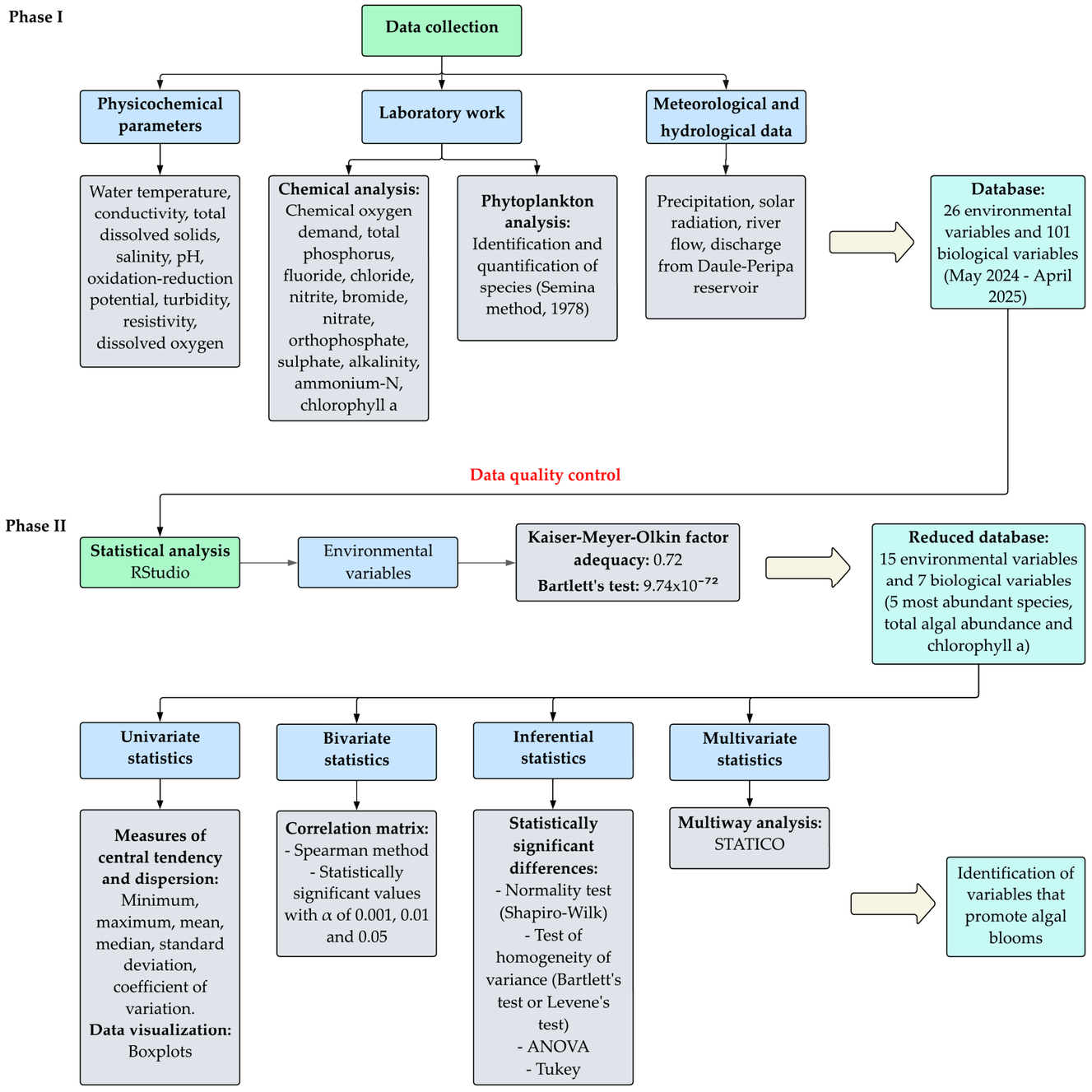


Figure S1. Methodological scheme.

