

**ANALYSIS FOR QUALITY OF WATER
OF TRIVENI LAKE AT MALKAPUR OF MAHARASHTRA STATE, INDIA**

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ABSTRACT

We present a report for the quality of water for Lake of Malkapur on the basis of its experimental analysis including three parameters namely quantity of dissolved oxygen, alkalinity and hardness.

Water is the most valuable component in the nature for shaping the land and regulating the climate. The quality of water usually described in the form of its physical, chemical and biological characteristics. To analysis the qualities of water several studies have been conducted by the researchers time to time using various techniques (see [1] and [6]-[11]) based on the established methods (see [3], [4]-[5]). In our analysis, we are using correlation matrix, which is a table showing correlation coefficients between variables. Each cell in the table shows the correlation between two variables. A correlation matrix is used to summarize data, as input into a more advanced analysis, and as a diagnostic for advanced analyses.

Analysis of variance, abbreviated as ANOVA (see [5], pp. 256-258) is a useful technique for research in the various fields including statistical analysis. This technique is used when multiple sample cases are involved. The significance of the difference between the means of two samples can be judged through either z -test or the t -test, but the difficulty arises when we happen to examine the significance of the difference among more than two samples at the same time.

Triveni Lake is situated in Malkapur, which is a largest city and municipality in the Buldhana district within Maharashtra state of India. The samples were collected in plastic container to avoid unpredictable changes in characteristic and also analyzed as for different physico-chemical parameters such as total alkalinity (TA), total hardness (TH) and dissolved oxygen (DO) as per the standard methods APHA (see [2]). Further, we compared our results with WHO standard values (see [12]-[13]). The status of quality of lake water is presented in Table-1. Correlation matrix is prepared within the studied parameters and tabulated as in Table-2, for ascertain the relationship between the variables. The analysis of variance is applied and tabulated in Table-3, to know the similarities or non similarities between the sampling sites and sample variables.

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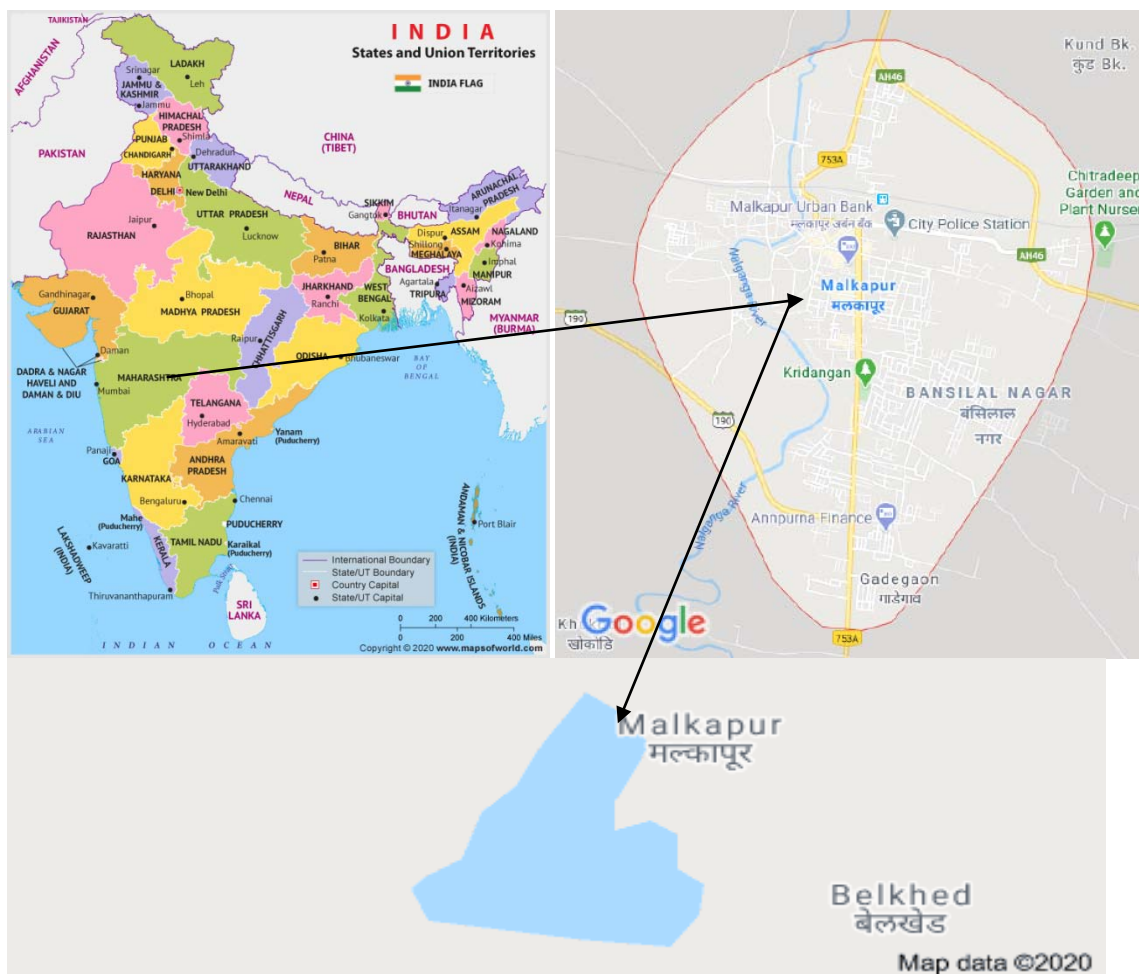


