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Supplementary Data

Response of phytoplankton community to water quality in local alpine glacial lake of Xinjiang Tianchi, China: potential drivers and management implications

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Table S1 List of phytoplankton genus

Category	Genus
Bacillariophyta (32)	<i>Melosira varians</i> , <i>Melosira arena</i> , <i>Cyclotella</i> sp., <i>Synedra acus</i> , <i>Synedra</i> sp., <i>Fragilaria</i> sp., <i>Asterionella</i> sp., <i>Diatoma vulgare</i> , <i>Diatoma vulgare</i> var. <i>product</i> , <i>Diatoma hiemale</i> , <i>Diatoma arcus</i> , <i>Eunotia lunaris</i> , <i>Navicula</i> sp., <i>Cymbella</i> sp., <i>Gomphonema</i> sp., <i>Achnanthes</i> sp., <i>Gyrosigma</i> sp., <i>Cocconeis placentula</i> , <i>Nitzschia</i> sp., <i>Gomphonema constrictum</i> , <i>Amphora ovalis</i> , <i>Neidium</i> sp., <i>Synedra amphicephala</i> , <i>Surirella</i> sp., <i>Campyladiscus</i> sp., <i>Cocconeis pediculus</i> , <i>Cymbella parva</i> , <i>Pinnularia</i> sp., <i>Cymbella cistula</i> , <i>Coscinodiscales</i> sp., <i>Nitzschia longissimi</i> , <i>Diatoma</i> sp.
Chlorophyta (13)	<i>Spirogyra</i> sp., <i>Ulothrix</i> sp., <i>Oedogonium</i> sp., <i>Closterium</i> sp., <i>Mougeotia</i> sp., <i>Chladophora</i> sp., <i>Chlamydomonas</i> sp., <i>Selenastrum</i> sp., <i>Scenedesmus quadricauda</i> , <i>Scenedesmus bicaudatus</i> , <i>Scenedesmus bijuga</i> , <i>Scenedesmus</i> sp., <i>Tetraedron minimum</i>
Cyanophyta (5)	<i>Oscillatoria</i> sp., <i>Merismopedia</i> sp., <i>Leptolyngbya</i> sp., <i>Nostoc</i> sp., <i>Anabaena</i> sp.
Dinoflagellate (3)	<i>Gymnogonium</i> sp., <i>Peridinium</i> sp., <i>Ceratium</i> sp.
Cryptophyta (3)	<i>Cryptomonas ovata</i> , <i>Cryptomonas</i> sp., <i>Chroomonas acuta</i>
Chrysophyceae (1)	<i>Dinobryon</i> sp.

Table S2 Codes of phytoplankton species for CCA

Codes	Category	Phytoplankton
A1	Bacillariophyta	<i>Cyclotella sp.</i>
A2	Bacillariophyta	<i>Synedra acus</i>
A3	Bacillariophyta	<i>Asterionella sp.</i>
A4	Bacillariophyta	<i>Cymbella sp.</i>
A5	Bacillariophyta	<i>Gomphonema sp.</i>
A6	Bacillariophyta	<i>Nitzschia sp.</i>
A7	Bacillariophyta	<i>Navicula sp.</i>
A8	Bacillariophyta	<i>Synedra sp.</i>
A9	Bacillariophyta	<i>Fragilaria sp.</i>
B1	Chlorophyta	<i>Tetraedron minimum</i>
B2	Chlorophyta	<i>Chlamydomonas sp.</i>
B3	Chlorophyta	<i>Selenastrum sp.</i>
B4	Chlorophyta	<i>Scenedesmus bicaudatus</i>
C1	Dinoflagellate	<i>Gymnogonium sp.</i>
C2	Dinoflagellate	<i>Peridinium sp.</i>
C3	Dinoflagellate	<i>Ceratium sp.</i>
D1	Cryptophyta	<i>Cryptomonas ovata</i>
D2	Cryptophyta	<i>Cryptomonas sp.</i>
D3	Cryptophyta	<i>Chroomonas acuta</i>
E1	Chrysophyceae	<i>Dinobryon sp.</i>

Table S3. Pearson Correlations of water quality parameters between Chl-*a* and environmental variables

	Chl- <i>a</i>	Water temperature	TN	TP	COD _{Mn}	Ammonium	Nitrate	DO	pH	SD	SRP
Chl- <i>a</i>	1	.362**	–	–	.302**	.536**	-.261**	–	.398**	-.222*	–
Water temperature		1	-.311**	–	.515**	–	-.417**	–	–	-.282**	–
TN			1	–	–	–	.381**	–	-.244*	.241*	–
TP				1	–	.386**	–	–	-.230*	–	.773**
COD _{Mn}					1	–	–	–	.201*	-.273**	–
Ammonium						1	-.348**	–	–	-.290**	–
Nitrate							1	–	–	.570**	–
DO								1	.201*	–	–
pH									1	–	–
SD										1	–
SRP											1

