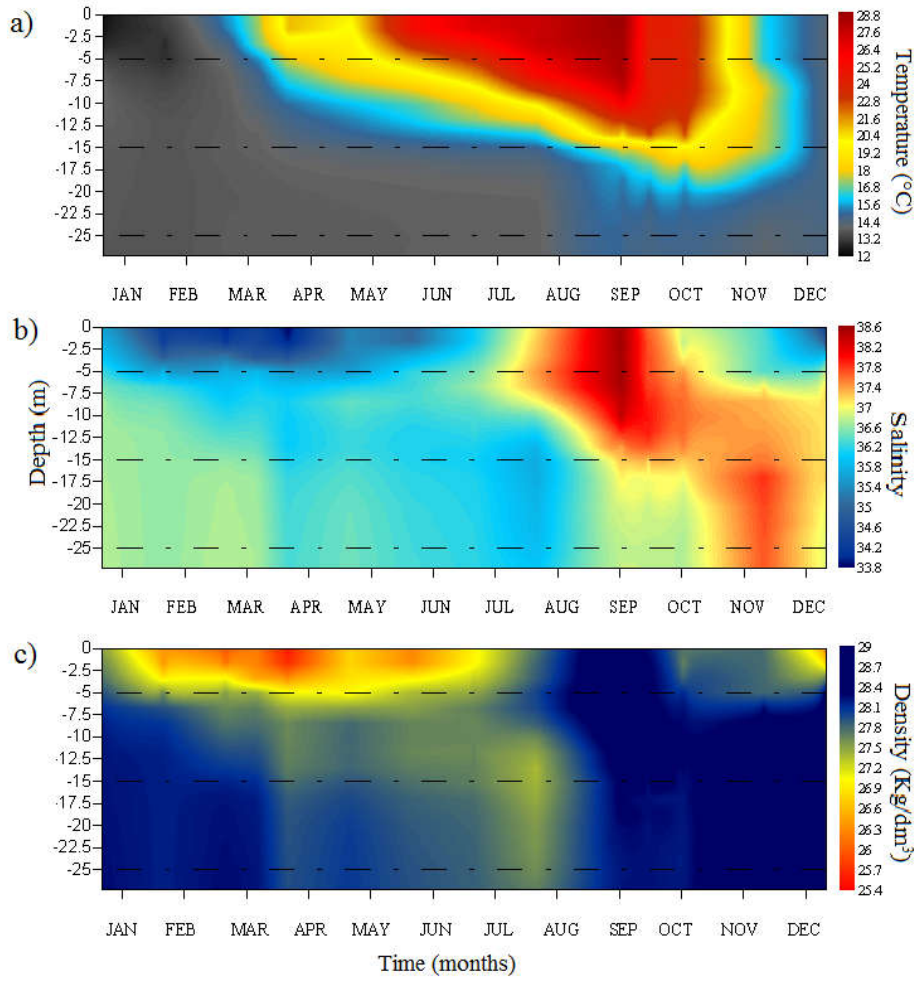
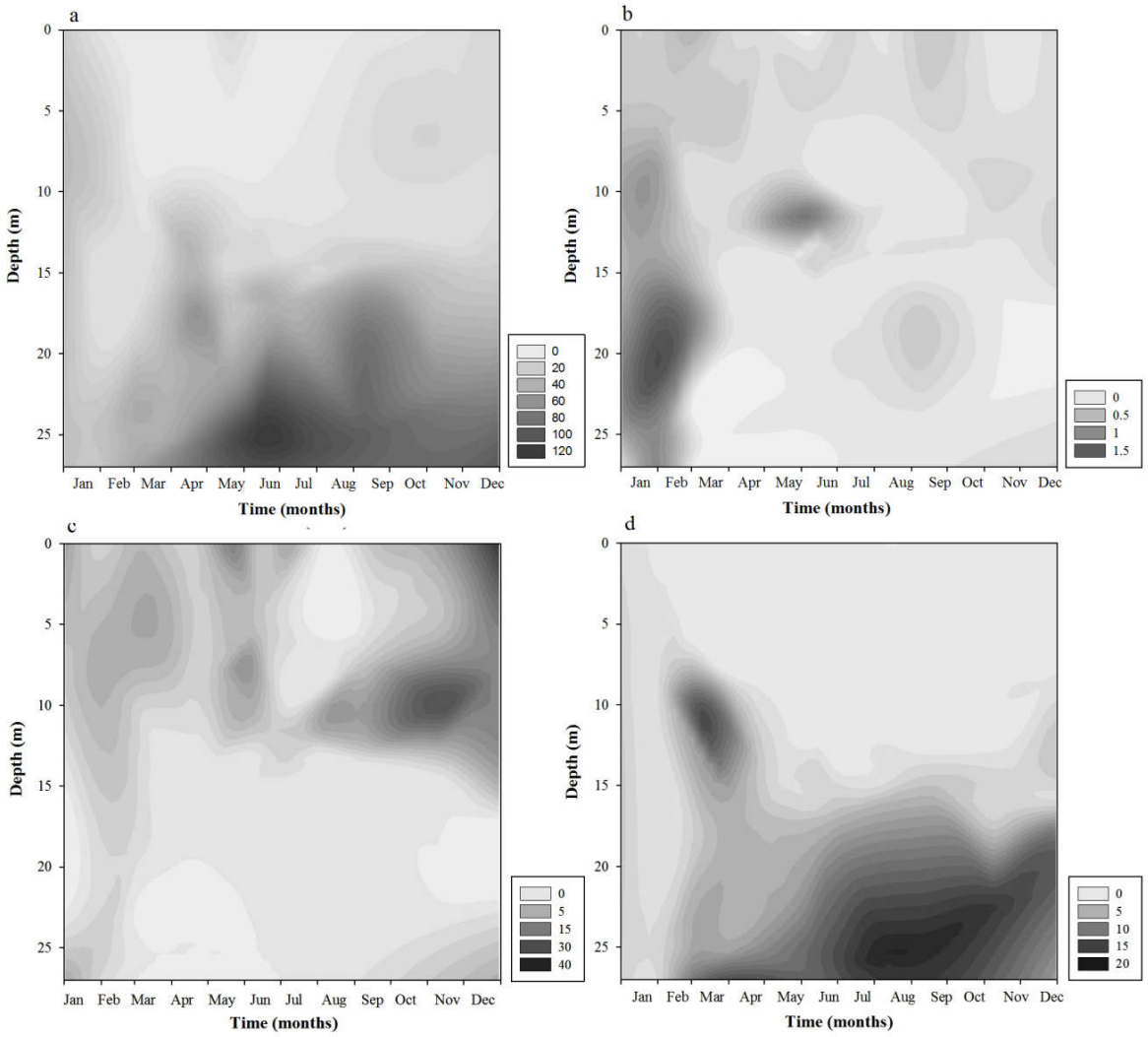