Fig 1: Location map of the study area

Table-1: Monthly variation for physic-chemical parameters (mg/liter) for water in Triveni Lake, Malkapur, 2014.

CODE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
DO	8.6	7.76	7.32	7.5	7.45	7.62	7.74	7.43	7.44	7.44	7.36	8.35
TA	121.23	110.43	121.18	188.56	230.32	199.34	124.34	121.33	115.46	110.34	115.43	115.52
TH	100.23	105.00	102.46	142.23	194.34	165.33	102.23	83.32	70.43	70.84	68.46	99.23

Table-2: Pearson Correlation Matrix for pre- monsoon

	DO	TA	TH
DO	1		
TA	-0.20569	1	
TH	-0.02403	0.772224	1

Table-3: Analysis the Data using two ways ANOVAs (Post monsoon)

SUMMARY	Count	Sum	Average	Variance
JAN	3	230.06	76.68667	3587.096
FEB	3	223.19	74.39667	3337.705
MAR	3	230.96	76.98667	3727.693
APR	3	338.29	112.7633	8846.894
MAY	3	432.11	144.0367	14315.58
JUN	3	292.29	97.43	6578.147
JUL	3	234.31	78.10333	3835.462
AUG	3	212.08	70.69333	3362.877
SEP	3	193.33	64.44333	2943.96
OCT	3	188.62	62.87333	2694.703

NOV	3	191.25	63.75	2936.419
DEC	3	223.1	74.36667	3334.991
DO	12	92.01	7.6675	0.16382
TA	12	1593.48	132.79	1379.853
TH	12	1304.1	108.675	1552.973

ANOVA						
Source of Variation	SS	df	MS	F	P-value	F crit
Rows	19018.59	11	1728.962	2.871966	0.016918	2.258518
Columns	105758.8	2	52879.38	87.83751	3.24E-11	3.443357
Error	13244.3	22	602.0136			

SS- Sum of Squares; **df**- degree of freedom; **MS**-Mean squares;

F-F test(F=between- group variability/within- group variability(F-test calculated value)

p-value:-probability value; **F crit**-F test table value

The results revealed that there is significant seasonal variation in the attributes. There is positive co-relationship between the physico-chemical attributes, very weak negative co-relationship occurred between dissolved Oxygen and total hardness, weak co-relationship between dissolved oxygen and total alkalinity; and strong positive co-relationship occurred between total hardness and total alkalinity.

Conflicts of Interest: Both the authors declare that they have no conflict of interest

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