

ABSTRACT

Landslides are natural disasters that often occur in Indonesia. In 2018 there were 474 landslides in Indonesia that resulted in many casualties and many buildings that were damaged. To minimize losses caused by landslides, we need a system that can monitor the condition of land shifts. This system is able to detect the condition of vibration and soil moisture continuously and in real time.

In this thesis, the researchers designed a system that aims to monitor the vibration and moisture of the soil in the form of a prototype, the condition of the soil is made in accordance with actual conditions. This system uses a geophone sensor and capacitive soil moisture sensor v1.2. The reading results from the two sensors, will be sent using the zigbee module and displayed in the cloud between using node MCU ESP8266. The data is displayed in cloud antares in graphical form and can be accessed anywhere. The results of this thesis is the geophone sensor has a data accuracy of 99.97% while the value of capacitive soil moisture sensor v1.2 produces an average accuracy of 99.71%. The communication system sending data to antares produces an average delay of 2.3 seconds.

Keywords: *Landslide, Zigbee Module, Geophone Sensor, Microcontroller, capacitive soil moisture v1.2, Monitoring System*