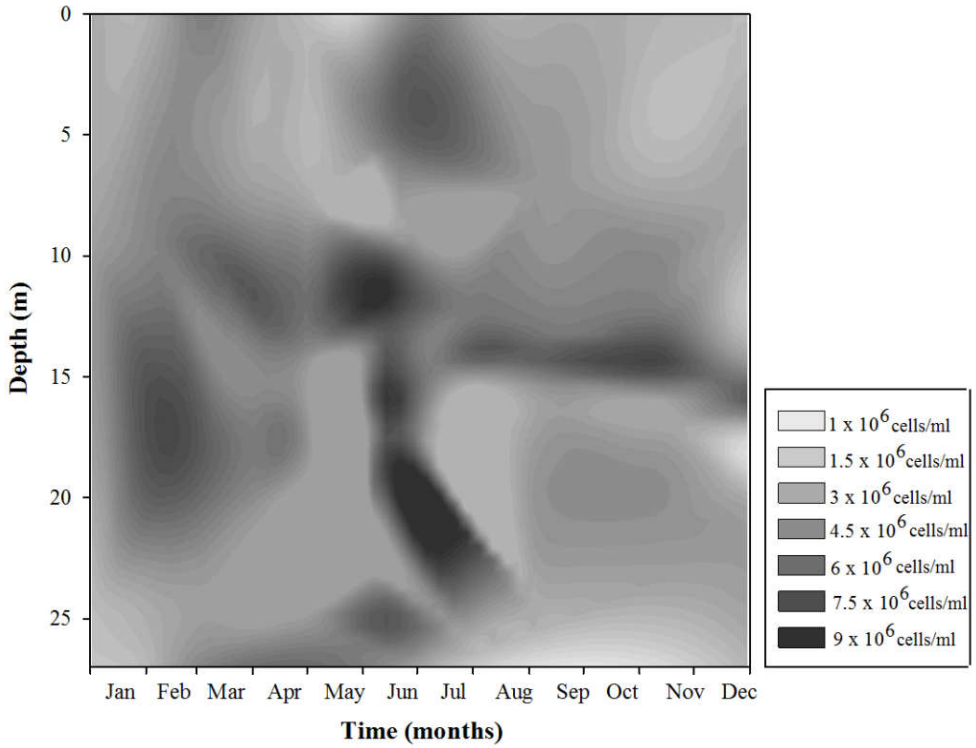


