ABSTRACT

Air pollution in big cities has become a serious problem due to emissions from fossil fuel combustion, industrial pollution, vehicle fumes, and natural factors such as volcanic activity. The resulting air pollutants such as SO_2 and NO_2 can cause acid rain which affects the quality of rainwater and threatens flora and fauna. This observation was carried out with the aim of identifying the pattern of data owned by doing data processing and observing the level of acidity and quality of rainwater. This observation continues and complements previous observations, namely rain quality measurements spread across two stations TULT with a height of approximately 70m above the ground and GKU with a height of approximately 30m with a measurement time of 31 days from May 8, 2023 to June 08, 2023. The rainy period occurred on May 08, May 21, May 22, June 04, June 05, and June 06. In performing data processing, the data must go through several stages, namely data cleaning, data integration, and data validation. The data cleaning process will eliminate unnecessary data and NaN values in the data. Then it will be integrated based on the 6-day rain period that occurs from the rain falling until the rain stops and sampling. Furthermore, the data will go through a data validation process, there are two stages in data validation, namely quality control and outlier detection. In the quality control stage, the data will go through the process of eliminating values that are outside the measurement range. After that the data will be identified as outliers using the modified z-score method. Outlier detection requires the median data value, interquartile value, observation value to calculate the modified z-scores value. After that, the modified z-scores value will be eliminated based on the threshold limit used, which is 1.5. Although the amount of data outside the range and outliers, it has been confirmed that in each parameter the amount of valid data is >75% and the results of valid data are still representative. The results shown in the rainwater quality data are quite good with the acidity level still at the specified threshold. However, on May 08, 2023 at the TULT station showed the occurrence of acid rain with a pH of 4 and still needs further analysis of the cause of acid rain. However, overall, the quality of rainwater is still considered good based on the thresholds set by BMKG, WHO, and PMK RI 32 Year 2017. Nevertheless, it is necessary to further analyze the acid rain that occurred on that one day, so as to prevent the resulting impact on the environment and human health.

Keywords: pH, Conductivity, TDS, Water Temperature, Rainwater