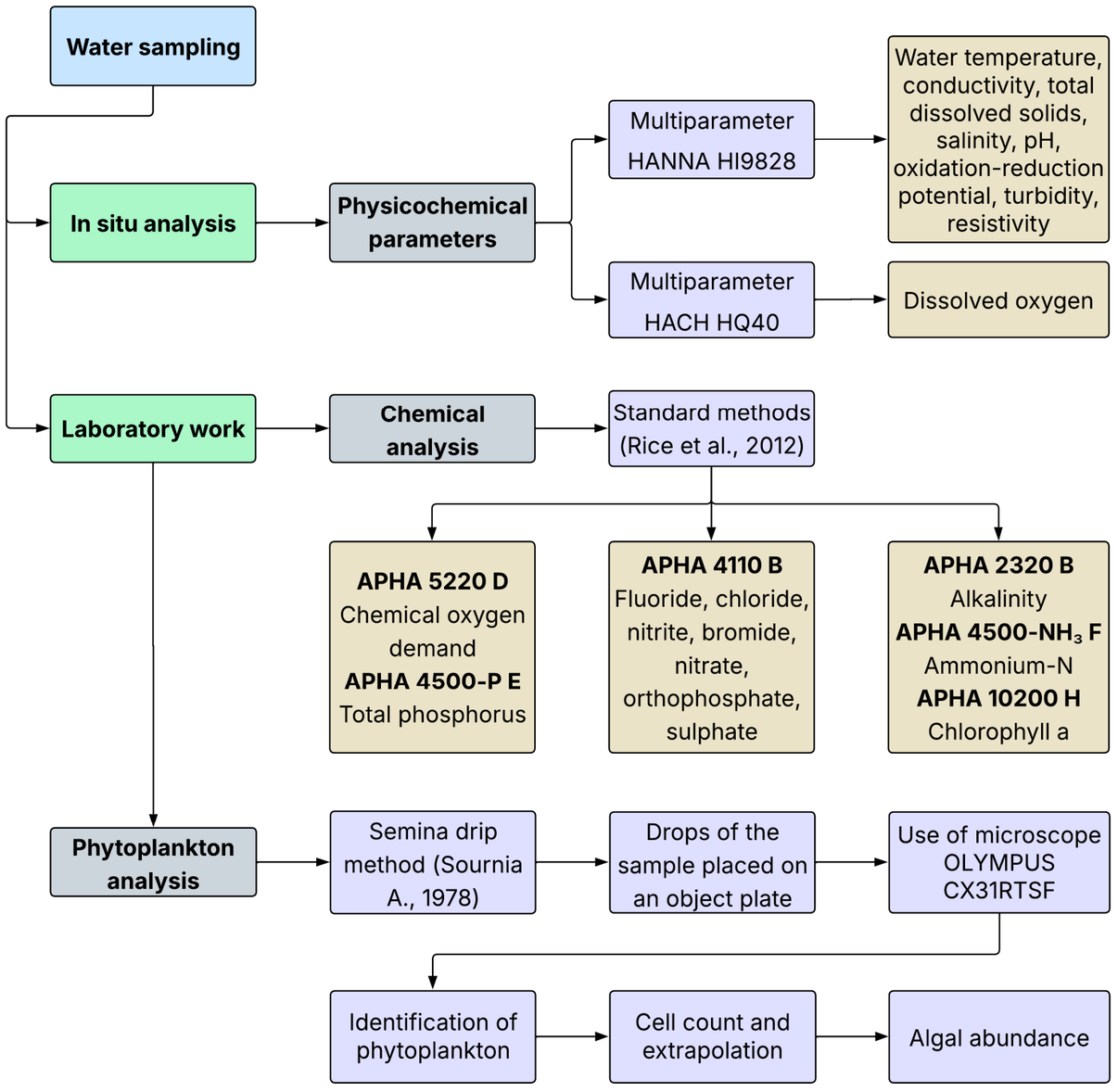


Figure S2. Water sampling analysis process.

