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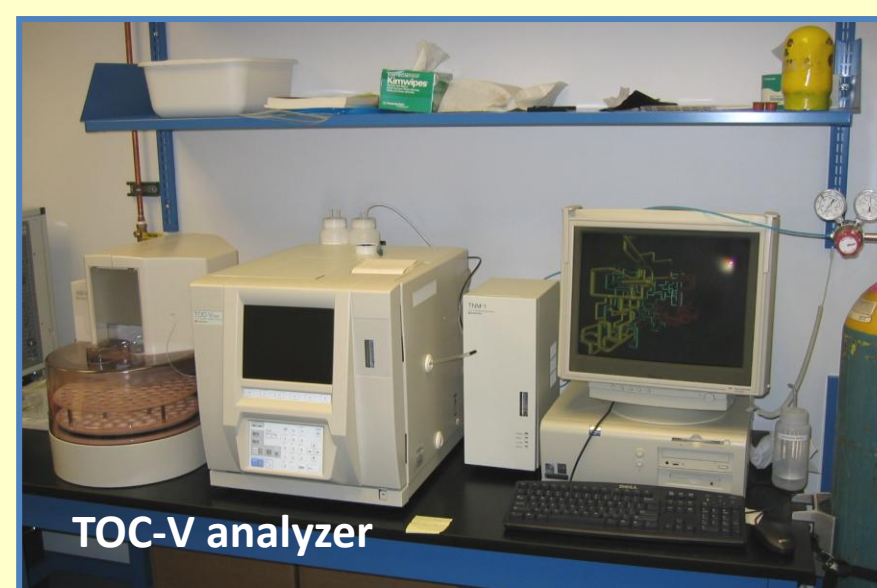
Introduction

- Tempe Town Lake was constructed in 1999, and provides recreation and flood control for the city of Phoenix
- Sources of water to the lake are CAP (Colorado River) water, reclaimed water, and storm water from Indian Bend Wash and the Salt River
- Seepage losses are captured and pumped back into the lake
- Water clarity and algal growth are important considerations for the recreational services provided to Phoenix by Tempe Town Lake; both are highly related to DOC dynamics.
- Identifying biogeochemical and hydrological drivers of DOC and water clarity will be critical for management of these variables in the lake.

Study Site and Methods



- **Temperature, pH, O₂, & conductivity** measured in situ with meters
- Water samples filtered (0.2µm) for: D/H, δ¹⁸O_{H₂O}, nutrients, major ions, trace elements
- **DOC/TN:** High-temperature combustion



Monsoon characteristics

Daily sampling: Jan–Oct 05, Jan–Mar 08, Jul–Sep 08
 Weekly sampling: Oct 07–Jan 08, Mar–Jul 08, Sep 08–Apr 10, Oct 11–present
 Monthly sampling: Oct 05 – Oct 07

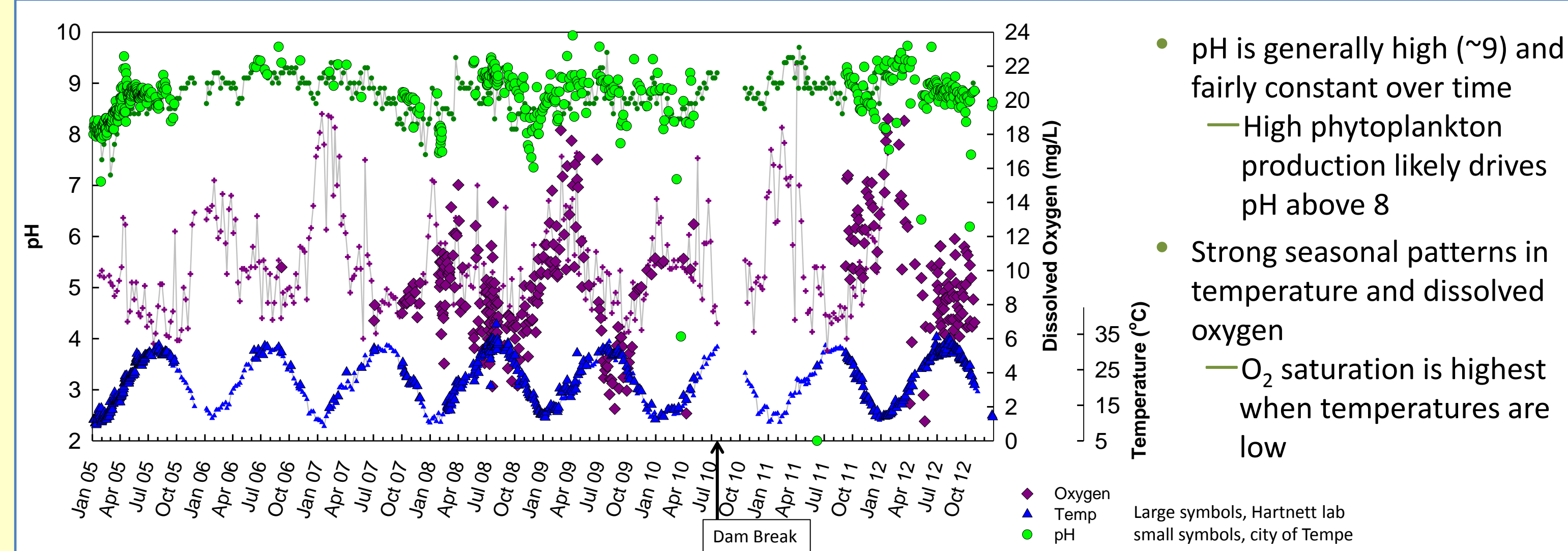
Central Arizona has experienced long-term drought throughout the period of this study.

