

Analysis of Ground Water Quality Data

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ABSTRACT

Water is essential to all basic needs of food, drinking, sanitation and domestic use. Ground water contaminated with bacteria, chemicals, oils or gases etc. leads to many types of diseases in human being. The quality of water is very significant on the earth for everyone. The present work collects water samples in the regions of Kadapa district, Andhra Pradesh. For quality assessment purpose, they were considered to perform an analysis on physico-chemical properties of ground water, whether they are suitable for drinking or not. In this paper, water quality data is analysed using Histograms, Box plots, Bar charts, Pie chart and Scatter plot.

1. Introduction

Water is the main natural resource. The insufficient availability of surface water leads people to depend on ground water resources for their needs. The physico-chemical analysis of water samples was carried by many researchers using standard methods [1] – [11].

Study Area - Kadapa is one of the district in state of Andhra Pradesh, India (14.4700° N, 78.8200° E). Most of the people in rural areas of Kadapa depend on ground water for drinking, Agriculture and other domestic purposes.

2. Materials & Methods

Water samples were collected in plastic containers with tight cap. A total of 57 samples were collected and analysed in the laboratory for physico chemical properties like pH, EC (Electrical Conductivity), TH (Total Hardness), Total dissolved solids (TDS), Ca (Calcium), Cl (Chlorine) and F (Fluorine). Histograms, Bar charts, Box plots, Pie chart and Scatter plot were drawn for the physico chemical properties of water samples data.

3. Results and discussion

The histograms display the distribution of each parameter. Figure 1 to 4 explains the Calcium, Chlorine, Electrical Conductivity and Fluorine distributions respectively.

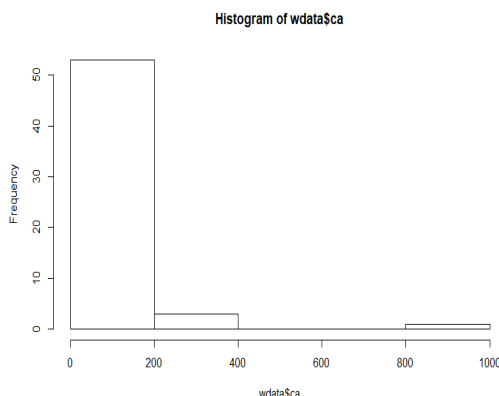


Figure 1. Histogram for Calcium

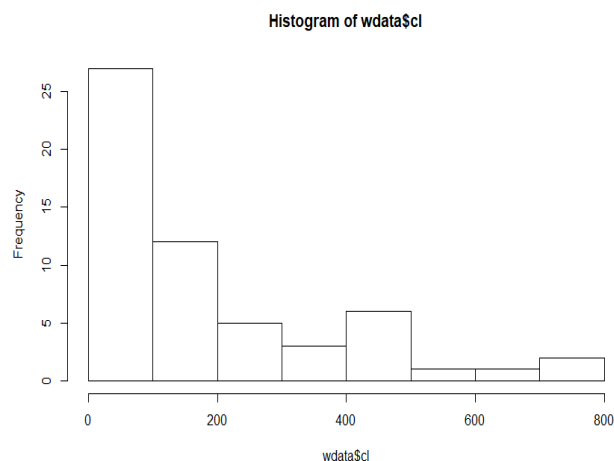


Figure 2. Histogram for Chlorine

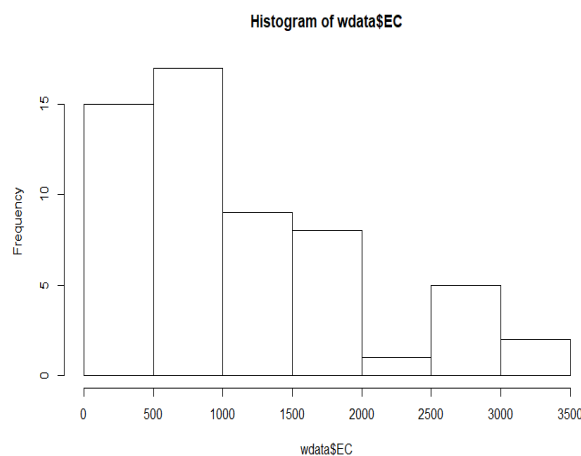


Figure 3. Histogram for Electrical Conductivity

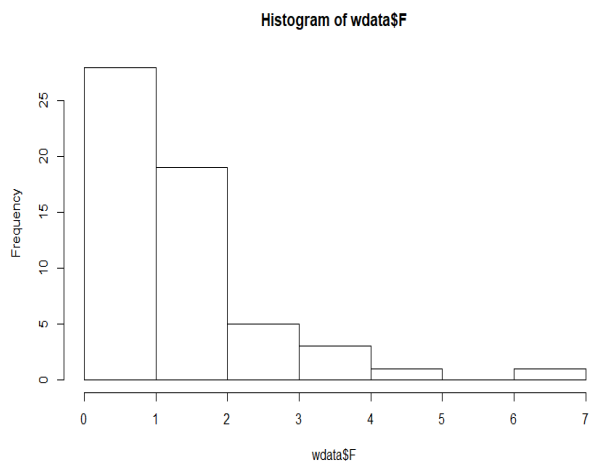


Figure 4. Histogram for Fluorine

Figure 5 to Figure 8 describes the box plots for water samples data. The box plot describes five number summary: minimum, lower quartile (25th percentile), median (50th percentile), upper quartile (75th percentile) and maximum. Circles denote outliers in data.

