International Journal of Oceans and Oceanography
ISSN 0973-2667 Volume 14, Number 2 (2020), pp. 277-283

https://www.ripublication.com/ijoo.htm

Analysis of Sea Water from Tupilipalem Coastal area, India

[1]Salahuddin and [2]Intazar Husain

[1,2]PDM University, Bahadurgarh, Haryana, India.

Abstract

Physico-chemical characteristics like pH, temperature, Electric Conductivity, Dissolved Oxygen, Organic matter and Silica presents important erudition on the quality of the water. The study area is based in the major portion in Nellore district of Andhra Pradesh.

A well-ordered study has been performed to reckon the water quality condition of the study area. A total of 10 water samples were collected during November, 2016 and scrutinized for physico-chemical parameters (pH, water temperature, Electric Conductivity, Salinity, Dissolved Oxygen, Organic matter, and Silica) using standard methods. Statistical analysis like Pearson Correlation matrix and Factor loadings were implemented to the data set to know the relationship among the studied parameters.

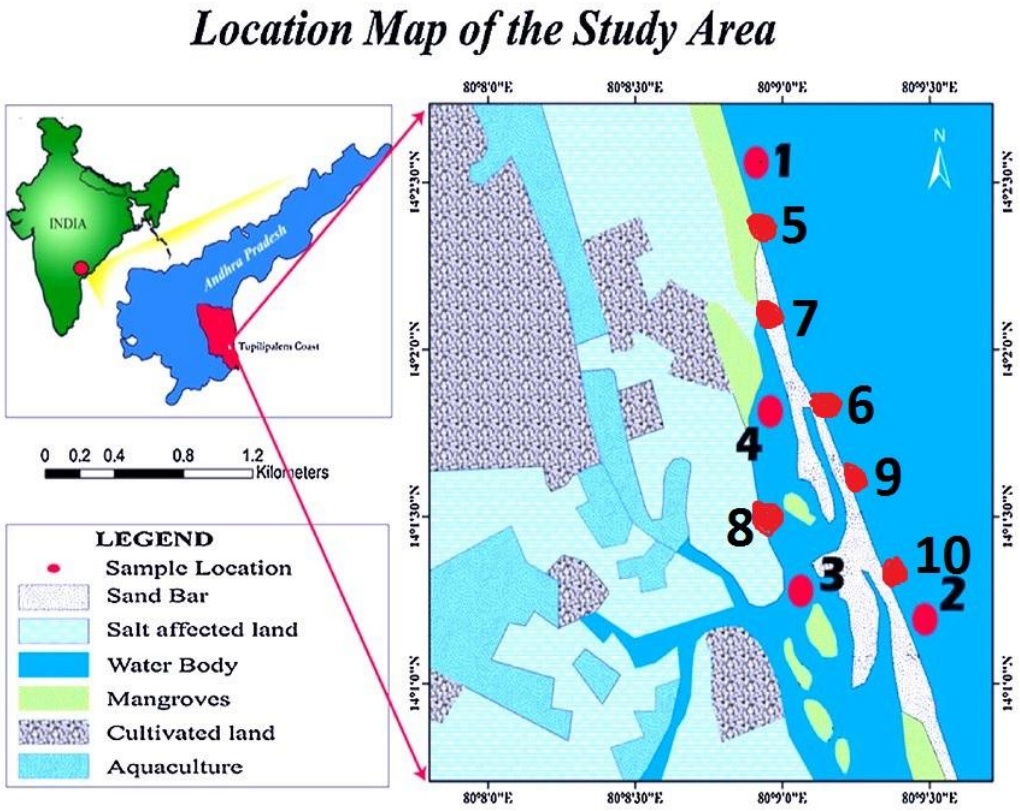
Keywords: Water, Tupilipalem, Preserved specimen.

INTRODUCTION

Water is very useful resource on earth[13]. It is very essential for life on earth. It is the source of all biological lives and their sustenance also. Water status has become a major global matter due to increasing human activities. Water is polluted due to discharge of garbage, industrial garbage, ludicrous non rural garbage discarding, extract from landfills, organic pollutants etc[2, 5].

STUDY AREA

Tupilipalem is about 20 km from Dugarajapatnam (southeast coast of India) and more than 120 km from Pulicat Lake. The study area is geographically located in the southeastern part of Nellore district, Andhra Pradesh, India, lying between the latitudes 14°0’10” – 14°02’30” N and longitudes 80°08’20”– 80°19’00”E.