Table S1. Descriptive statistics of environmental variables

	Balzar				Colimes				Santa Lucía				Nobol				Petrillo				Mean value (all sites)
	[min, max]	$\bar{x}$ ± SD	Median	CV	[min, max]	$\bar{x}$ ± SD	Median	CV	[min, max]	$\bar{x}$ ± SD	Median	CV	[min, max]	$\bar{x}$ ± SD	Median	CV	[min, max]	$\bar{x}$ ± SD	Median	CV	
Total solar radiation (W/m²)	[513.3, 1142.7]	850.92 ± 231.20	942.7	27%	[513.3, 1142.7]	850.36 ± 219.34	910.40	26%	[513.3, 1142.7]	833.38 ± 214.70	844.80	26%	[520.9, 1142.7]	828.11 ± 210.13	844.8	25%	[520.9, 1142.7]	828.11 ± 210.13	844.8	25%	837.94
Discharge (m³/s)	[119.13, 603.62]	232.51 ± 154.02	166.31	66%	[119.13, 603.62]	225.65 ± 147.88	157.03	66%	[119.13, 603.62]	227.07 ± 148.22	157.03	65%	[119.13, 603.62]	228.92 ± 147.34	157.03	64%	[119.13, 603.62]	228.92 ± 147.34	157.03	64%	228.55
River flow (m³/s)	[102.11, 1271.21]	388.43 ± 380.97	214.53	98%	[102.11, 1271.21]	363.53 ± 370.74	202.92	102%	[102.11, 1271.21]	363.53 ± 370.74	202.92	102%	[102.11, 1271.21]	375.2 ± 364.72	226.13	97%	[102.11, 1271.21]	375.2 ± 364.72	226.13	97%	372.90
Water temperature (°C)	[26.28, 29.6]	27.31 ± 1	27.17	4%	[26.1, 30.4]	28.10 ± 1.32	28.40	5%	[26.31, 29.6]	27.43 ± 0.99	27.25	4%	[26.6, 31]	27.83 ± 1.41	27.24	5%	[26.7, 29.9]	27.99 ± 1.16	27.82	4%	27.74
Salinity (ppt)	[0.02, 0.09]	0.03 ± 0.02	0.03	66%	[0.02, 0.04]	0.03 ± 0.01	0.03	29%	[0.03, 0.06]	0.04 ± 0.01	0.03	28%	[0.02, 0.07]	0.04 ± 0.02	0.03	40%	[0.01, 0.07]	0.04 ± 0.02	0.03	55%	0.03
Disolved oxygen (mg/L)	[0.89, 4.73]	2.65 ± 1.51	2.86	57%	[3.66, 8]	5.84 ± 1.34	6.36	23%	[4.18, 7.79]	5.93 ± 1.23	5.75	21%	[4.35, 8.45]	6.35 ± 1.33	6.54	21%	[4.39, 8.29]	6.28 ± 1.23	6.22	20%	5.46
