ABSTRACT

Most areas in Indonesia have very diverse rainfall. This diversity makes it difficult to predict the rainfall index that results in disasters such as floods and landslides in an area. The Special Capital Region (DKI) Jakarta is the most flood-prone area and the most vulnerable to climate change impacts compared to other coastal areas in Southeast Asia. Disasters caused by floods can cause losses to society, government, industry, and other sectors. To handle early floods, a system is needed that can provide rain index information and early warning of potential flooding.

To overcome these problems, it is proposed to develop an "Information System Of Extreme Rain Index Prediction And Potential Flood Warning Based On Rain Radar For Jakarta Area". The development of this information system provides 2 visualizations using radar data from Santanu and satellite data from GSMaP. Both visualizations apply real-time communication techniques using the SSE method. This information system also utilizes machine learning technology to provide predictions of extreme rain index movements using pySTEPS and predictions of potential flooding using the Random Forest algorithm. The learning process used data derived from data from Santanu and Sadewa.

This information system can visualize the distribution of rain using Santanu radar data in the Jakarta area and its surroundings in real time. Then can visualize the distribution of rain using GSMaP. In addition, the results of potential flood predictions provide inaccurate data based on actual flood events. Although the accuracy of the flood potential using the Random Forest is 93.75% with an AUC value of 0.93. However, due to the inaccuracy of the results of predicting flood movements using PyStep with an average RMSE of 2.8 and IoA of 0.57. So that it has an impact on predictions of potential flooding that do not match the actual data.

Keywords: *Flood potential prediction, Information System, Real-time, pySTEPS, Random Forest.*