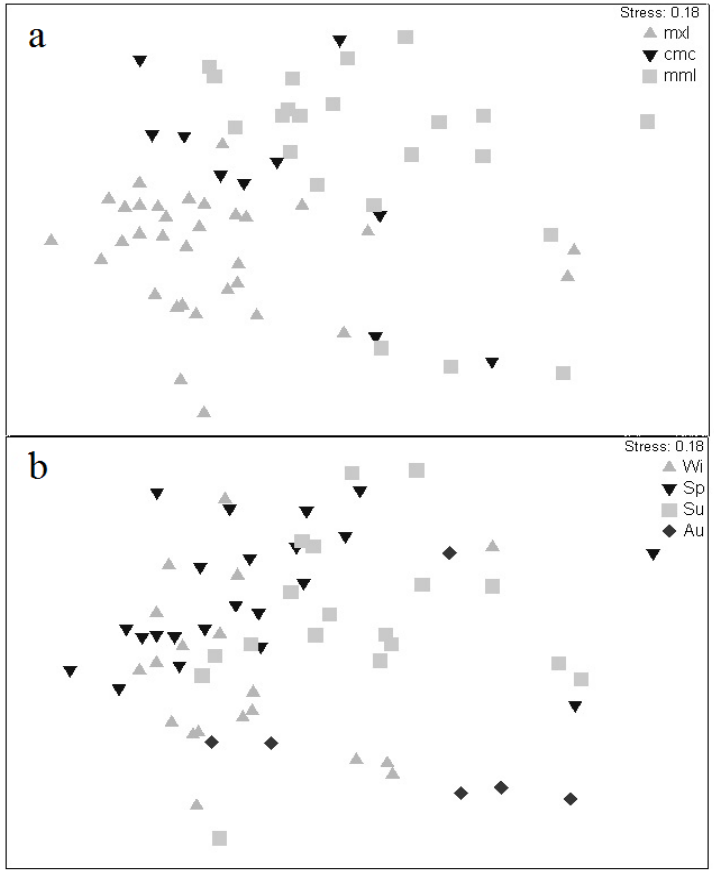
Supplementary Figure S1. Temperature (**a**), Salinity (**b**), Density (**c**) profiles during 2010 along the water column.



