New insights into mechanisms of sunlight-mediated high-temperature accelerated diurnal production-degradation of fluorescent DOM in lake waters

by

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Table S1. Fluorescence EEM peaks wavelengths of the components identified in water samples collected from Jingye and Qingnian lakes in various seasons.

Sampling site	Sampling date	Fluorescence peak (Ex/Em)													
		AHLS C-type		AHLS M-type		EPS or newly-released PLS				PLS		TLS		Degraded TLS	
		Peak C (nm)	Peak A	Peak M	Peak A	Peak M	Peak A	Peak T	Peak T_{UV}	Peak T	Peak T_{UV}	Peak T	Peak T_{UV}	Peak T	Peak T_{UV}
Jingye lake	Sept 2017	345/458	265/458	280/388	240/388							275/339	230/339		
"	Dec 2017	355/458	270/458	290/389	245/389					275/340	230/340	270/321	225/321		
"	Apr 2018	345/468	275/468	300/382	230/382			285/354	-			275/329	225/329		
"	Jun 2018	340/449	270/449	295/377	240/377			285/341				270/333	225/333		-
Qingnian lake	Sept 2017	-	-	300/391	260/391					-	-	-			225/363
"	Dec 2017			-		270/425	230/425	270/365	230/365	-	-	-	-		
"	Apr 2018	310/442	260/442	-								275/332	225/332		
"	Jun 2018	320/468	260/468	305/391	235/391			285/340	240/340			270/333	225/333		

Table S2. Concentration ranges (left columns) and average values +/− standard deviations (right columns) of nutrients (NO_3^-, NO_2^-, NH_4^+, PO_4^{3-} and DSi), dissolved organic nitrogen (DON) and dissolved organic carbon (DOC) in water samples collected from Jingye lake in the months July and October over the entire day.

Sampling time &	Concentrations and the average values of the respective parameters						
sub-dirunal samples	NO_3^-	NO_2^-	NH_4^+	DON	PO_4^{3-}	DSi	DOC
July 5, 2018							
6:00 − 9:00	0.11-0.19; 0.14±0.03	0.003-0.004; 0.0032±0.0006	0.10-0.16; 0.13±0.03	0.49-0.65; 0.57±0.07	0.007-0.012; 0.009±0.0024	0.353-0.587; 0.44±0.1044	818-956; 871±59
10:00 − 15:00	0.09-0.16; 0.12±0.03	0.003-0.005; 0.0034±0.0007	0.11-0.15; 0.14±0.02	0.57-0.66; 0.61±0.03	0.000-0.011; 0.008±0.0039	0.310-0.557; 0.36±0.0960	841-963; 876±46
16:00 − 20:00	0.12-0.18; 0.15±0.03	0.003-0.004; 0.0036±0.0002	0.10-0.18; 0.13±0.03	0.55-0.75; 0.66±0.08	0.004-0.007; 0.006±0.0013	0.370-0.470; 0.41±0.0436	827-932; 886±38
21:00 − 1:00	0.11-0.18; 0.16±0.03	0.002-0.004; 0.0032±0.0005	0.10-0.18; 0.13±0.04	0.61-0.87; 0.74±0.11	0.004-0.016; 0.011±0.0046	0.420-0.690; 0.54±0.1176	815-915; 850±40
2:00 − 6:00	0.13-0.21; 0.16±0.03	0.003-0.004; 0.0035±0.0005	0.15-0.20; 0.18±0.02	0.55-0.69; 0.63±0.06	0.008-0.018; 0.012±0.0042	0.390-0.510; 0.42±0.0486	815-845; 835±12
Oct 12, 2018							
6:00 − 9:00	2.18-2.77; 2.40±0.26	0.000-0.069; 0.037±0.029	0.12-0.20; 0.15±0.04	−	0.263-0.431; 0.33±0.072	−	975-2355; 1379±653
10:00 − 15:00	2.08-3.03; 2.64±0.36	0.015-0.132; 0.062±0.039	0.04-0.78; 0.53±0.29	−	0.207-0.359; 0.26±0.053	−	2055-2989; 2397±354
16:00 − 20:00	2.07-2.83; 2.39±0.33	0.064-0.077; 0.071±0.006	0.31-0.35; 0.32±0.02	−	0.180-0.231; 0.20±0.023	−	2058-2674; 2301±277
22:00 − 0:00	2.28-2.51; 2.40±0.17	0.000-0.077; 0.039±0.054	0.33-0.39; 0.36±0.04	−	0.144-0.305; 0.22±0.114	−	1095-1978; 1536±625
2:00 − 6:00	2.29-3.36; 2.78±0.54	0.003-0.078; 0.039±0.038	0.34-0.37; 0.35±0.01	−	0.233-0.354; 0.29±0.060	−	1279-1548; 1392±140

Fig. S1. Map of sampling sites and their locations.