SAMPLE COLLECTION

Sampling site consists of Tupilipalem coast area. Samples were taken from ten (10) samples site. Samples were taken in waterproof bottle to bypass ambiguous diversify in attributes according to canonical method (APHA) [1, 6, 7, 10, 13].

INVESTIGATION OF SAMPLES

The preserved specimen were determined considering different attributes such as pH(pH), Temperature(T), Salinity(SL), Electric Conductivity(EC), Dissolved Oxygen(DO), Silica(S), Iron (Fe), Manganese (Mn), Chromium (Cr), Copper (Cu), Nickel (Ni), Lead (Pb) , Zinc (Zn) and Cadmium(Cd) as per the standard methods (APHA, 1998) [3.]

RESULTS AND DISCUSSION

The variations different attributes such as pH(pH), Temperature(T), Salinity(SL), Electric Conductivity(EC), Dissolved Oxygen(DO), Silica(S), Iron (Fe), Manganese (Mn), Chromium (Cr), Copper (Cu), Nickel (Ni), Lead (Pb) , Zinc (Zn) and Cadmium(Cd) concentrations at the different locations along the Tupilipalem Coast are listed in Table 1 and shown in Fig. 2.. Agglomeration Schedule has adapted using IBM SPSS 21 software and tabulated in Table 3. Cluster analysis has performed by IBM SPSS 21 software and a Dendogram and corresponding cluster analysis are

shown in Fig 2 and Fig 3. There are two statistically significant clusters are formed. Present study reveals that there is a difference in the physico-chemical properties of cluster 2 and cluster 1. Correlation matrix has performed within the studied attributes using Microsoft Excel 7 software and tabulated in Table 2 for determining the relationship between the physico-chemical variables.[16] The analysis yielded positive correlations among Fe, Mn, Cr, Ni, Zn, Cu and Pb. Positive correlations among heavy metals signified that metals have common sources, mutual dependence, and identical behavior .

CONCLUSIONS

The analysis of total congregations of heavy metals and their dispensation show that sediment from the Tupilipalem Coast are desecrated with heavy metals, which is an effect of comprehensive anthropogenic accentuation in the area.

Table 1. Water Quality at different locations of Tupilipalem Coastal area (Laboratory Analysis)

Sample Name	pH	T (^{0}C)	SL (ppt)	EC (µmho)	DO (mg/L)	S (mg/L)	Fe (mg/L)	Mn (mg/L)
TUP-1	7.1	33.9	35.6	68	3.8	25	2032.26	50.86
TUP-2	7.0	33.8	35.4	87	4.3	23	2043.76	25.43
TUP-3	6.9	34.0	35.8	83	4.1	20	3052.73	57.88
TUP-4	7.1	34.1	35.5	78	4.6	18	2550.86	40.76
TUP-5	6.9	34.0	36.0	62	4.0	19	2307.68	29.72
TUP-6	7.0	33.9	35.9	67	4.4	25	6810.44	166.26
TUP-7	7.1	33.7	35.7	82	4.3	32	1428.76	20.42
TUP-8	6.9	33.9	35.8	83	4.0	15	1872.24	44.28
TUP-9	7.2	34.1	35.9	61	3.9	28	3513.59	66.88
TUP-10	7.1	33.9	36.0	79	4.0	27	4343.12	90.22

Sample Name	**Cr** (mg/L)	**Cu** (mg/L)	**Ni** (mg/L)	**Pb** (mg/L)	**Zn** (mg/L)	**Cd** (mg/L)
TUP-1	7.02	5.36	6.12	7.12	14.22	0.84
TUP-2	8.02	4.22	4.42	4.16	14.75	0.45
TUP-3	10.22	4.12	6.56	3.98	17.46	1.04
TUP-4	9.22	4.12	6.44	6.42	14.12	0.58
TUP-5	7.66	4.10	6.24	6.43	13.43	0.54
TUP-6	17.98	5.87	9.32	7.14	24.32	0.89
TUP-7	6.78	4.04	6.22	4.87	11.96	0.68
TUP-8	6.72	3.98	6.97	4.67	11.73	0.56
TUP-9	10.42	3.86	6.13	6.23	12.23	0.61
TUP-10	11.96	3.98	8.42	5.44	13.65	0.53

