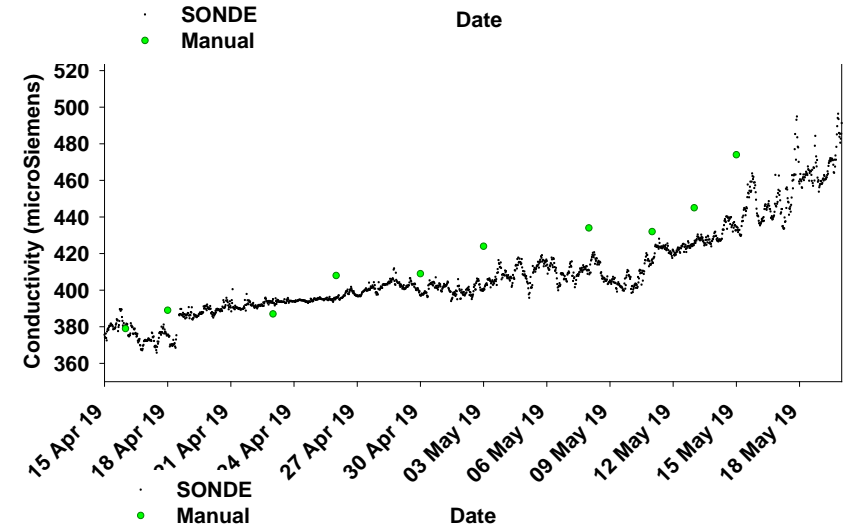
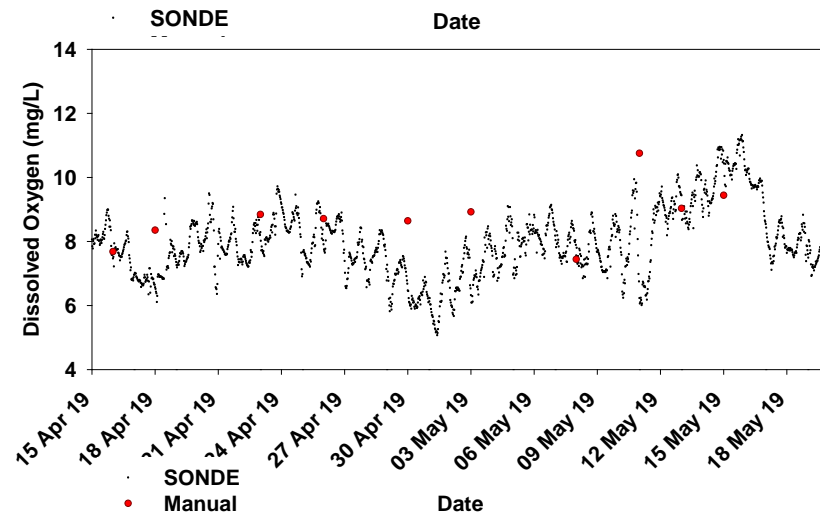
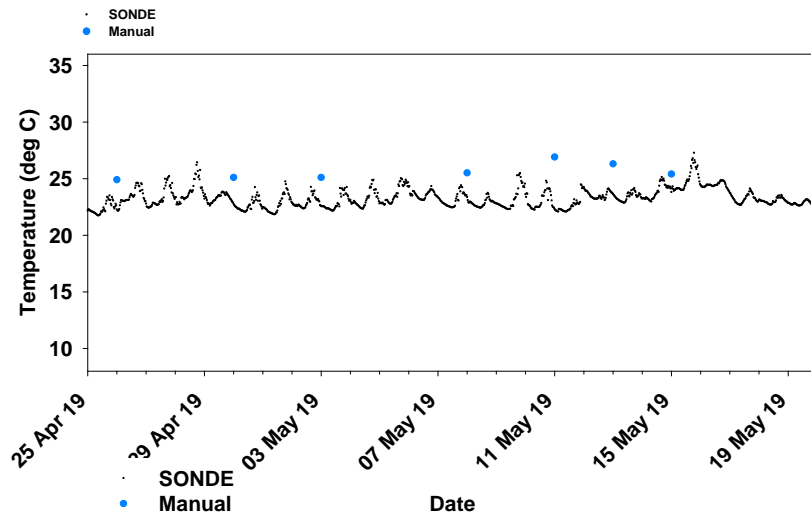
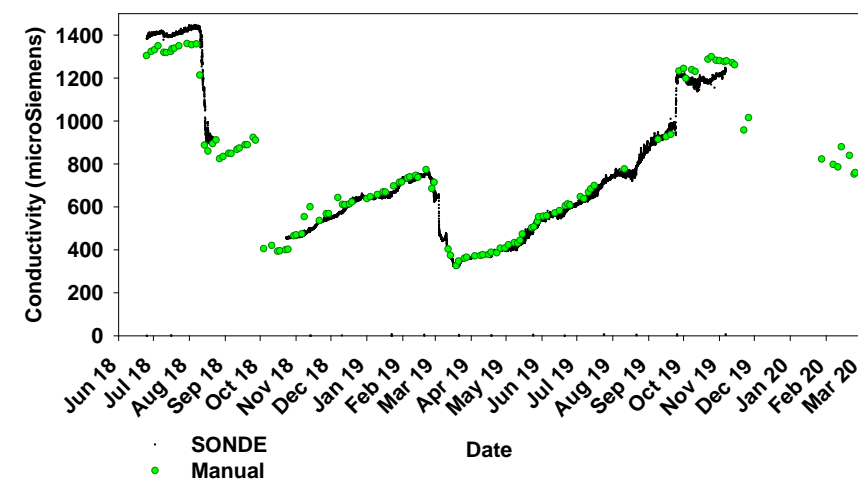