pH	[6.34, 7.83]	6.98 ± 0.46	6.91	7%	[6.65, 8.04]	7.16 ± 0.40	7.06	6%	[6.74, 8.05]	7.48 ± 0.38	7.46	5%	[6.91, 8.18]	7.66 ± 0.43	7.7	6%	[6.8, 8.24]	7.68 ± 0.56	7.9	7%	7.40
Turbidity (FNU)	[15, 1000]	133.08 ± 305.89	23.55	230%	[5.3, 569]	116.9 ± 203.68	26.8	174%	[3.67, 961]	123.48 ± 282.97	19.9	229%	[19, 969]	203 ± 305.17	23.3	150%	[19, 932]	226.4 ± 317.77	79.5	140%	161.09
Chemical oxygen demand (mg/L)	[0.7, 41]	9.71 ± 13.68	3.55	141%	[0.7, 77]	18.25 ± 29.34	4	161%	[0.7, 98.3]	17.56 ± 30.03	5.9	171%	[0.7, 98.2]	22.11 ± 31.09	5.9	141%	[0.7, 78.7]	17.87 ± 22.55	10.5	126%	17.24
Nitrite (mg/L)	[0.04, 0.38]	0.12 ± 0.10	0.07	82%	[0.05, 0.15]	0.09 ± 0.04	0.07	40%	[0.07, 0.14]	0.09 ± 0.03	0.07	33%	[0.06, 0.18]	0.10 ± 0.05	0.07	50%	[0.07, 0.17]	0.10 ± 0.04	0.07	42%	0.10
Nitrate (mg/L)	[0.05, 1.14]	0.41 ± 0.44	0.18	107%	[0.07, 1.17]	0.37 ± 0.44	0.15	117%	[0.10, 1.34]	0.38 ± 0.51	0.10	134%	[0.01, 1.41]	0.43 ± 0.52	0.10	120%	[0.10, 1.54]	0.45 ± 0.56	0.21	125%	0.41
Orthophosphate (mg/L)	[0.01, 0.22]	0.08 ± 0.05	0.07	65%	[0.01, 0.13]	0.07 ± 0.04	0.07	53%	[0.05, 0.14]	0.08 ± 0.03	0.07	38%	[0.04, 0.12]	0.08 ± 0.02	0.07	31%	[0.03, 0.10]	0.06 ± 0.02	0.07	32%	0.07
Sulphate (mg/L)	[0.10, 7.30]	3.08 ± 2.31	2.4	75%	[0.10, 13.81]	4.96 ± 5.24	2.86	106%	[0.10, 22.59]	7.74 ± 8.91	3.69	115%	[0.10, 19.03]	8.92 ± 7.49	10.20	84%	[0.10, 22.42]	9.67 ± 8.67	9.25	90%	6.94
Ammonium-N (mg/L)	[0, 0.28]	0.08 ± 0.10	0.06	120%	[0, 0.26]	0.12 ± 0.11	0.13	91%	[0, 0.25]	0.08 ± 0.09	0.09	113%	[0, 0.26]	0.11 ± 0.09	0.11	84%	[0, 0.18]	0.08 ± 0.07	0.10	83%	0.09
Alkalinity (mg/L)	[7.50, 95]	56.35 ± 22.78	58.75	40%	[30, 137.5]	61.35 ± 30.49	57.5	50%	[42.5, 157.5]	75.96 ± 36.68	65	48%	[45, 160]	76.15 ± 31.84	67.5	42%	[28.6, 177.5]	75.22 ± 41.15	70	55%	69.24