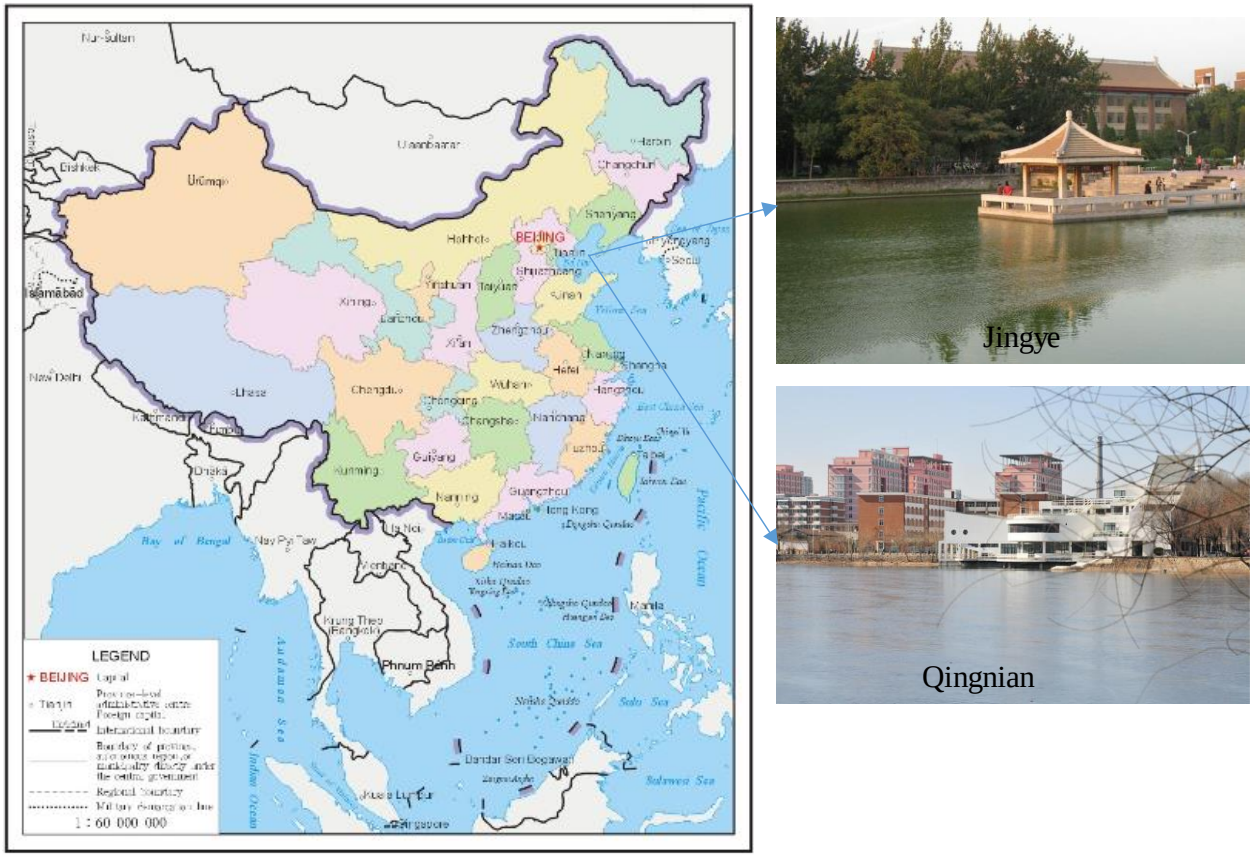

Fig. S2. Scanning electron microscopy images of phytoplankton measured in day (14:00; A-C) and night (D-E) conditions in water samples from Jingye lake. Images were obtained by the intelligent identification and counting instrument for algae (Algacount S300-3614025)