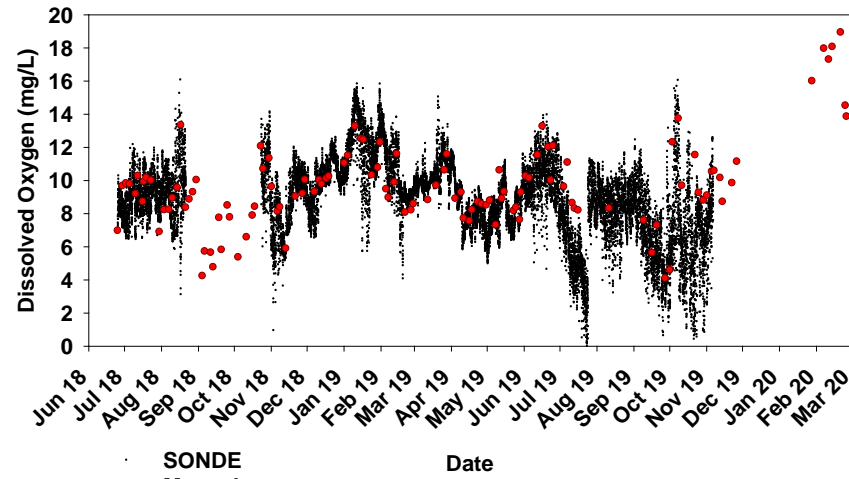
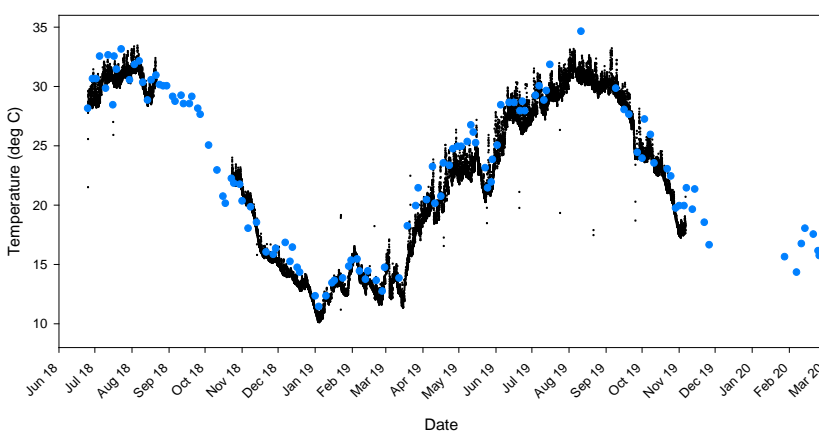
**Reimagining the TTL time series as a tool for addressing social-ecological questions**