Data were log transformed before analysis. (* for $P < 0.05$, ** $P < 0.01$, – not significant, $n = 102$)

Table S4 Parameters used for calculation of hotel and catering discharge

	Discharge coefficients	TN	TP	Ammonia-N
	Large (≥ 200)	6.60 g/bed/d	0.66 g/bed/d	4.80 g/bed/d
Tourism hotels	Medium (50-200)	6.0 g/bed/d	0.59 g/bed/d	4.30 g/bed/d
	Small (≤ 50)	4.90 g/bed/d	0.49 g/bed/d	3.50 g/bed/d
	Large (≥ 500)	3.18 g/seat/d	0.29 g/seat/d	1.46 g/seat/d
Catering (regular food)	Medium (100-500)	3.70 g/seat/d	0.35 g/seat/d	1.67 g/seat/d
	Small (≤ 100)	4.24 g/seat/d	0.49 g/seat/d	1.86 g/seat/d

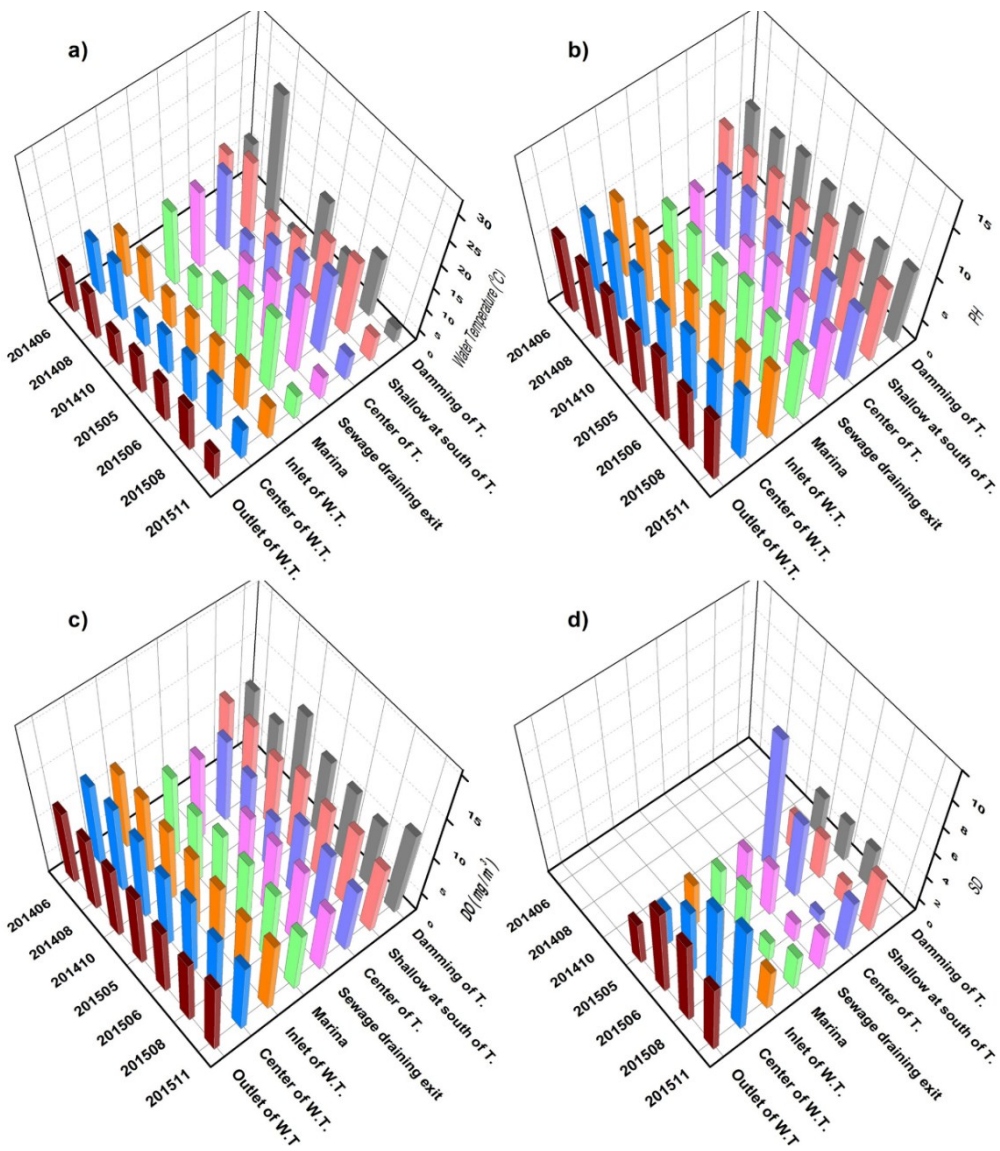


Fig. S1. Variation of water temperature, pH, DO and Secchi-depth (SD) in surface water samples



Fig. S2 Photos of filamentous algae bloom in Tianchi and Western Tianchi in 2014