Southwest Monsoon Characteristics*

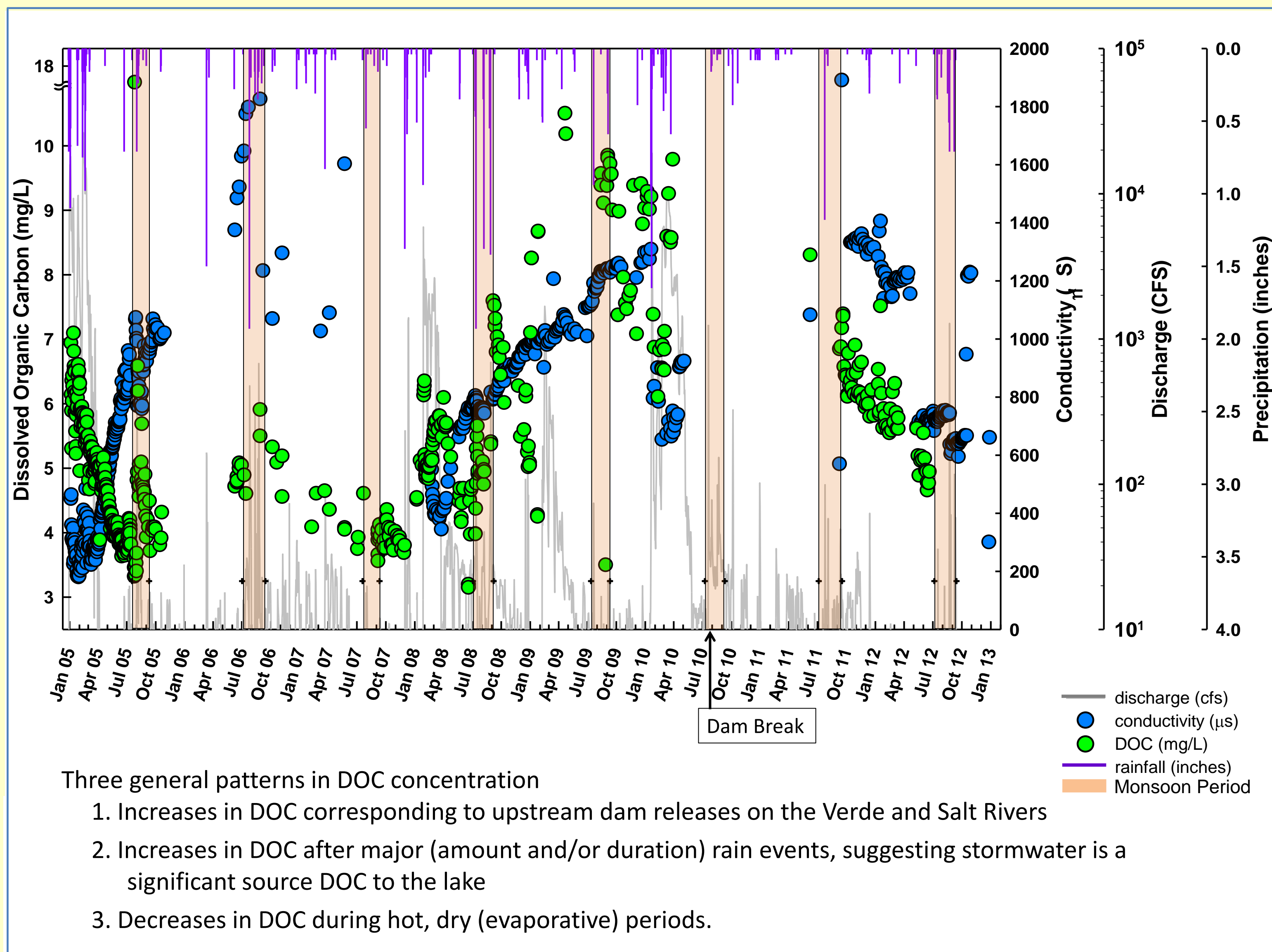
year	start date	end date	# rainfall events	total rainfall (in)
2005	18 July	11 Sept	8	1.53
2006	02 July	14 Sept	11	3.33
2007	19 July	11 Sept	6	0.74
2008	03 July	07 Sept	10	6.77
2009	13 July	11 Sept	4	1.88
2010	09 July	10 Sept	6	0.48
2011	05 July	17 Sept	5	1.77
2012	06 July	14 Sept	13	3.51