- 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.

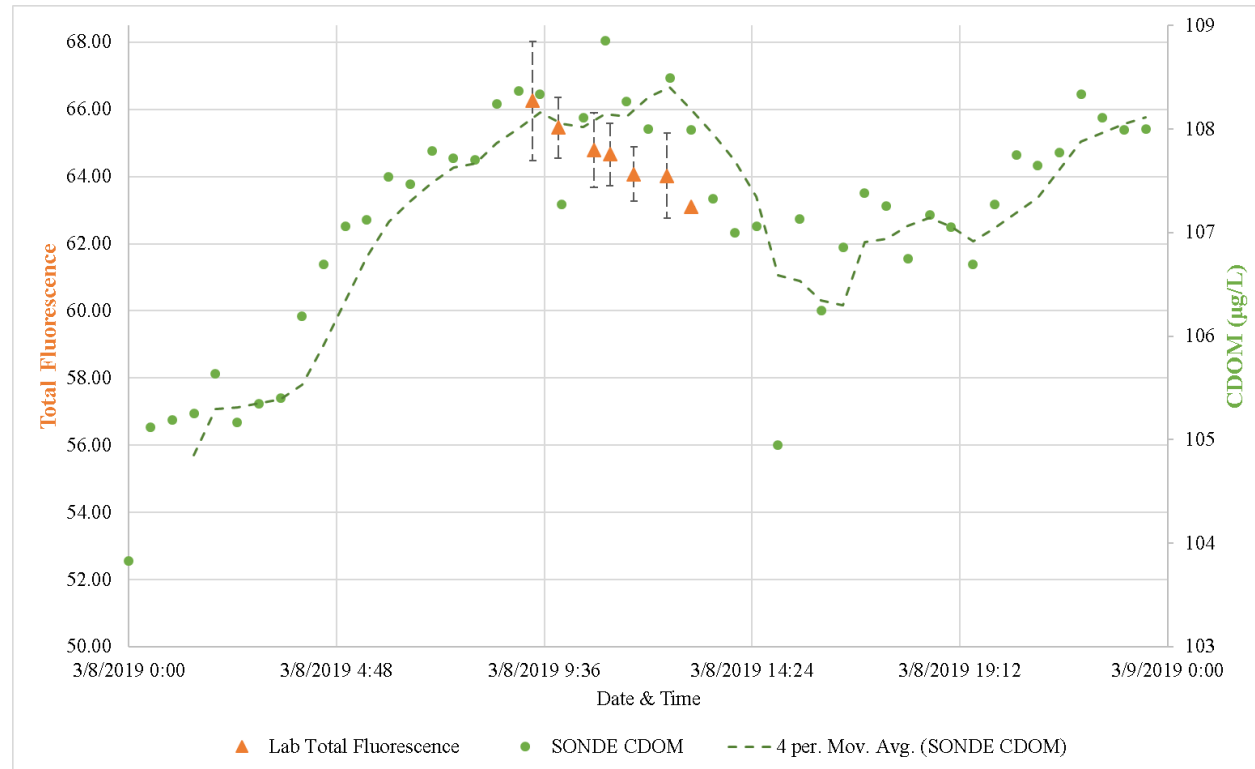
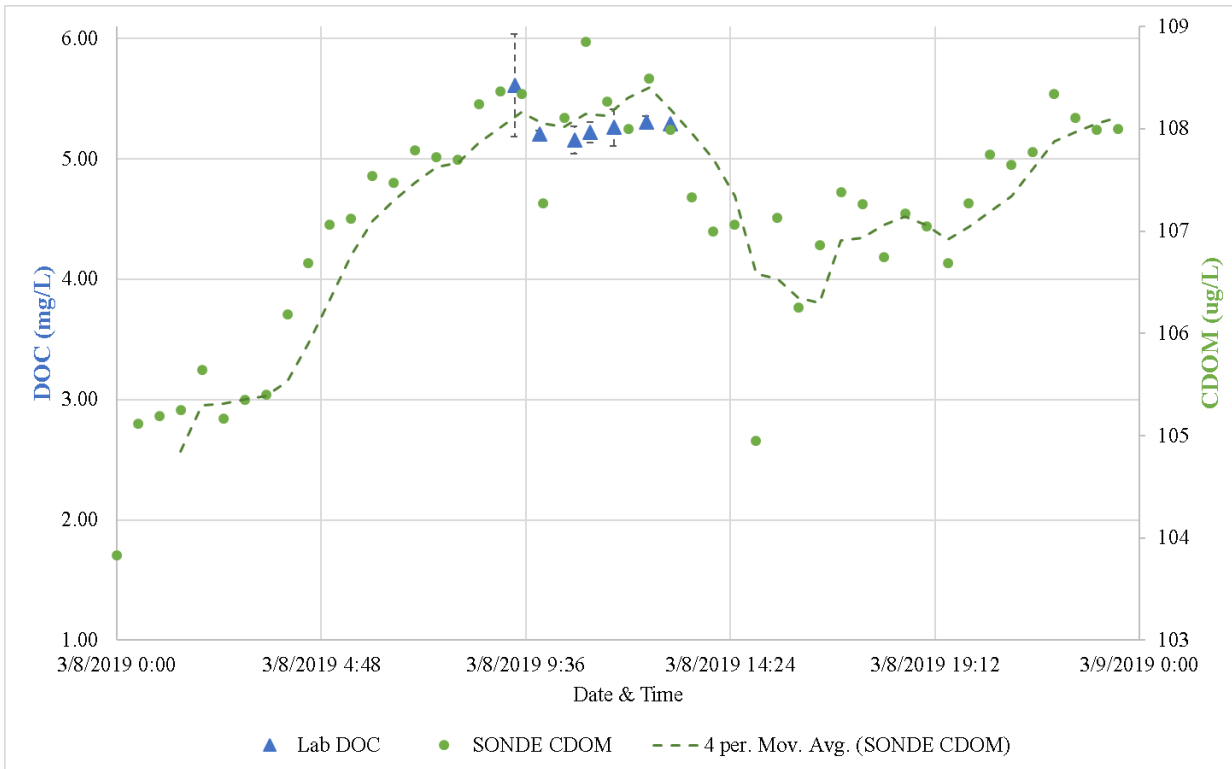
**Acknowledgements:** Thanks to 16 years of undergraduate researchers in the CaNDy Lab and to Stevan, Quincy, Sally, and the CAP analytical team for all their help!