Supplementary Figure S2. Ammonia (uM) (**a**), Nitrites (uM) (**b**), Nitrates (uM) (**c**) and Phosphates (uM) (**d**) concentration during 2010 along the water column.



Supplementary Figure S3. Temporal and vertical variations of DAPI-stained cell abundance.



Supplementary Figure S4. Non-metric multidimensional scaling (nMDS) analysis permuted on ARISA results (Bray-Curtis similarity matric): layer factor (**a**); season factor (**b**). mxl: mixolimnion; cmc: chemocline; mml: monimolimnion; Wi: winter; Sp: spring; Su: summer; Au: August.

Supplementary Table S1. List of 5-HRP labeled oligonucleotide probes used in this study.

Probe	Target group	Probe sequence (5′-3′)[1]	Reference	Remarks
EUB338I	Most but not all Bacteria	GCTGCCTCCCGTAGGAGT	[39]	
EUB338II	Planctomycetes	GCAGCCACCCGTAGGTGT	[40]	
EUB338III	Verrucomicrobiales	GCTGCCACCCGTAGGTGT	[40]	
ARCH915	Archaea	GTGCTCCCCCGCCAATTCCT	[41]	
ALF968	Alphaproteobacteria	GGTAAGGTTCTGCGCGTT	[42]	
BET42a	Betaproteobacteria	GCCTTCCCACTTCGTTT	[43]	Gam42a as competitor targets 23S rRNA
GAM42a	Gammaproteobacteria	GCCTTCCCACATCGTTT	[43]	Bet42a as competitor targets 23S rRNA
DELTA495a	Some Deltaproteobacteria	AGTTAGCCGGTGCTTCCT	[44]	
DELTA495b	Deltaproteobacteria	AGTTAGCCGGCGCTTCCT	[44]	
DELTA495c	Deltaproteobacteria	AATTAGCCGGTGCTTCCT	[44]	
EPS914	Epsilonproteobacteria	GGTCCCCGTCTATTCCTT	[45]	
CF319a	Bacteroidetes	TGGTCCGTGTCTCAGTAC	[46]	
NON338	Negative control probe	ACTCCTACGGGAGGCAGC	[47]	

[1] Formamide concentration was 35% for all probes used in this study.

Supplementary Table S2. Diversity indices computed in this study *per* month and lake stratum.

	Layer	Taxa S	Margalef (Richness) d	Pielou (evenness) J'	Shannon (Diversity) H'	Shannon Max H' Max	Simpson (Dominance) D	Simpson Reciprocal 1/D
	mxl	88	19.00	0.79	3.55	4.48	0.05	21.14
Jan	mxl	91	19.64	0.79	3.55	4.51	0.05	19.71
	mxl	107	23.29	0.84	3.95	4.67	0.03	30.92
	mxl	87	18.86	0.84	3.77	4.47	0.03	29.48
Feb	mxl	84	18.19	0.84	3.73	4.43	0.04	26.58
	mxl	109	23.60	0.85	4.00	4.69	0.03	33.80
	mxl	91	19.74	0.85	3.84	4.51	0.03	33.34
Mar	cmc	102	22.16	0.81	3.74	4.62	0.05	22.05
	mml	129	27.95	0.83	4.05	4.86	0.03	31.56
	mxl	88	19.01	0.84	3.75	4.48	0.04	28.39
Apr	cmc	127	27.51	0.84	4.08	4.84	0.03	35.01
	mml	134	29.14	0.83	4.06	4.90	0.03	34.55
	mxl	105	22.73	0.84	3.93	4.65	0.03	30.30
May	cmc	117	25.46	0.85	4.06	4.76	0.03	34.79
	mml	149	32.39	0.84	4.18	5.00	0.03	32.24
	mxl	80	17.27	0.84	3.69	4.38	0.04	26.29
Jun	cmc	113	24.51	0.83	3.92	4.73	0.03	29.62
	mml	148	32.14	0.82	4.07	5.00	0.04	27.09
	mxl	115	25.00	0.82	3.88	4.74	0.03	28.97
Jul	cmc	95	20.53	0.77	3.52	4.55	0.06	18.04
	mml	113	24.46	0.78	3.69	4.73	0.05	20.33
	mxl	121	26.33	0.86	4.11	4.80	0.03	37.55
Aug	cmc	135	29.38	0.81	3.98	4.91	0.04	23.22
	mml	103	22.21	0.78	3.59	4.63	0.06	16.04
	mxl	88	19.02	0.80	3.56	4.48	0.05	20.70
Sep	cmc	96	20.65	0.80	3.64	4.56	0.05	20.14
	mml	109	23.51	0.78	3.65	4.69	0.06	17.53
	mxl	79	17.00	0.83	3.62	4.37	0.04	25.47
Oct	cmc	123,00	26.83	0.80	3.87	4.81	0.04	23.97
	mml	141,00	30.67	0.84	4.14	4.95	0.03	32.42
	mxl	93	19.99	0.86	3.89	4.53	0.03	29.00
Nov	cmc	61	13.03	0.58	2.40	4.11	0.28	3.63
	mml	88	18.91	0.76	3.39	4.48	0.06	15.63
	mxl	104	22.60	0.83	3.87	4.64	0.04	28.20
Dec	cmc	88	18.99	0.75	3.37	4.48	0.06	17.18
	mml	106	22.94	0.82	3.80	4.66	0.04	27.37

