

Supplementary Materials

How Do Extreme Lake Water Temperatures in Poland Respond to Climate Change?

Table S1. Average and median Sen's slope value of minimum lake water temperature for all analysed lakes.

Period	Value	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct
1972–2001	Average	0.17b*	0.11b	0.12a	0.15a	0.26a	0.27b	1.19	0.76a	0.69a	0.70a	0.17	0.43ab
	Median	0.14	0.12b	0.16ab	0.11a	0.27a	0.36b	1.24	0.74a	0.69ab	0.67a	0.10ab	0.50ab
1982–2011	Average	0.37ac	0.18ab	−0.03a	−0.04	0.05	0.24b	0.57ab	0.74a	0.68a	0.58a	0.63a	0.63ab
	Median	0.37ab	0.09ab	−0.05a	−0.01b	0.04b	0.11ab	0.52ab	0.66a	0.71ac	0.57a	0.68ac	0.72ac
1992–2021	Average	0.38abc	0.79	0.42	0.08a	0.25a	0.46ab	0.41b	0.36	0.46a	0.61a	0.57a	0.69b
	Median	0.09ab	0.88	0.45b	0.08ab	0.20ab	0.42ab	0.54b	0.36a	0.39bc	0.67a	0.57bc	0.65bc
1972–2021	Average	0.47a	0.30a	0.06a	0.11a	0.22a	0.45a	0.77a	0.63a	0.58a	0.59a	0.41	0.43a
	Median	0.46b	0.32a	0.06a	0.10a	0.22a	0.39a	0.76a	0.62a	0.57a	0.56a	0.43a	0.42a

*-the same letter indicates no significant differences at the significance level of 0.05 (mean and median value are analysed separately). The results of the t-test and the sign test are presented on the background of average and median values respectively.

Table S2. Average and median Sen's slope value of maximum lake water temperature for all analysed lakes.

Period	Value	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct
1972–2001	Average	0.22a*	0.07	0.28a	0.46	0.04	1.10b	0.59	0.06	0.43	0.46a	0.17	0.19
	Median	0.28a	0.06ab	0.25a	0.43b	0.11b	1.11a	0.72a	0.09	0.35a	0.46a	0.11ab	0.13a
1982–2011	Average	0.25a	0.33a	−0.16	0.15a	0.36a	0.83ab	−0.02a	0.47a	0.64ab	0.52a	0.44a	0.63a
	Median	0.32a	0.35ac	−0.20	0.07a	0.32ab	0.79a	0.03b	0.42a	0.62ab	0.54a	0.49a	0.68b
1992–2021	Average	0.70	0.59	0.31a	0.16a	0.56	0.30	0.03a	0.95	0.90b	0.56a	0.77	0.61a
	Median	0.70	0.62bc	0.43a	0.16ab	0.60ab	0.37	0.00ab	0.97	0.88b	0.47a	0.86b	0.63b
1972–2021	Average	0.41	0.29a	0.25a	0.23a	0.36a	0.82a	0.37	0.44a	0.62a	0.57a	0.43a	0.34
	Median	0.40a	0.33a	0.25a	0.21a	0.34a	0.83a	0.39	0.44a	0.64a	0.56a	0.45a	0.35a

*-the same letter indicates no significant differences at the significance level of 0.05 (mean and median value are analysed separately). The results of the t-test and the sign test are presented on the background of average and median values respectively.

Table S3. Mann-Kendall and Sen slope analysis of mean yearly air temperature (°C per decade).

Meteorological station	Code	1972–2021		1972–2001		1982–2011		1992–2021	
		Z-Value	P-Value	Z-Value	P-Value	Z-Value	P-Value	Z-Value	P-Value
Zielona Góra	A	4.31	0.000*	1.97	0.049*	2.12	0.034*	2.87	0.004*
Chojnice	B	4.68	0.000*	1.86	0.063	1.86	0.063	3.36	0.001*
Łeba	C	4.16	0.000*	1.63	0.103	0.62	0.536	3.43	0.001*
Toruń	D	3.89	0.000*	1.82	0.069	0.62	0.536	2.49	0.013*
Kętrzyn	E	3.87	0.000*	1.14	0.253	1.29	0.196	3.40	0.001*
Olsztyn	F	3.87	0.000*	1.63	0.103	0.43	0.666	3.13	0.002*

* 5% significance level.