

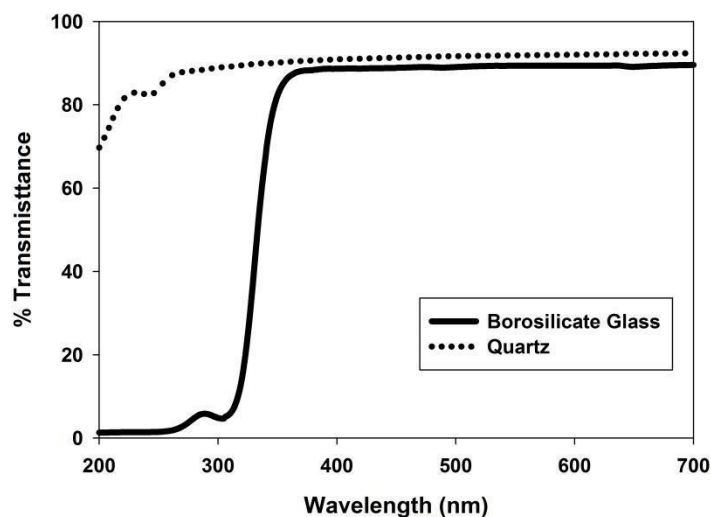
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Supplemental Information

2 **Table 1.** Timeframe for when samples were deployed on the surface of Lake Lacawac and the
3 total amount of light received by samples (280–700 nm).

Month	Dates	Total Light ($\text{J km}^{-2} \text{nm}^{-1}$)
May	May 9-16	299.9
June	June 7-13	365.4
July	July 7-13	320.9
August	August 8-14	365.4

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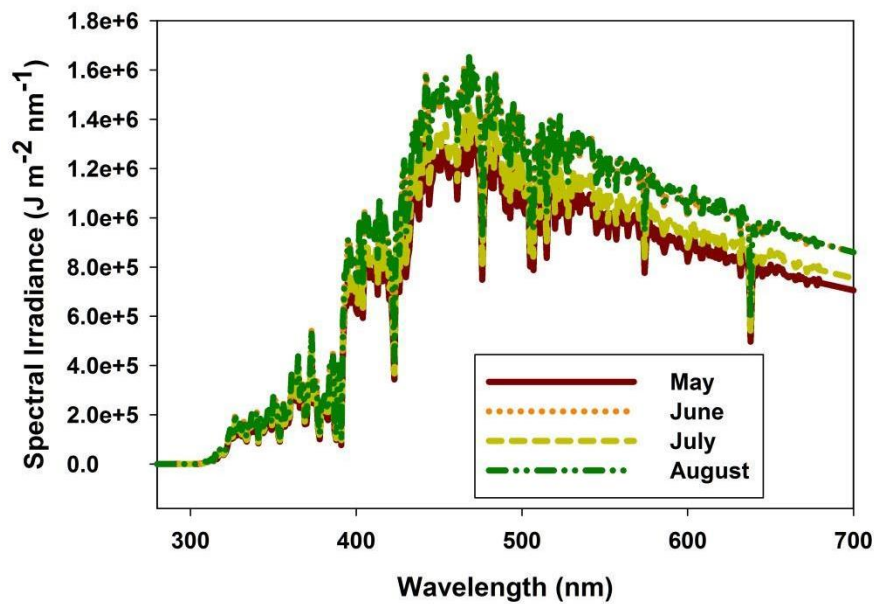
6 **Figure 1.** Percent transmittance of the quartz and borosilicate glass that was used for the
7 experiments.

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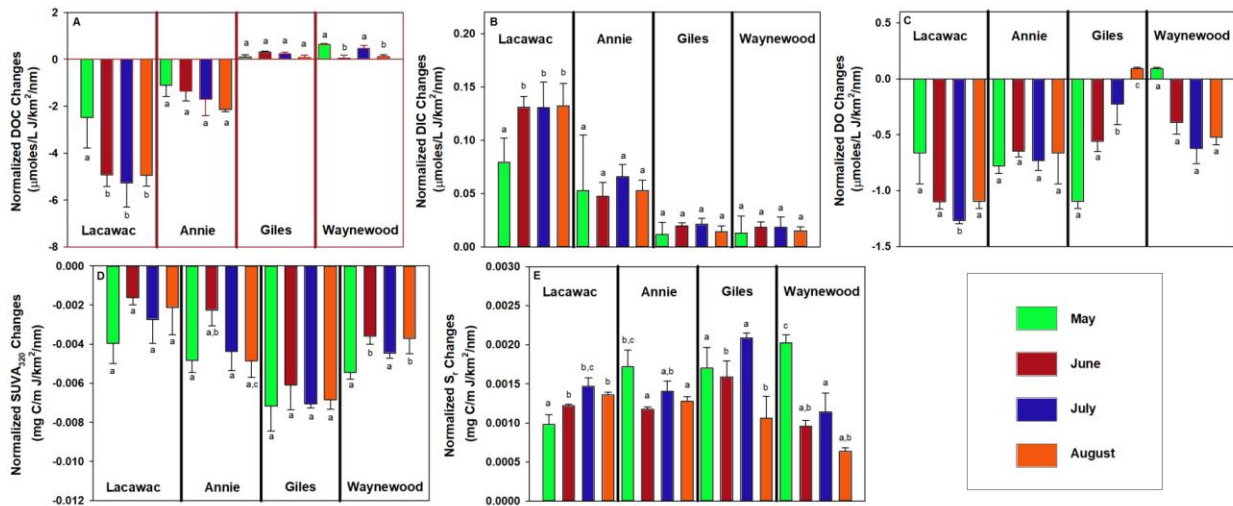
9 Supplemental Methods

10 The photodegradation treatments described above (DOC, DIC, DO, S_r , and $SUVA_{320}$) were
11 normalized to the total amount of light received by the samples for each month. This allowed us
12 to determine the impact of seasonality. To calculate the total amount of light ($\text{J m}^{-2} \text{nm}^{-1}$), a
13 modeled solar spectrum (280-700nm) was created. The base spectrum was generated with the
14 Quick TUV Calculator (version 5.2; http://cprm.acom.ucar.edu/Models/TUV/Interactive_TUV/)
15 for June 21 through June 27, 2016 (Madronich 1993). The latitude and longitude of Lake
16 Lacawac (Table 1) was provided and the ozone concentration from the Total Ozone Mapping
17 Spectrometer (TOMS; <https://ozoneaq.gsfc.nasa.gov/tools/ozonemap/>) for each day was entered.

18 We then fit this modeled solar spectrum to our GUV data for each experimental timeframe using
19 Solver in Microsoft Excel (version 2013). A best fit was determined by calculating the square of
20 the difference between the measured GUV data and the values estimated by the model for the
21 305 and 340nm wavelengths. In the resulting modeled solar spectra (SI Fig. 2), the total amount
22 of light (280-700nm) was summed for each month of the experiment and was used to standardize
23 the concentration and optical data described above.



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25 **Figure 2.** Modeled solar spectra for each month plotted against wavelength (nm)
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 30 **Figure 3.** Normalized photodegradation data (described in SI Fig 2) for each variable, lake, and
 31 month. Photodegradation samples were compared to controls (0 value on each panel). The panels
 32 are arranged as follows: A) DOC, B) DIC, C) DO, D) SUVA₃₂₀, and E) S_r. Statistical
 33 significance is indicated by the letter(s) above each bar. Months were compared using an
 34 ANOVA with a Tukey post-hoc test (CI = 95%). n = 3 for each bar.
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