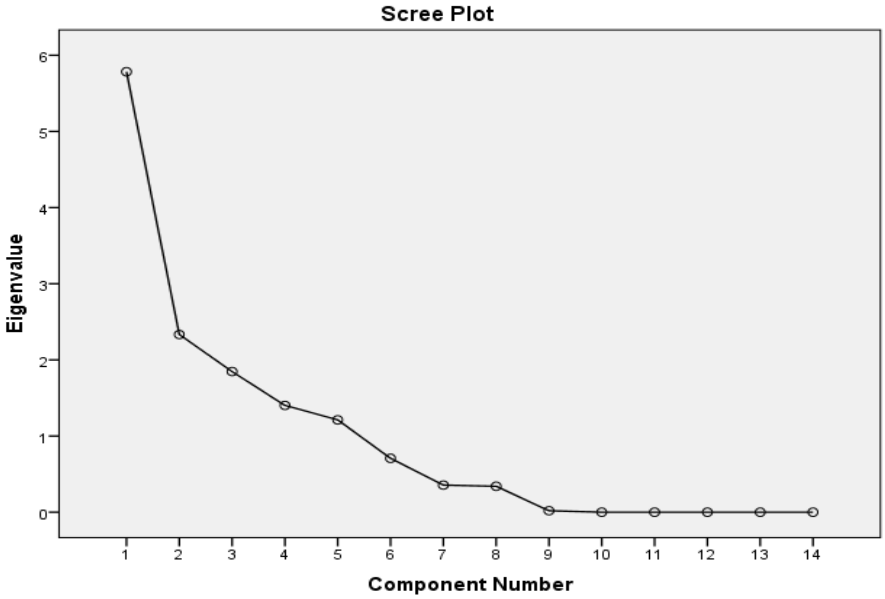


Fig 1: Graphical representation of data

Table 2. Pearson Correlation Matrix for the data

	pH	*T*	*SL*	*EC*	*DO*	*S*	*Fe*	*Mn*	*Cr*	*Cu*	*Ni*	*Pb*	*Zn*	*Cd*
pH	1													
T	0.092177	1												
SL	-0.14218	0.223475	1											
EC	-0.26308	-0.4917	-0.50596	1										
DO	-0.00838	-0.07801	-0.43835	0.366458	1									
S	0.69352	-0.43681	0.101326	-0.16071	-0.08361	1								
Fe	0.076528	0.200586	0.482183	-0.35663	0.181056	0.179189	1							
Mn	0.064238	0.121421	0.455452	-0.34044	0.110107	0.171009	0.97355	1						
Cr	0.073906	0.175244	0.399077	-0.28307	0.297243	0.190285	0.989656	0.953751	1					
Cu	-0.01162	-0.15934	-0.05166	-0.34002	0.092459	0.12968	0.551985	0.660273	0.546395	1				
Ni	-0.02823	0.067847	0.641722	-0.22896	0.080981	0.082917	0.809547	0.854107	0.77274	0.438649	1			
Pb	0.381367	0.366388	0.213449	-0.82182	-0.05129	0.123899	0.416498	0.449776	0.362012	0.605441	0.387742	1		
Zn	-0.24045	0.013273	0.116512	-0.15129	0.378737	0.002034	0.808106	0.812834	0.847568	0.76754	0.571093	0.285669	1	
Cd	-0.16943	0.062794	0.121536	-0.10666	-0.05342	0.084106	0.339923	0.423226	0.371866	0.53839	0.335794	0.105134	0.604806	1

Table 3. Agglomeration Schedule for the data

Agglomeration Schedule

Stage	Cluster Combined		Coefficients	Stage Cluster First Appears		Next Stage
	Cluster 1	Cluster 2		Cluster 1	Cluster 2	
1	1	2	579.315	0	0	2
2	1	8	19006.930	1	0	5
3	4	5	48766.433	0	0	6
4	3	9	155293.424	0	0	7
5	1	7	385866.736	2	0	6
6	1	4	842365.454	5	3	8
7	3	10	1591936.745	4	0	8
8	1	3	6696867.863	6	7	9
9	1	6	22880332.375	8	0	0

