ABSTRACT

Population growth that continues to increase has implications for increasing industrial and transportation activities. This results in an increase in gas emissions in the form of Sulfur Dioxide (SO_2) and Nitrogen Dioxide (NO_2) resulting in acid deposition. The measuring instrument in the form of a rain gauge which is used to measure acid deposition is currently not able to measure in real-time. Therefore, the purpose of this research is to measure acid deposition in real-time with measuring parameters such as pH, temperature, conductivity, and rainfall to test the acidity contained in rainwater. This research was conducted in the Greater Bandung Basin using rainwater sampling in the period 1 – 31 March 2022 using a system equipped with an ESP32 microcontroller, and data logger, and sent to Ubidots via the cloud with a WiFi connection. Each data generated will be compared with data from the National Research and Innovation Agency (BRIN). The results of the measurement of acid deposition in real time get the value of the relative precision range and standard deviation of rainfall: 0.62 – 1.45 and 0.43 - 4.16, temperature: 0.20 – 0.55 and 1.46 – 4.39, pH : 0.29 – 0.88 and 0.69 – 1.92, and conductivity : 0.29 – 0.43 and 0.09 – 0.12. The Mean Absolute Percentage Error (MAPE) values for each parameter based on the measurement results of data loggers and ubidots are rainfall 41.88% (adequate), pH 4.28 (very good) and 8.54% (very good), conductivity 56.72% (poor) and 16.94% (adequate). The measurement results in this study can be used as a pre-analysis prediction of daily acid deposition measurements in real-time.

***Keywords:** Acid Deposition, Wet Deposition, Acid Rain.*