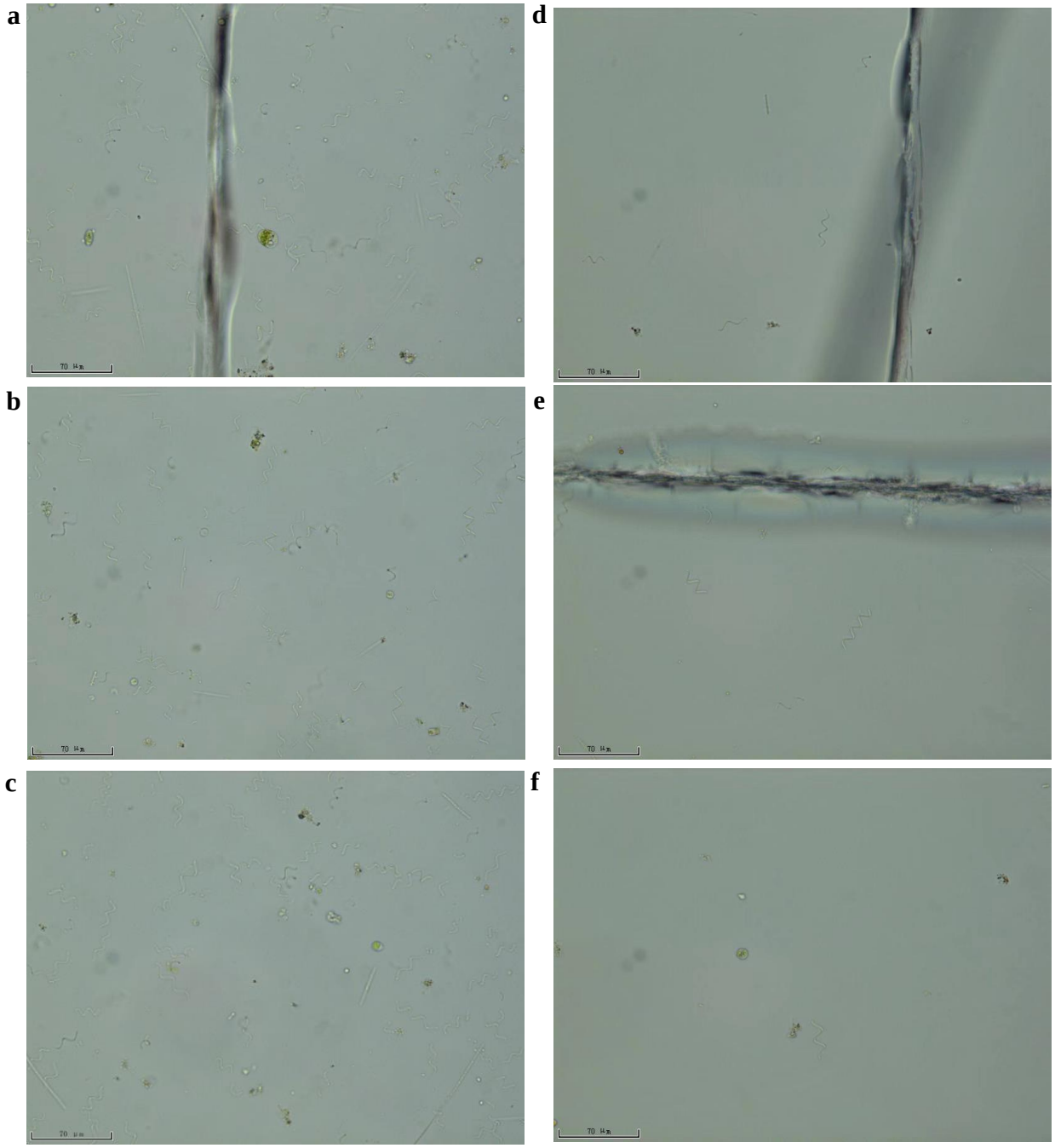

Fig. S3. Fluorescence EEM images showing the peaks of fluorescent components identified over four seasons in Jingye lake waters using EEM-PARAFAC modeling.