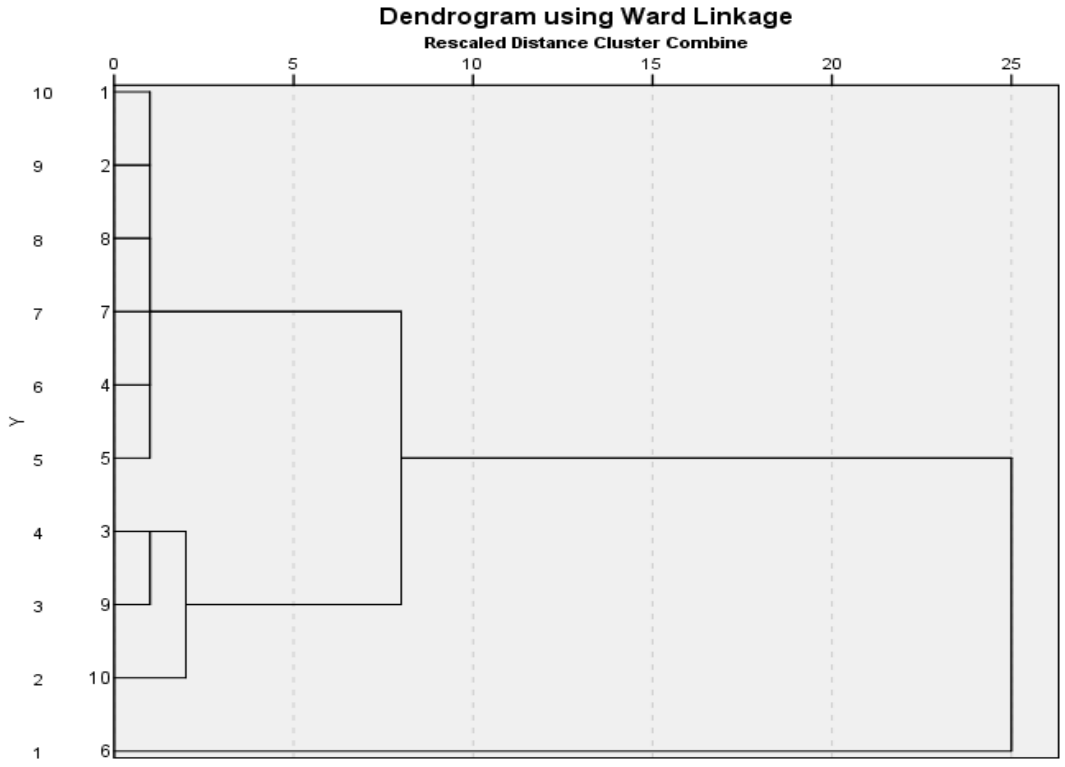


Fig 2: Dendogram based for agglomerative hierarchical clustering (Wards method)

