ABSTRACT

The interaction between metals and the atmospheric environment containing corrosive pollutants can cause corrosion. There are two pollutant parameters that can accelerate corrosion, namely gaseous sulfur dioxide (SO_2) and hydrogen chloride (HCl). This study aims to perform spatial visualization of SO_2 and HCl gas concentrations using the Ordinary Kriging (OK) method and to analyze the influence of meteorological parameters on SO_2 and HCl concentrations. This study continues and complements previous research, namely measuring the concentration of SO_2 and HCl gases spread across 3 stations (Telkom University Landmark Tower (TULT), ~70m above the ground, General Lecture Building (GKU), ~35m, and Deli Building, ~15m) which is at Telkom University based on microsensors in real-time. In visualizing, it is necessary to have data that is at least 75% validated and free of outliers. The data to be used contains the coordinates of the measurement locations, as well as the measured pollutant concentrations (X, Y, Z). The implementation of OK in interpolating the distribution of SO_2 and HCl concentrations on 7 days of measurement resulted in an estimated value with high accuracy, namely R2=0.96. The resulting visualization is in the form of a heatmap, where the distribution of pollutants at points that are not measured can be predicted through spatial data interpolation. The distribution of SO_2 and HCl pollutant concentrations as seen from the visualization results shows changes in pollutant concentrations which are strongly influenced by wind direction and speed, as well as the presence of day and night. Many human activities during the day tend to increase pollutant concentrations. In addition, the presence of humidity and temperature also tend to affect the concentration of HCl. The distribution of air pollutants measured against atmospheric corrosion has the potential to accelerate metal corrosion even though the results of the two concentrations are still below the standard threshold.

***Keywords**: corrosion, HCl, kriging, SO_2*