*determined using NWS dew point criteria; data from NWS and the Maricopa County Flood Control District

Basic Water Chemistry



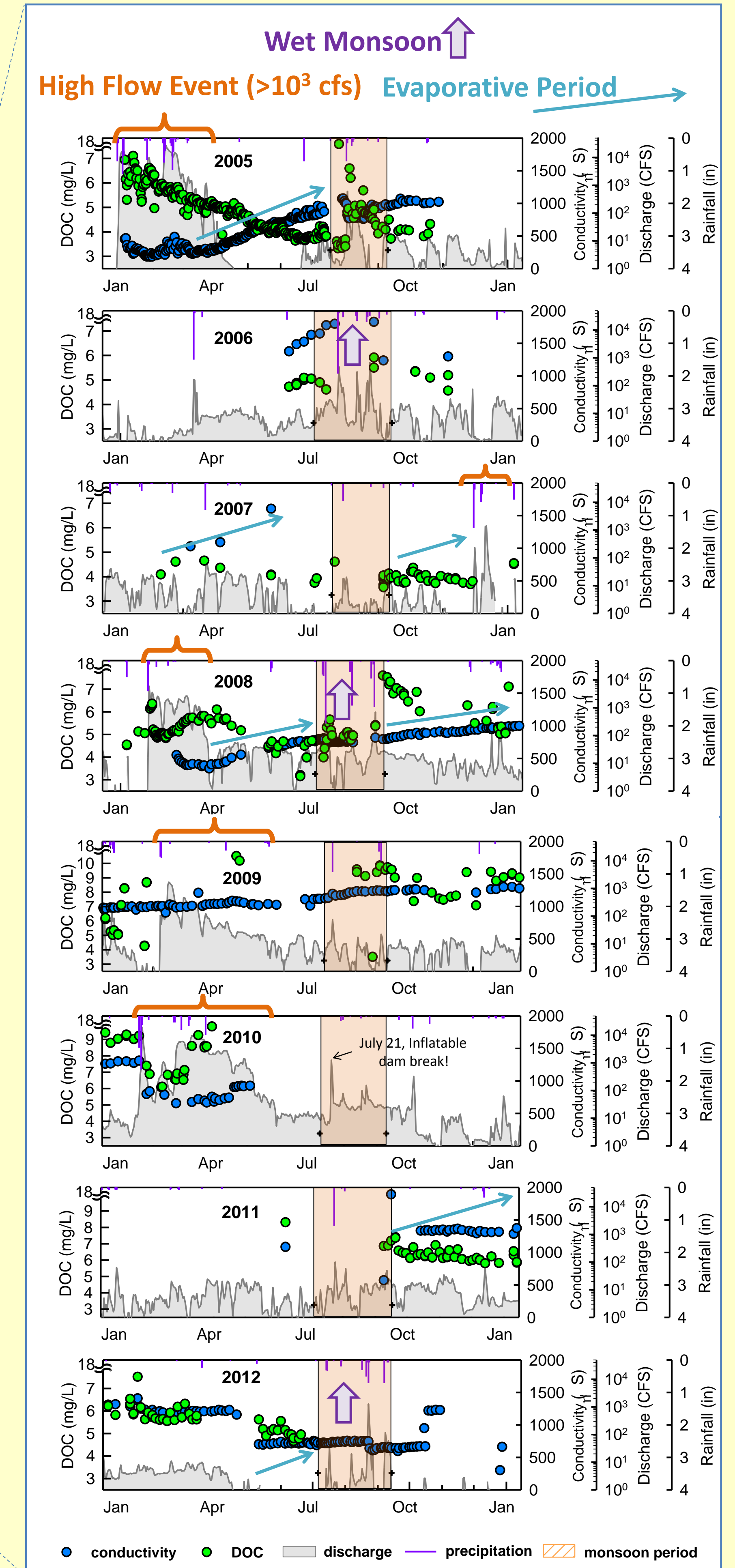
Time Series Data



Work in progress, future work

- Linking climate, hydrology, and water quality metrics during storms in Indian Bend Wash to pulses of DOC in Tempe Town Lake
- Converting City of Tempe water clarity data into a usable format in order to make quantitative comparisons
- Explore potential for monitoring some component of phytoplankton/community respiration or NPP that can be related to DOC dynamics

Time Series Data By Year



Summary

- Tempe Town Lake exhibits large seasonal and interannual changes in dissolved organic carbon content (and composition).
- Increases in DOC correspond with (1) input of river water (due to upstream dam releases), (2) intense monsoon storms that carry urban run-off, and (3) with dry, evaporative periods