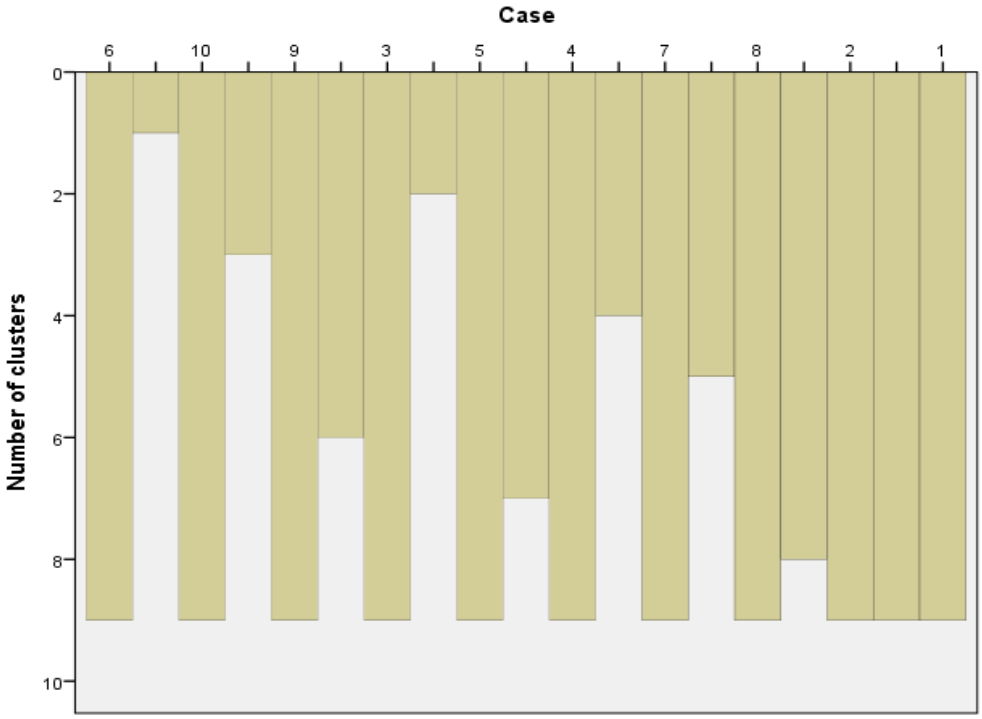


Fig 3: Representation of Cluster

REFERENCES

[1] Anita. and Salahuddin.(2019). Analysis of Electrical conductivity of Ground water at different locations of Phooli of U.P, India. *International Journal of Emerging Trends in Engineering and Development*, 3, 1-5.

[2] Ansari, Farid**.** and Salahuddin. (2013). Groundwater Temperature Variation Analysis of Industrial Area Nandganj, Ghazipur (India). *Australian Journal of Basic and Applied Sciences,* 7 (14),539-542.

[3] APHA. (1998). Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WPCF, Washington D.C.

[4] Babu,Y. S. and Mohan, M.R. (2018). A study on Physico-Chemical parameters of Errarajan of Bangalore Rural. *International Journal of Scientific Research*, 7(2), 401-402.

[5] Chaudhary, M. P. and Salahuddin (2014). Analysis of COD in water at different locations of upper lake in Madhya Pradesh. *European Journal of Applied Engineering and Scientific Research*, 3(2), 37-39.

[6] Chaudhary, M. P. and Salahuddin. (2015). Physico-Chemical analysis in winter season

[7] of Bhojtal water in Bhopal region of Madhya Pradesh, India. *International Journal of Mathematical Archive,* 6 (4),78-81.

[8] Khan, M. F. (2020). Physico-Chemical and Statistical Analysis of Upper Lake Water in Bhopal Region of Madhya Pradesh, India. *International Journal of Lakes and Rivers.*13(1),01-16.

[9] Salahuddin. (2013). Analysis of Chloride Content in the Surface of water at different locations of Madhya Pradesh. *International Journal for Pharmaceutical Research Scholars*, 2(4), 107-109.

[10] Salahuddin.(2014). Physico-chemical analysis of upper lake water in Bhopal region of Madhya Pradesh, India. *Advances in Applied Science Research*, 5(5), 165-169.

[11] Salahuddin.(2015). Analysis of electrical conductivity of ground water at different locations of Dildar Nagar of U.P, India, *Advances in Applied Science Research*, 6(7), 137-140.

[12] Salahuddin. (2020).Analysis of Magnesium contents of Ground water at surrounding areas of Dildar Nagar of U.P. India. *International Journal of Innovative Research in Science, Engineering and Technology*, 9(4), 1607-1610.

[13] Salahuddin. and Ansari, Farid.(2013). Statistical Analysis for the Presence of pH Content of Ground Water at Different Locations of Industrial area at Ghazipur in India.*Global Journal of Science Frontier Research (F),* 13 (9),55-59.

[14] Salahuddin. and Husain, Intazar.(2020). Analysis of Lower Lake Water in Bhopal Region of Madhya Pradesh, India. *International Journal of Lakes and Rivers.*13(1), 17-25.

[15] Salahuddin. Khola , R. K.(2014). Physico-Chemical Analysis for the Presence of Oxygen Content of Ground Water at Different Locations of Dildar Nagar of U.P, India. *Global Journal of Science Frontier Research (B),* 14 (6),01-03.

[16] Salahuddin and Khola, R. K. (2013). Analysis of Chloride Content in the Surface of water using two way Anova. *International Journal for Pharmaceutical Research Scholars,* 2(4), 51-53.

[17] Salla, S. and Ghosh, S. (2014). Assessment of water quality parameters of lower lake, Bhopal. *Advances in Applied Science Research*, 6, 8-11.

[18] Sirajudeen., Mohidheen, M. K., and Vahith, R. A.(2014). Physico-chemical contamination of groundwater in and around Tirunelveli district, Tamil Nadu. *Advances in Applied Science Research***,** 5(2), 49-54.