Min: minimum value; max: maximum value; $\bar{x}$: mean value; SD: standard deviation; CV: coefficient of variation

Table S2. Descriptive statistics of biological variables

	Balzar				Colimes				Santa Lucía				Nobol				Petrillo				Mean value (all sites)
	[min, max]	$\bar{x}$ ± SD	Median	CV	[min, max]	$\bar{x}$ ± SD	Median	CV	[min, max]	$\bar{x}$ ± SD	Median	CV	[min, max]	$\bar{x}$ ± SD	Median	CV	[min, max]	$\bar{x}$ ± SD	Median	CV	
***Polymyxus coronalis* (cells/m³)**	[0, 183]	18.3 ± 57.87	0	316%	[0, 15750]	1563.64 ± 4725.15	0	302%	[0, 280976]	27092.18 ± 84343.65	0	311%	[0, 4507317]	466975.4 ± 1341728.18	52033	287%	[0, 5723577]	633684.6 ± 1706263.25	6400	269%	230049.20
***Aulacoseira granulata* (cells/m³)**	[0, 22764]	3612 ± 7291.74	147	202%	[0, 211382]	31538.45 ± 69040.34	583	219%	[0, 162602]	19306.45 ± 48558.76	250	252%	[0, 637398]	73810 ± 190109.56	667	258%	[0, 114472]	11832 ± 34233.31	111	289%	28471.78
***Ulnaria ulna* (cells/m³)**	[0, 18211]	4719 ± 7478.76	341.5	158%	[0, 162602]	17038.91 ± 48780.36	0	286%	[0, 113821]	13220.91 ± 34651.51	0	262%	[0, 406504]	46394.5 ± 121296.19	317	261%	[0, 182927]	16877.7 ± 55073.6	111	326%	19926.76
***Mougeotia sp.* (cells/m³)**	[0, 16260]	1904.9 ± 5069.62	0	266%	[0, 23415]	2189.91 ± 7040.99	0	322%	[0, 178862]	26680.45 ± 61045.19	0	229%	[0, 63740]	5924.8 ± 19177.55	0	324%	[0, 104065]	9505.6 ± 31362.07	0	330%	9377
***Planktothrix cf. agardhii* (cells/m³)**	[0, 22764]	3607.6 ± 7274.1	525	202%	[0, 81951]	9144.91 ± 24622.19	0	269%	[0, 208130]	20640 ± 62368.6	250	302%	[0, 78049]	8178.6 ± 23275.69	317	285%	[0, 31220]	4440.7 ± 9591.94	267	216%	9305.98
Total algal abundance (cells/m³)	[1734, 145692]	40505.9 ± 52048.51	5897	128%	[224, 715446]	125506.36 ± 233611.58	4249	186%	[0, 894966]	142738.91 ± 309810.43	4250	217%	[0, 5454310]	635503.3 ± 1609849.7	130668	253%	[0, 6139843]	707963.5 ± 1833740.5	18661	259%	335812.80
Chlorophyll a (mg/m³)	[3, 301.3]	70.92 ± 96.6	38.7	136%	[1, 5013.7]	554.06 ± 1498.9	32.63	271%	[16, 1013.5]	323.89 ± 438.2	34.71	135%	[1, 1507.8]	358.6 ± 546.86	65.4	152%	[11, 3794.2]	852.6 ± 1430.59	147.1	168%	438.70

