

# SMART DISASTER PREDICTION APPLICATION USING FLOOD-RISK ANALYTICS TOWARDS SUSTAINABLE CLIMATE ACTION



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## Abstract

Disaster prediction devices for early warning systems are used by many countries for disaster awareness. This study developed a smart disaster prediction application using microcontrollers and sensors to analyze the river water level for flood using flood risk analytics specifically, it monitors the river water level, water pressure, and rainfall using a microcontroller, applying statistical modeling algorithms for river flood prediction, and monitor flood in a web-based system with SMS notification and alarm to the community as an early warning. The researchers used the system development method to measure the prototype feasibility study. The researchers applied the statistical modeling algorithm as the data can be observed from time to time or on a daily basis for predictive analytics. Based on the 7-days observation result, rainfall resulted in a Precipitation average of 10.96 mm, water pressure with an average of 40.92 pounds per square inch (psi), and water level averaged 138.78 cm. The tropical depression during the 7 days' observation reflected the average data result from the sensors as the target of the study. The result of the Prototype device used the City Disaster Risk and Reduction management office (CDRRMO) as history logs for flood risk and it was proven accurate which makes good use for disaster prediction.

## Keywords:

*flood risk, flood monitoring, flash flood, microcontroller, predictive analytics, flood maps, regression model*