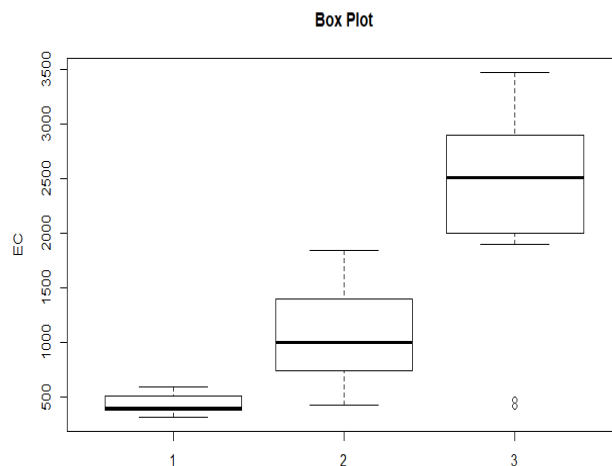


Figure 7. Box Plot for EC

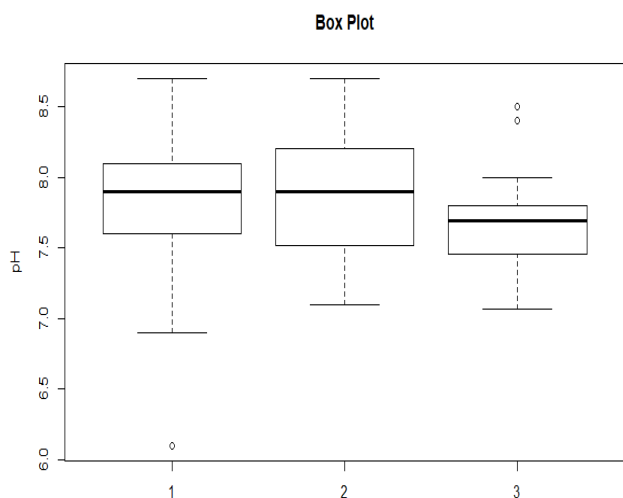


Figure 5. Box Plot for pH

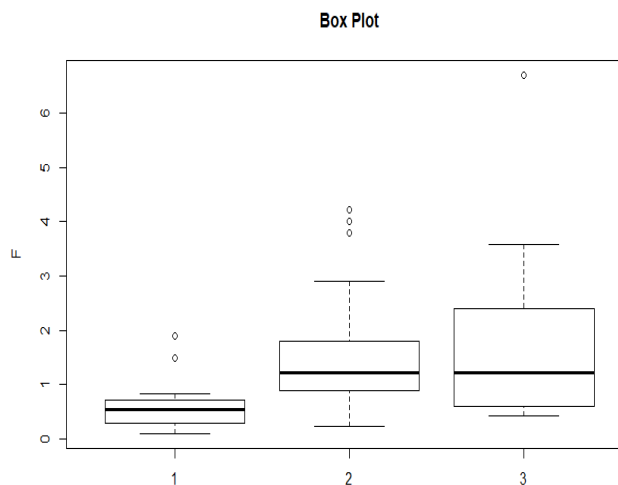


Figure 8. Box Plot for F

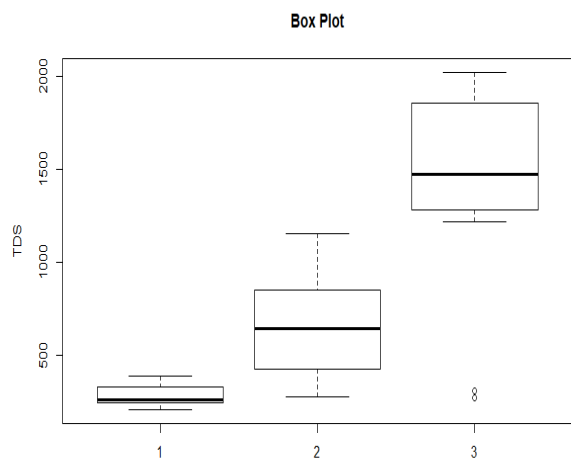


Figure 6. Box Plot for TDS

Figure 9 and Figure 10 implies the Bar chart and Pie chart for water quality data. Bar and Pie charts implies that there are 14 samples belong to excellent, 30 samples belong to good and 13 samples belong to poor in the study area.

