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Supplement of

The relative importance of photodegradation and biodegradation of terrestrially derived dissolved organic carbon across four lakes of differing trophic status

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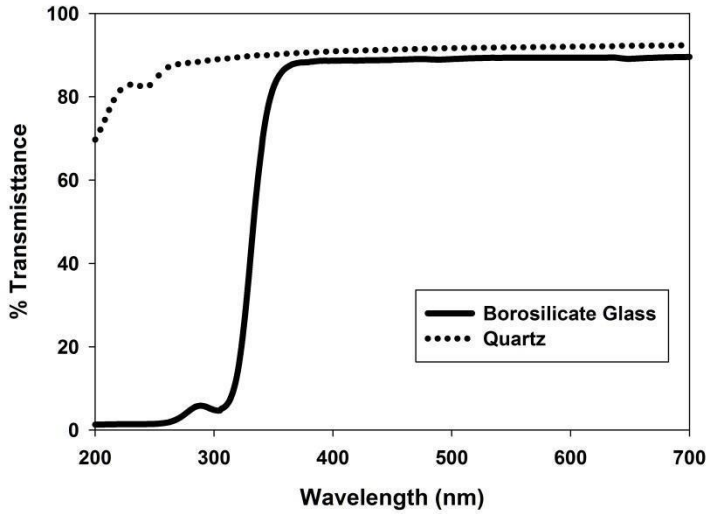
Supplemental Information

Table 1. Timeframe for when samples were deployed on the surface of Lake Lacawac, the total amount of light received by samples (280–700 nm), and the average surface (0.1 m) temperature of Lake Lacawac during each 7 day experiment

Month	Dates	Total Light (J km^{-2} nm^{-1})	Mean Surface Temp (° C) ± SD
May	May 9-16	299.9	15.1 ± **1.5**
June	June 7-13	365.4	20.1 ± **1.4**
July	July 7-13	320.9	25.4 ± **0.8**
August	August 8-14	365.4	26.2 ± **1.1**

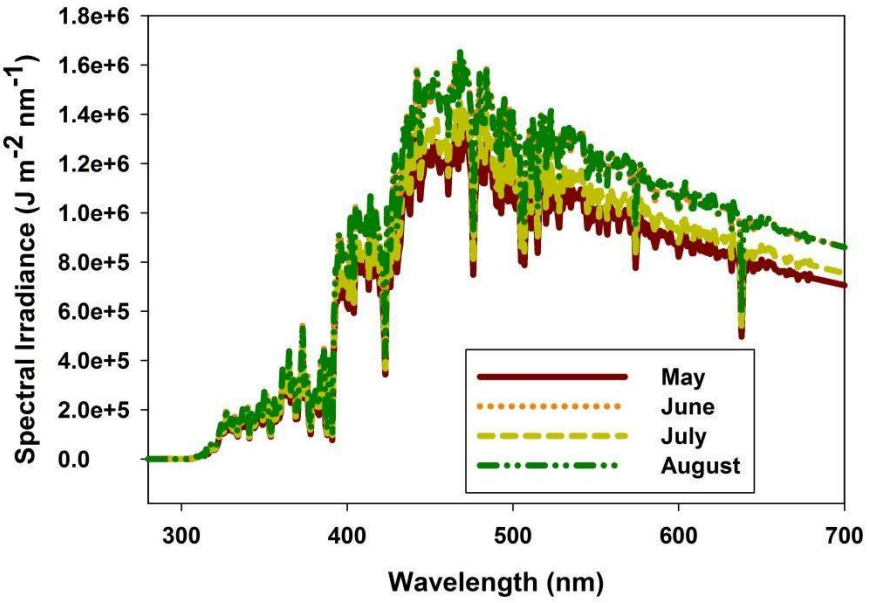


SFigure 1. Percent transmittance of the quartz and borosilicate glass that was used for the experiments.

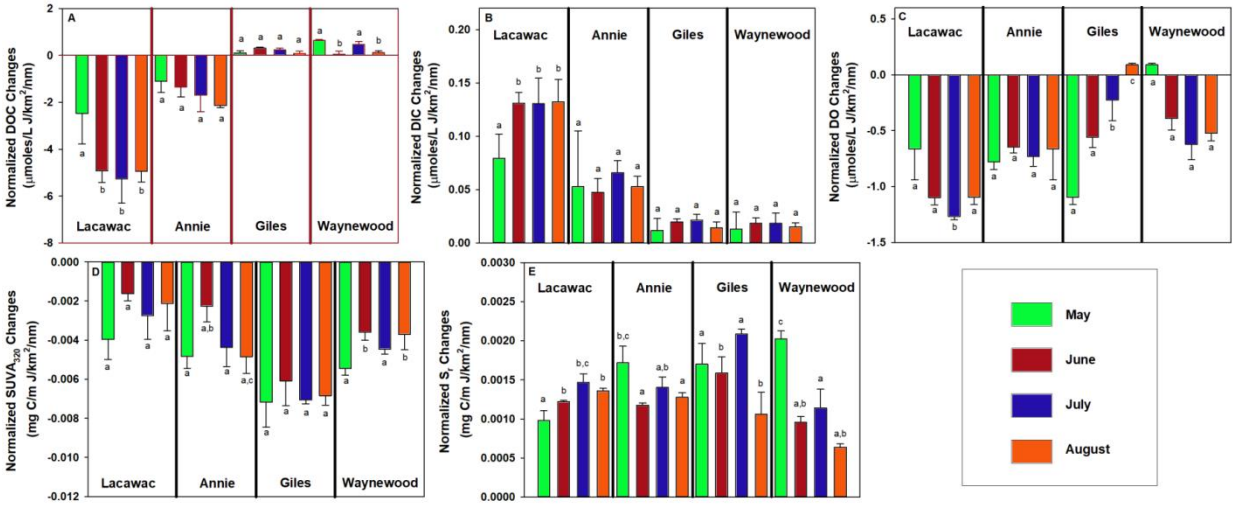
Supplemental Methods

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

Spectrometer (TOMS; https://ozoneaq.gsfc.nasa.gov/tools/ozonemap/) for each day was entered. We then fit this modeled solar spectrum to our GUV data for each experimental timeframe using Solver in Microsoft Excel (version 2013). A best fit was determined by calculating the square of the difference between the measured GUV data and the values estimated by the model for the 305 and 340nm wavelengths. In the resulting modeled solar spectra (SI Fig. 2), the total amount of light (280-700nm) was summed for each month of the experiment and was used to standardize the concentration and optical data described above.



SFigure 2. Modeled solar spectra for each month plotted against wavelength (nm)



SFigure 3. Normalized photodegradation data (described in SI Fig 2) for each variable, lake, and month. Photodegradation samples were compared to controls (0 value on each panel). The panels are arranged as follows: A) DOC, B) DIC, C) DO, D) $SUVA_{320}$, and E) S_r. Statistical significance is indicated by the letter(s) above each bar. Months were compared using an ANOVA with a Tukey post-hoc test (CI = 95%). n = 3 for each bar.

References

Madronich, S. UV radiation in the natural and perturbed atmosphere. Pages 17–69 in M. Tevini, editor. Environmental effects of UV (ultraviolet) radiation. Lewis Publisher, Boca Raton, Florida, 1993.