Supplementary Table S3. Physical and chemical parameters recorded by the CTD probe, nutrients concentration, DAPI counts, TC/TOC/TN concentration determined in the selected samples for CARD-FISH analysis (mxl: mixolimnion; cmc: chemocline; mml: monimolimnion).

	January			February			March			April			May			June		
	mxl	*mxl*	*mxl*	*mxl*	*mxl*	*mxl*	*mxl*	*cmc*	*mml*	*mxl*	*cmc*	*mml*	*mxl*	*cmc*	*mml*	*mxl*	*cmc*	*mml*
Temperature (°C)	12.36	14.12	13.76	13.38	13.58	13.68	15.60	13.85	13.86	21.04	14.33	13.89	20.21	15.01	13.91	25.52	15.15	13.92
Dissolved O_2 (mg/L)	7.92	2.43	4.06	8.05	4.07	1.68	11.94	0.16	0	7.09	0.18	0	8.32	0.2	0	7.61	0.10	0
Red. Pot. (mV)	161	162	162	240	242	245	119	35	-181	62	16	-238	43	14	-240	61	5	-255
Chlorophyll (µg/L)	1.40	0.70	0.3	0.5	1.9	0.3	1	0.9	0.2	1.2	1.2	0.3	0.5	3.6	2.3	3.3	57.8	1.5
pH	8.60	8.41	8.51	8.94	8.76	8.55	9.07	8.63	8.39	8.24	7.97	7.58	8.49	8.14	7.7	8.33	7.98	7.08
Salinity	35.57	36.71	36.74	34.23	36.52	36.61	33.90	36.70	36.75	33.83	36.09	36.33	35.32	36.26	36.46	35.06	36.15	36.30
DAPI (cells/mL)	3.35×10^6	3.68×10^6	2.29×10^6	2.90×10^6	4.91×10^6	3.06×10^6	5.29×10^6	8.20×10^6	4.93×10^6	2.33×10^6	4.86×10^6	3.94×10^6	1.51×10^6	1.43×10^6	1.26×10^6	5.36×10^6	9.28×10^6	7.33×10^6
Ammonia (uM)	22.13	33.41	30.42	5.98	22.70	29.46	1	13.17	47.91	3.86	31.09	78.85	13.87	12.10	56.27	4.02	12.82	122.05
Nitrites (µM)	0.32	0.75	0.76	0.35	0.81	1.12	0.58	2.43	0	0.15	0.06	0	0.05	0.04	0	0.19	0.27	0
Nitrates (µM)	13.17	6.17	5.63	4.84	10.68	5.16	9.61	3.60	0	8.43	2.34	0	17.21	1.02	0	6.07	2.22	0
Phosphates (µM)	1.70	2.97	3.03	0.70	2.14	2.45	0.45	2.94	10.39	0.56	3.34	8.49	0.40	1.71	6.60	0.04	2.74	12.61
TC (mg/L)	18.49	15.15	17.98	18.49	15.15	17.98	21.48	18.86	16.28	61.85	21.59	18.79	19.21	12.63	22.17	13.98	17.61	17.04
TOC (mg/L)	3.35	3.11	2.78	3.35	3.11	2.78	6.07	3.84	10.32	46.46	10.03	7.41	8.842	8.501	6.02	3.05	3.25	9.05