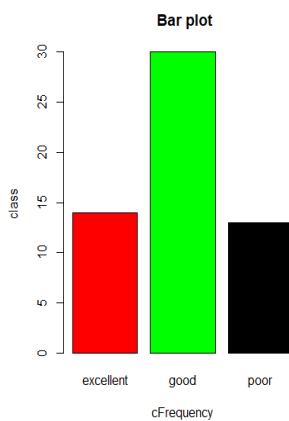


Figure 9. Bar chart

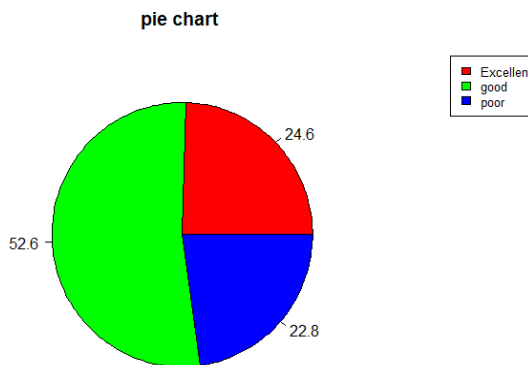


Figure10: Pie Chart

In Figure 11, Scatter plot explains the bivariate relationship among all the variables (pH,EC,TH,Ca,Cl,F,TDS,Class).

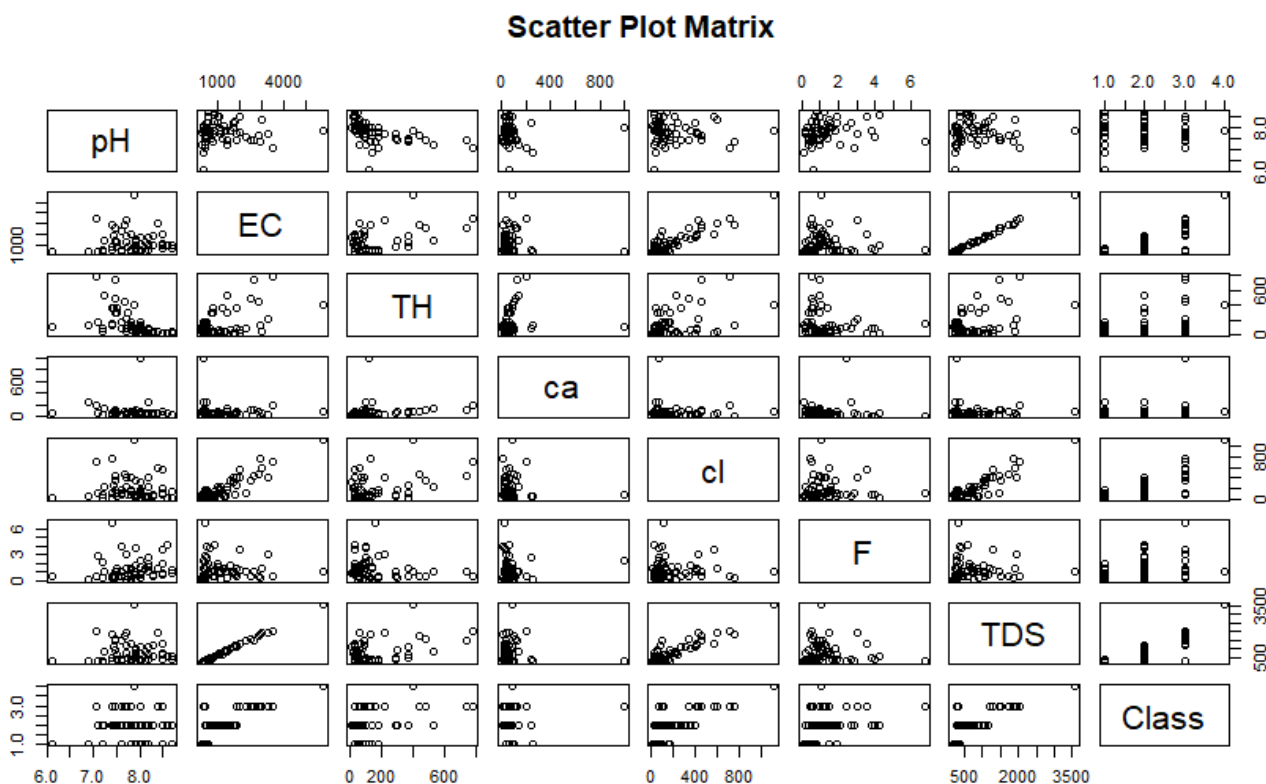


Figure 11. Scatter Plot

4. Conclusion

Histograms, Bar charts, Box plots, Pie chart and Scatter plot were drawn in order to analyse the water quality data for the collected samples of the regions of Kadapa district. Scatter plot is the one which specifies the bivariate relationship among all the variables. The class variable is considered as Excellent,

Good or Poor based on physio chemical properties of water samples data.

Acknowledgement

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