Min: minimum value; max: maximum value; $\bar{x}$: mean value; SD: standard deviation; CV: coefficient of variation

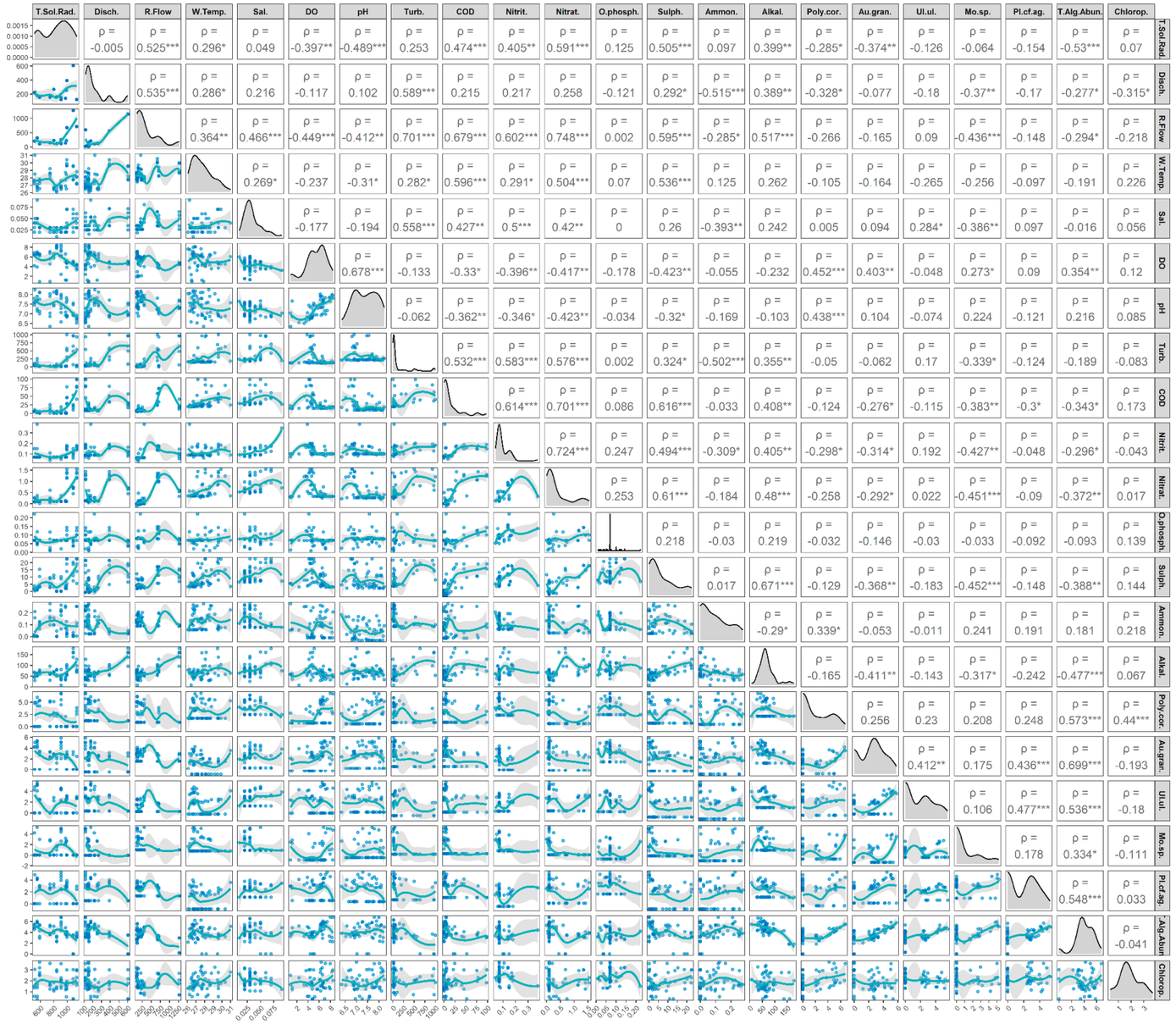


Figure S3. Generalised pairs plot. ϱ: Spearman's correlation coefficient. Statistical significance level: highly significant (*** for $\alpha = 0.001$), very significant (** for $\alpha = 0.01$) and significant (* for $\alpha = 0.05$). T.Sol.Rad.: Total solar radiation, Disch.: Discharge, R.flow: River flow, W.Temp.: Water temperature, Sal.: Salinity, DO: Dissolved oxygen, Turb.: Turbidity, COD: Chemical oxygen demand, Nitrit.: Nitrite, Nitrat.: Nitrate, O.phosph.: Orthophosphate, Sulph.: Sulphate, Ammon.: Ammonium-N, Alkal.: Alkalinity, Poly.cor.: Polymyxus coronalis, Au.gran.: Aulacoseira granulata, Ul.ul.: Ulnaria ulna, Mo.sp.: Mougeotia sp., Pl.cf.ag.: Planktothrix cf. agardhii, T.Alg.Abun.: Total algal abundance, Chlorop.: Chlorophyll a

