CHANGES IN THE GEOCHEMICAL PARAMATERS OF KARST LAKES OVER THE PAST THREE DECADES – THE CASE OF PLITVICE LAKES, CROATIA

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Supplementary Material

Appendix A

Table A1 Significant correlations of measured and calculated parameters with water temperature at each location

Parameter	Locations							
	1	2	3	4	5	6	7	8
pH	0.17				-0.26	-0.40	-0.42	
$c(HCO_3^-)$				-0.20	-0.40	-0.22	-0.52	-0.37
$c(Ca^{2+})$	0.32		-0.20	-0.20	-0.50	-0.31	-0.49	-0.45
$c(Mg^{2+})$		0.23	0.37	0.41	0.10	0.23	0.23	0.28
SI_{calc}	0.26	0.17		0.32				
IR_{calc}	0.23			-0.14	-0.42	-0.47	-0.63	-0.44
$c(CO_2)$	-0.24			-0.43	-0.31	-0.14	-0.24	-0.30
Mg/Ca		0.20	0.37	0.48	0.48	0.24	0.37	0.47

Table A2 Significant correlations of measured and calculated parameters at eight sampling locations with discharge rate at location 6 (Kozjak lake)

Parameter	Locations							
	1	2	3	4	5	6	7	8
t		-0.30	-0.20	-0.44		-0.44	-0.45	-0.28
pH	-0.22				0.35	0.17		
$c(HCO_3^-)$		-0.32	-0.48				0.49	
$c(Ca^{2+})$				0.44	0.55	0.40	0.57	
$c(Mg^{2+})$	-0.20	-0.42	-0.52	-0.62	-0.71	-0.42	-0.51	-0.24
SI_{calc}					0.24		0.24	
IR_{calc}					0.41	0.35	0.50	
$c(CO_2)$				0.24				
Mg/Ca		-0.35	-0.45		-0.71	-0.41		-0.22

Appendix B

T-test for paired data, $p<0.05$, *All locations* compare mean annual values (February and November excluded) for all locations in two time periods, while *Individual locations* compare mean values for each month in the two time periods (1981-1986 and 2010-2014). "sig" means that the pair of data from the first period significantly differs from that in the second period

Parameter	All locations	Individual locations							
		1	2	3	4	5	6	7	8
Q	sig	sig			*	*		*	*
t (water)	sig	sig	sig			sig	sig		
pH		sig						sig	sig
$c(Ca^{2+})$	sig	sig	sig	sig	sig	sig	sig	sig	sig
$c(HCO_3^-)$	sig	sig	sig	sig	sig	sig	sig		sig
$c(Mg^{2+})$					sig				
$c(CO_2)$				sig				sig	sig
SI_{calc}	sig	sig	sig		sig	sig	sig		
IR_{calc}	sig	sig	sig		sig	sig	sig		
Mg/Ca	sig				sig	sig	sig	sig	sig

*Insufficient data

Appendix C

Table C1 Significant temporal correlations of measured and calculated parameters at each location from March to November ($p<0.05$). The temporal correlation for air in Gospić is given only for the temperature parameter ("p" = positive correlation, "n" = negative correlation)

t / pH / $c(HCO_3^-)$

Months	Air	|1	2	3	4	5	6	7	8	|1	2	3	4	5	6	7	8	|1	2	3	4	5	6	7	8
		— t —								— pH —								— $c(HCO_3^-)$ —							
Mar					p	p	p	p													p				p
Apr	p		p															p	p	p	p	p	p	p	p
May		p					p											p			p		p		p
Jun	p	p		n												n		p		p				p
Jul	p	p	p										p					p		p				
Aug	p			n												n		p		p	p	p		p	
Sep						p									n			p					p	
Oct		p		n																p		p		p	p
Nov	p								p	p									p				p	

$c(Ca^{2+})$ / $c(Mg^{2+})$ / $c(CO_2)$

Months	|1	2	3	4	5	6	7	8	|1	2	3	4	5	6	7	8	|1	2	3	4	5	6	7	8
	— $c(Ca^{2+})$ —								— $c(Mg^{2+})$ —								— $c(CO_2)$ —							
Mar	p	p	p	p	p	p	p	p																
Apr	p	p		p		p		p				p												
May						p																		
Jun	p	p	p	p	p	p	p	p																p
Jul	p	p	p	p	p	p	p													n				
Aug	p	p	p	p		p	p						p											p
Sep						p																p		
Oct	p	p					p	p			n	n												
Nov	p		p	p													n							

SI_{calc} / IR_{calc} / Mg/Ca

Months	|1	2	3	4	5	6	7	8	|1	2	3	4	5	6	7	8	|1	2	3	4	5	6	7	8
	— SI_{calc} —								— IR_{calc} —								— Mg/Ca —							
Mar																								
Apr					p								p				n							n
May																								
Jun				p		p						p		p						n				
Jul				p		p						p		p										n
Aug				p	p							p	p											
Sep			p								p											p		
Oct						p									p			n	n	n			n	n
Nov	p			p					p			p												

Table C2 Percentage of coinciding significant temporal correlations in location pair combinations for each pair of parameters from Table C1 (expressed in decimal)

	t	pH	$c(HCO_3^-)$	$c(Ca^{2+})$	$c(Mg^{2+})$	SI_{calc}	IR_{calc}	$c(CO_2)$	Mg/Ca
t	1	0.71	0.58	0.47	0.75	0.63	0.63	0.72	0.69
pH		1	0.54	0.43	0.88	0.83	0.83	0.99	0.85
$c(HCO_3^-)$			1	0.50	0.58	0.51	0.51	0.53	0.56
$c(Ca^{2+})$				1	0.33	0.43	0.43	0.42	0.39
$c(Mg^{2+})$					1	0.82	0.82	0.88	0.76
SI_{calc}						1	1.00	0.83	0.64
IR_{calc}							1	0.83	0.64
$c(CO_2)$								1	0.75