



SUPPLEMENTARY MATERIAL TO
**Assessment of water quality in Yapıaltın Dam Lake (Sivas, Turkey)
during dry and rainy seasons using various parameters and water
quality indices**

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STUDY AREA

Yapıaltın Dam is a dam lake constructed on Çaylak Stream for irrigation purposes in 1977. The dam lake has a capacity of 1,000,000 m³ and stands 37 meters above the river bed. At normal water level, the dam lake holds 17 hm³ of water and covers an area of 1.42 km². It serves an irrigation area spanning 2,894 hectares. The area surrounding Yapıaltın Dam, near Şarkışla, has been developed by Şarkışla Municipality, featuring recreational and picnic areas. Particularly in summer, it is frequented by the public for recreational purposes (<https://www.dsi.gov.tr/>). A map of the study area and sampling stations is provided in Fig. 1.

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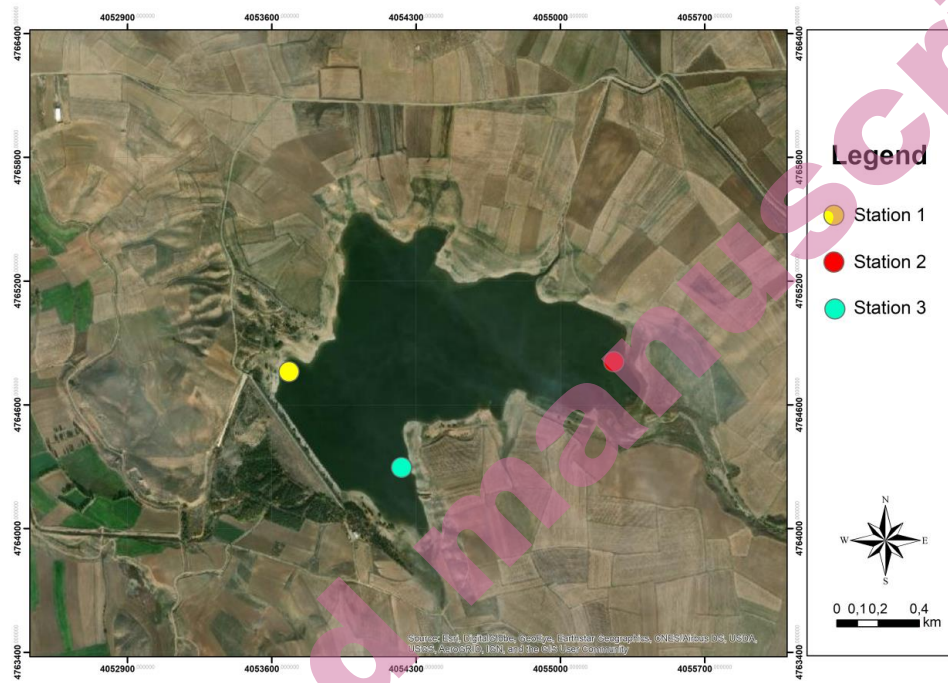


Fig. S-1. The study area map and sampling stations

Table S- I. Information about stations

Station Code	Coordinates	Information on Stations
ST1	39°18'01"N 36° 24' 52"E	Behind the set of dam
ST2	39°18'01"N 36° 25' 47"E	Opposite the set of dam
ST3	39°17'47"N 36 25' 12"E	In front of agricultural areas

ST1:First Station; ST2: Second station; ST3; Third station

Table S- II. Physicochemical parameters, mean values, and quality classes measured during dry and rainy seasons

Parameters	Unit	Dry Season			Rainy Season			Average	13, 14
		ST1	ST2	ST3	ST1	ST2	ST3		
W.T.	°C	33	35	34.3	19.3	18.3	18	26.4	I ¹³
EC	µscm ⁻¹	384	361	354	554	584	307	424	I and II ¹⁴
pH		8.20	8.08	8	7.91	8.11	8.03	8.05	I ¹⁴
DO	mgL ⁻¹	4.95	4.37	4.56	7.42	5.90	5.52	5.45	II and III ¹⁴
BOD ₅	mgL ⁻¹	18.6	28.4	30.3	11.6	9.6	10.4	18.15	III ¹⁴
COD	mgL ⁻¹	35.7	56.2	64.6	21.2	18.3	18	35.66	I ¹⁴
TDS	ppm	192	180	176	277	297	307	238	I ¹³
TSS	mgL ⁻¹	150	130	110	95	113	85	113	
Cl	mgL ⁻¹	20.99	17.99	15.99	18.99	16.99	19.99	18.49	I ¹³
Salinity	‰	0.03	0.01	0.02	0.04	0.05	0.05	0.03	
Ca	mgL ⁻¹	21.64	27.25	18.84	41.68	24.04	44.88	29.72	
Mg	mgL ⁻¹	2.54	3.80	2.13	1.02	0.58	1.24	1.88	
T.H.	FS°	11.2	11.6	10.6	2	1.2	1	6.26	
NO ₃ -N	mgL ⁻¹	4.16	4.84	3.13	16.12	20.31	16.20	10.79	II and III ¹³
NO ₂ -N	mgL ⁻¹	0	0	0	0.021	0.006	0.012	0.0065	I ¹³
NH ₄ -N	mgL ⁻¹	0.021	0.020	0.017	0.034	0.028	0.010	0.021	I ¹⁴
PO ₄	mgL ⁻¹	0.79	1.04	1.80	1.06	1.11	1.54	1.22	
SO ₄	mgL ⁻¹	17.51	16.74	16.37	9.89	10.33	10.39	13.53	I ¹³

WT:water temperature; EC:electrical conductivity; DO:dissolved oxygen; BOD₅: biological oxygen demand; COD: chemical oxygen demand; TDS: total dissolved solids; TSS: total suspended solid; Cl: chloride; Ca: Calcium; Mg:magnesium; T.H: total hardness; NO₃-N:nitrate nitrogen; NO₂-N: nitrite nitrogen; NH₄-N:Ammonium nitrogen; PO₄:phosphate; SO₄:sulphate. ST1: First station; ST2: Second station; ST3: Third station.

Table S- III. Pearson correlation analysis between physicochemical variables

	WT	pH	EC	TDS	TSS	NO ₃ -N	SO ₄
WT	1						
pH	,360	1					
EC	-,525	-,186	1				
TDS	-,993**	-,288	,456	1			
TSS	,725	,792	-,103	-,706	1		
NO ₃ -N	-,975**	-,286	,632	,970**	-,641	1	
SO ₄	,982**	,510	-,555	-,962**	,801	-,964**	1

WT:water temperature; EC:electrical conductivity; TDS: total dissolved solids; TSS: total suspended solid NO₃-N:nitrate nitrogen; NO₂-N: nitrite nitrogen; NH₄-N:Ammonium nitrogen; SO₄:sulphate.

Table S- IV. Spearman Correlation Analysis between Physicochemical Variables

	BOD	COD	TH	Salinity
BOD	1			
COD	,943**	1		
TH	,771	,829*	1	
Salinity	-,928**	-,928**	-,928**	1

BODs: biological oxygen demand; COD: chemical oxygen demand; T.H: total hardness

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