Table S3. Inferential statistical analyses

Variables	Nomality test		Homogeneity of variances			Parametric test	
	Shapiro Wilk (*p*-values)	Meets normality	Bartlett test (*p*-value)	Levene test (*p*-value)	Meets homogeneity of variances	ANOVA (*p*-value)	Tukey
Total solar radiation (W/m^2)	B: 0.19, C: 0.31, SL: 0.63, N: 0.65, P: 0.65	Yes	0.99	-	Yes	0.99	-
Discharge (m^3/s)	B: $3.8x10^{-3}$, C: $9.86x10^{-4}$, SL: $1.31x10^{-3}$, N: $1.28x10^{-3}$, P: $1.28x10^{-3}$	No (all sites)	-	0.99	Yes	1	-
River flow (m^3/s)	B: $5.77x10^{-3}$, C: $1.44x10^{-3}$, SL: $1.44x10^{-3}$, N: $2.55x10^{-3}$, P: $2.55x10^{-3}$	No (all sites)	-	0.99	Yes	1	-
Water temperature (°C)	B: 0.09, C: 0.89, SL: 0.31, N: 0.02, P: 0.27	No (N)	-	0.85	Yes	0.45	-
Salinity (ppt)	B: $1.55x10^{-5}$, C: $9.06x10^{-3}$, SL: $4.36x10^{-4}$, N: 0.16, P: 0.18	No (B, C, SL)	-	0.18	Yes	0.41	-
Disolved oxygen (mg/L)	B: 0.09, C: 0.64, SL: 0.61, N: 0.24, P: 0.66	Yes	0.97	-	Yes	$1.09x10^{-7}$	B differed significantly from all other sites
pH	B: 0.64, C: 0.30, SL: 0.82, N: 0.18, P: 0.03	No (P)	-	0.75	Yes	$1.96x10^{-3}$	C, SL, N and P were similar but different from B
Turbidity (FNU)	B: $6.74x10^{-7}$, C: $9.52x10^{-6}$, SL: $4.75x10^{-7}$, N: $3.64x10^{-4}$, P: $7.87x10^{-4}$	No (all sites)	-	0.87	Yes	0.85	-
Chemical oxygen demand (mg/L)	B: $1.73x10^{-3}$, C: $5.76x10^{-5}$, SL: $6.77x10^{-5}$, N: $9.36x10^{-4}$, P: $8.23x10^{-4}$	No (all sites)	-	0.91	Yes	0.87	-
Nitrite (mg/L)	B: $1.6x10^{-3}$, C: $1.26x10^{-3}$, SL: $2.08x10^{-5}$, N: $8.78x10^{-5}$, P: $2.05x10^{-4}$	No (all sites)	-	0.36	Yes	0.58	-
Nitrate (mg/L)	B: $5.05x10^{-3}$, C: $2.67x10^{-4}$, SL: $2.4x10^{-5}$, N: $1.25x10^{-3}$, P: $1.38x10^{-4}$	No (all sites)	-	0.99	Yes	0.99	-
Orthophosphate (mg/L)	B: $9.08x10^{-4}$, C: 0.09, SL: $7.03x10^{-5}$, N: 0.12, P: 0.02	No (B, SL, P)	-	0.79	Yes	0.6	-
Sulphate (mg/L)	B: 0.33, C: $4x10^{-3}$, SL: $1.45x10^{-3}$, N: 0.09, P: 0.06	No (C, SL)	-	0.15	Yes	0.18	-
Ammonium-N (mg/L)	B: $3.45x10^{-3}$, C: 0.04, SL: 0.02, N: 0.31, P: 0.16	No (B, C, SL)	-	0.67	Yes	0.83	-
Alkalinity (mg/L)	B: 0.25, C: 0.04, SL: 0.03, N: $4.1x10^{-3}$, P: 0.07	No (C, SL, N)	-	0.77	Yes	0.5	-
***Polymyxus coronalis* ($cells/m^3$)**	B: $1x10^{-7}$, C: $1.95x10^{-6}$, SL: $7.6x10^{-4}$, N: 0.07, P: 0.45	No (B, C, SL)	-	0.08	Yes	$3.97x10^{-5}$	N and P were similar but different from B, C and SL
***Aulacoseira granulata* ($cells/m^3$)**	B: 0.05, C: 0.44, SL: 0.23, N: 0.14, P: 0.15	No (all sites)	-	0.92	Yes	0.69	-
***Ulnaria ulna* ($cells/m^3$)**	B: 0.06, C: $7.19x10^{-4}$, SL: $4.99x10^{-4}$, N: 0.09, P: 0.03	No (C, SL, P)	-	0.98	Yes	0.61	-
***Mougeotia sp.* ($cells/m^3$)**	B: $2.12x10^{-3}$, C: $4.33x10^{-4}$, SL: $1.84x10^{-4}$, N: $5.82x10^{-5}$, P: $3.65x10^{-5}$	No (all sites)	-	0.96	Yes	0.96	-
***Planktothrix cf. agardhii* ($cells/m^3$)**	B: 0.05, C: $4.56x10^{-3}$, SL: 0.03, N: 0.02, P: 0.05	No (C, SL, N)	-	0.92	Yes	0.95	-
Total algal abundance ($cells/m^3$)	B: 0.06, C: 0.2, SL: 0.16, N: 0.17, P: 0.21	Yes	0.06	-	Yes	0.83	-
Chlorophyll a (mg/m^3)	B: 0.49, C: 0.26, SL: 0.01, N: 0.33, P: 0.51	No (SL)	-	0.84	Yes	0.12	-

B: Balzar, C: Colimes, SL: Santa Lucía, N: Nobol, P: Petrillo