# SONDE-Meter comparisons



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

# SONDE-lab comparisons



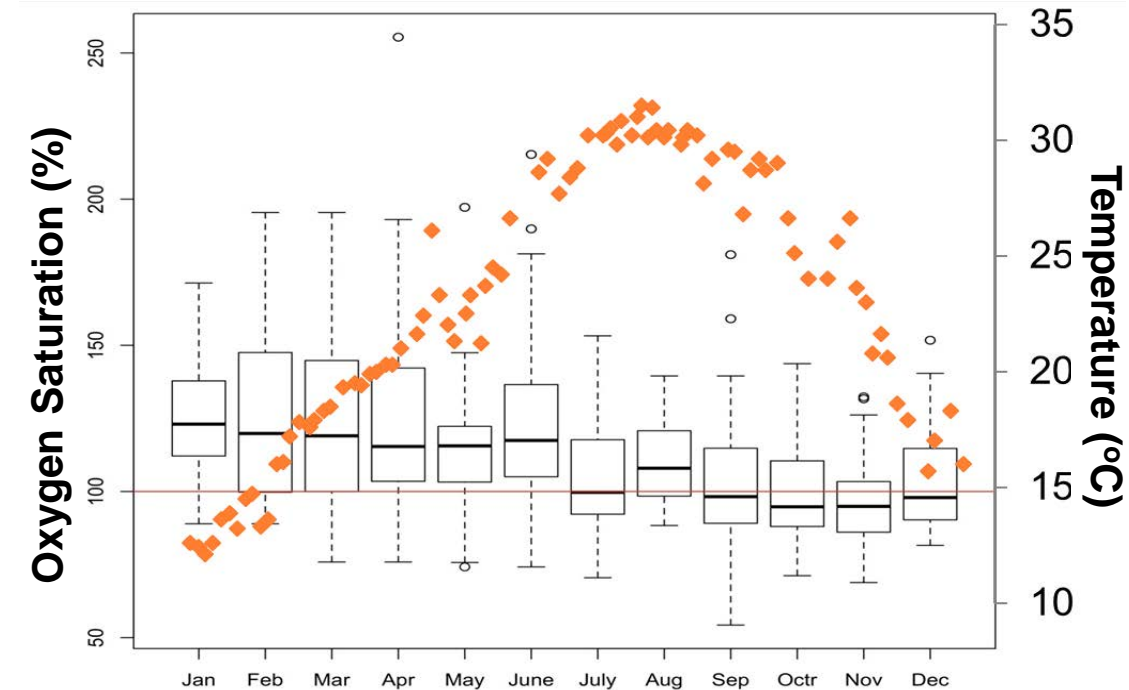
**2-hour grab samples (triangles) for DOC and Fluorescence, 30-minute sonde CDOM data (circles).**

- **General correspondence is excellent**

# A bit of Oxygen data...

## O<sub>2</sub> 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**