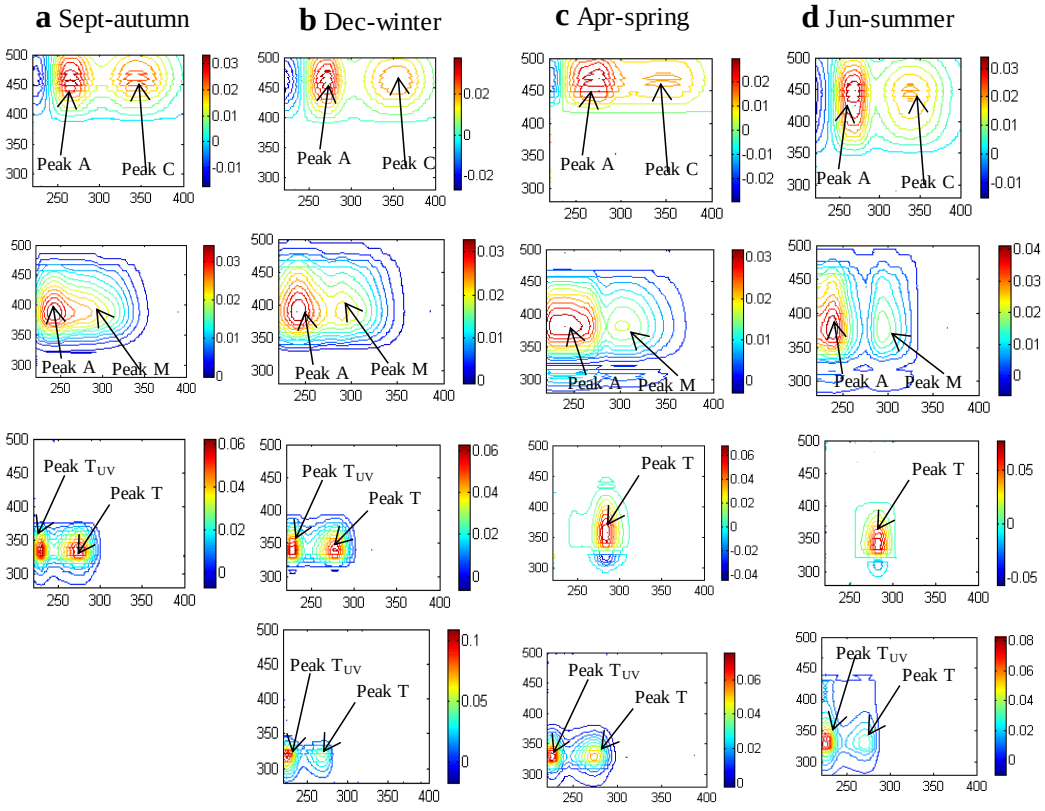
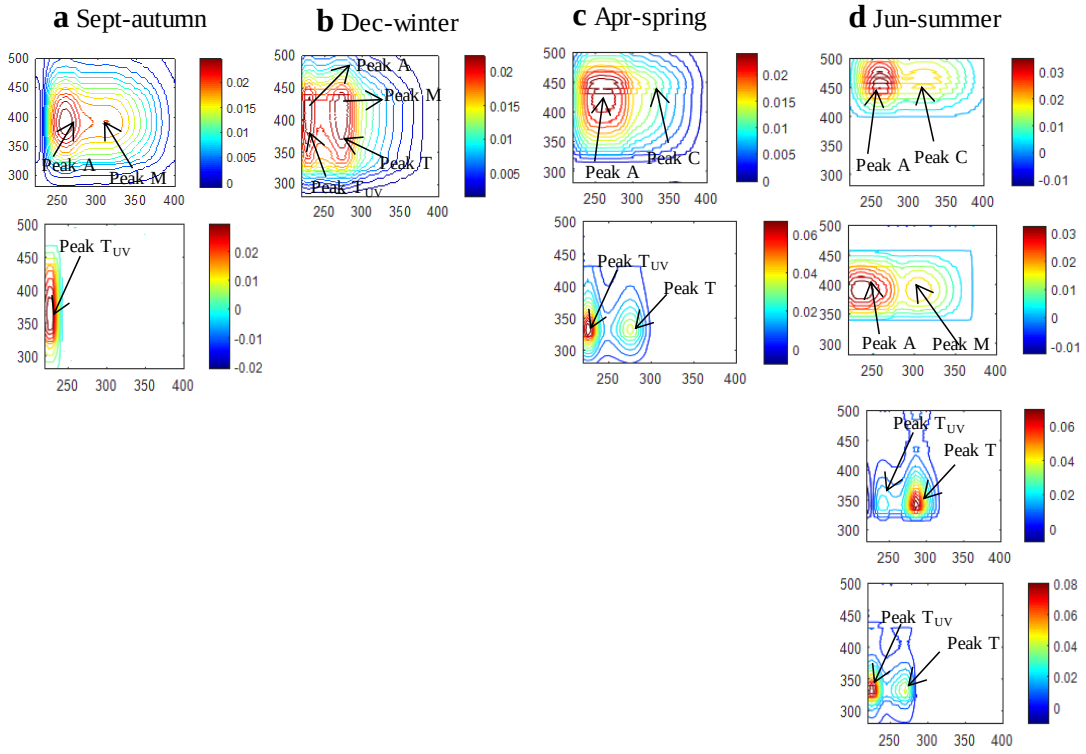
Fig. S4. Fluorescence EEM images showing the peaks of fluorescent components identified over four seasons in Qingnian lake waters using EEM-PARAFAC modeling.