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MICROCONTROLLER-BASED FLOOD WARNING SYSTEM WITH SHORT MESSAGE SERVICE NOTIFIER

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ABSTRACT

Floods are the most common natural disaster and the leading cause of natural disaster fatalities worldwide. Particularly, Philippines is the most-exposed country to typhoons in the world. The most recent typhoons that hit the Philippines are Typhoon Haiyan (Yolanda), Bopha (Pablo), and Washi (Sendong). Each of the typhoons gave destructive effects as it hit the Philippines. In the case of tropical storm Washi, it brought long hours of rapid falling rains that triggered flash flood all over Mindanao. Such flood affected almost 132,000 families (NDRRMC, 2012).

The researchers who were all residents of Iligan City, took the high level damage to properties and significant number of lost lives due to flood caused by typhoon Sendong, not only in Iligan City but all over Mindanao last December 2011, as the most important underlying factor to consider the design and development of the Microcontroller - Based Flood Warning System with SMS Notifier (MB-FWSSN) as shown in fig.1. If only someone could have alarmed everybody that there is an incoming flash flood at that time then lives could have been saved.

Thus, this system is focused on providing a forecasting system to the locality through warning devices like light indicators, buzzing sound, and issuing a text message every time the sensors at different water level readings at low, average and high levels are triggered by the water. Text messages are received as shown in fig.2. A graphical user interface as a desktop application for the control center is also added in the system to monitor the water level and serve as a database for the cellular telephone numbers of the affected registered residents. With these adequate components for early warning, this system will aid the residents and local authorities to make necessary precautions before and during the flood. The designed MB-FWSSN prototype for Mandulog River of Iligan City indeed turned on the light indicators, produces a buzzing sound and issued a text message to individuals upon different water level readings at only 5sec to 6.5sec delay from actual water reading.

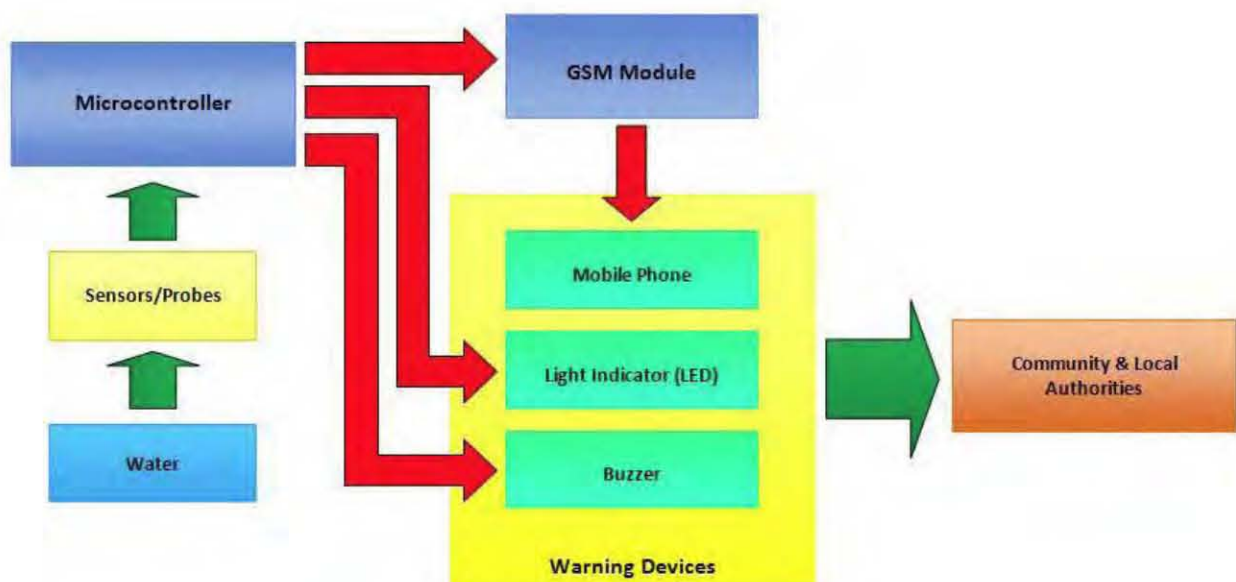


Figure 1. MB- FWSSN block diagram.

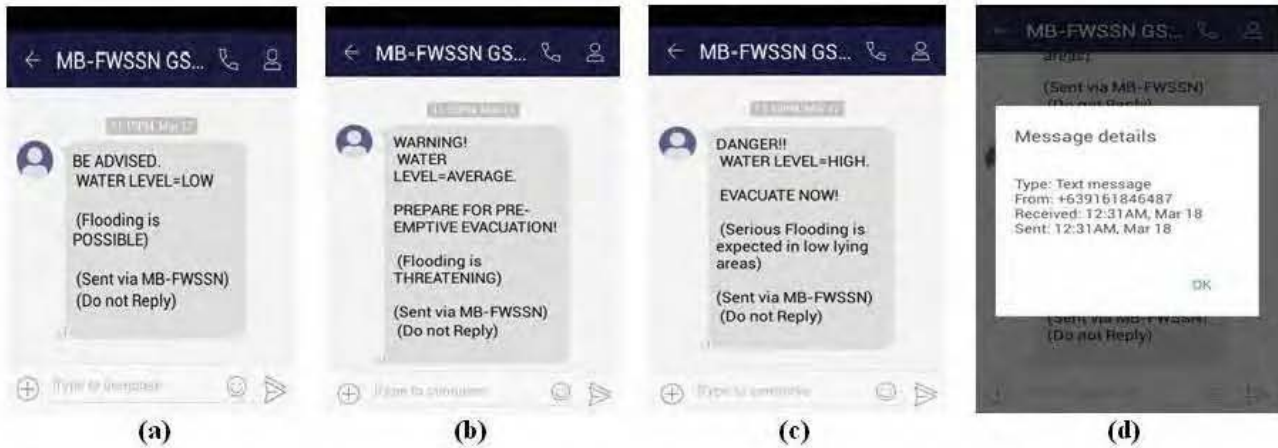


Figure 2. Warning SMS sample for (a) low, (b) average and (c) high water level along with its (d) SMS details.

Keywords: flood, light and sound indicator, microcontroller-based, SMS, warning system, water level sensor.

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