TN (mg/L)	0.22	0.37	0.61	0.22	0.37	0.61	0.48	0.23	3.35	2.51	0.57	1.75	0.46	0.277	0.723	0.31	0.39	2.32
	July			**August**			**September**			**October**			**November**			**December**		
	mxl	*cmc*	*mml*	*mxl*	*cmc*	*mml*	*mxl*	*cmc*	*mml*	*mxl*	*cmc*	*mml*	*mxl*	*cmc*	*mml*	*mxl*	*cmc*	*Mml*
Temperature (°C)	27.21	15.21	13.94	27.63	15.65	13.95	22.41	16.92	13.83	17.42	13.94	13.86	16.19	17.43	14.53	14.55	14.03	13.71
Dissolved O_2 (mg/L)	7.05	0.12	0	7.21	0.08	0	6.36	0.16	0	7.44	0.50	0	6.88	0.78	0	5.01	1.85	0
Red. Pot. (mV)	46	43	-290	61	12	-286	87	43	-280	76	14	-192	300	38	-185	81	53.15	-231
Chlorophyll (µg/L)	1.7	106.9	44.90	2.9	41.7	6.7	1.7	74.1	10.6	0.2	1.1	1	2.9	2.2	14.5	0.4	21.8	18.6
pH	8.47	8.14	7.29	8.53	8.14	6.66	8.43	8.24	6.72	8.97	8.58	8.28	8.80	8.89	5.73	8.81	8.01	7.80
Salinity	36.07	36.12	36.22	37.27	35.79	35.98	36.60	35.92	35.91	34.37	36.59	36.69	36.35	37.55	37.72	37.32	36.09	35.80
DAPI (cells/mL)	5.19×10^6	6.58×10^6	3.56×10^6	3.55×10^6	7.14×10^6	2.82×10^6	3.13×10^6	6.01×10^6	2.89×10^6	3.63×10^6	4.90×10^6	3.52×10^6	2.79×10^6	8.03×10^6	4.17×10^6	3.41×10^6	7.02×10^6	3.97×10^6
Ammonia (uM)	3.45	11.09	107.17	2.41	15.85	126.84	4.64	19.46	97.77	3.52	31.66	46.04	8.55	27.19	85.93	11.76	26.69	97.34
Nitrites (µM)	0.22	0.22	0	0.07	0.10	0	0.36	0.20	0	0.20	0.05	0	0.05	0	0	0.13	0.10	0
Nitrates (µM)	11.28	3.35	0	1.02	1.15	0	5.53	1.38	0	5.85	2.50	0	23.03	0	0	18.47	7.38	0
Phosphates (µM)	0.48	0.75	13.68	0.10	0.99	15.82	0.1	1.77	19.87	0.35	5.92	6.34	0.47	2.63	15.52	0.94	2.44	6.63
TC (mg/L)	18.34	10.44	23.64	15.70	14.18	16.79	19.68	12.73	15.90	14.73	19.89	16.51	17.67	22.64	19.14	8.86	13.99	14.52
TOC (mg/L)	4.07	4.76	15.40	2.78	2.68	2.59	5.74	6.97	6.62	6.31	4.62	5.67	4.63	4.63	3.14	1.40	0.84	1.28
TN (mg/L)	0.43	0.43	3.67	0.27	0.29	1.99	0.78	0.99	2.68	3.11	3.41	0.33	0.24	0.24	0.29	0.30	0.32	0.70