ABSTRACT

Indonesia is an archipelago that has the second longest coastline in the world. One of the disasters that often occurs in coastal areas is tidal flooding. Tidal flooding occurs when seawater overflows and enters land with a lower elevation than sea level. Semarang is one of the areas with a high potential of tidal flooding. According to BPBD Semarang in 2021, 11.128 people and 3.590 housing units were affected by tidal floods. The potential for increased impacts caused by tidal floods is the background for developing the capstone project design of a remote monitoring system for sea level rise using radar.

Technology development is needed to facilitate pump house guards monitoring water level rise. The alertness of pump house guards in taking mitigation actions can minimize the impact caused by tidal floods. The system is designed to detect changes in sea level and can integrate with the website. This is needed so that monitoring can be done remotely. RISOEWLES RADAR is developed by utilizing FMCW radar technology for its superiority in satisfied the required specifications.

The remote monitoring system of sea level rise using radar successfully demonstrated an accuracy rate of 94.10%. The system is designed to operate despite a power outage. The author's system can monitor sea levels up to 4 m and can detect changes in sea level within 10-20 mm. This shows that the system can detect the distance according to the elevation board and the smallest scale on the elevation board. The developed system uses materials that are resistant to the environment. API testing results using Postman show success in calling the API to view the data that has been sent. The results of testing data transmission using Wireshark are classified as preferred for parameter delay with an average value of 0.777 seconds and packet loss with an average value of 0.2%. Responsiveness on desktop website devices has 100% performance, and on mobile website devices has 98% performance. The website's responsiveness performance is assessed by PageSpeed Insights. Based on these results, the website supports users in monitoring remotely.

Keywords: Tidal Flooding, Semarang, Monitoring, Sea Water Level Rise