

FLASH FLOOD ALERT SYSTEM

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Abstract: Flash floods are typically associated with short, high-intensity rainstorms. As such, they are characterized by short response time and have the potential to severely impact and damage communities in different climatic settings all over the world. Despite their scientific and social importance, the fundamental processes triggering a flash-flood response are poorly understood. This contribution aims to provide a review of the hydrological mechanisms driving hillslope runoff response to intense rainfall and to characterize runoff response from selected extreme flash floods in Europe. The first part of the chapter provides general concepts regarding the hydrological mechanisms controlling catchment and hillslope runoff response to intense precipitation. Furthermore, we present an overview of scientific investigations carried out in different hydro-climatic settings to characterize the runoff-generation processes occurring under intense rain rates. In the second part of the chapter, we provide an analysis of the runoff properties of a number of extreme flash floods that occurred in Europe since 1994. More specifically, we examine the climatic settings of the flash floods considered, analyzing the distribution of event runoff coefficients and assessing the role of antecedent saturation conditions in controlling the magnitude of extreme flash floods.

Keywords: Flash floods, high-intensity rainstorms, rainfall.

1. INTRODUCTION

A flash flood is a flood that occurs in a short period of time after a high intensity rainfall event or a sudden massive snow melt.

A sudden increase in the level and velocity of the water body is often characteristic of these events. Rising water levels in the river network can reach its peak within minutes to a few hours of the onset of the flood event, leaving an extremely short time for warning. They are localised phenomena that occur in watersheds with maximum response times of a few hours. Therefore, the majority of flash floods occur in streams and small river basins that have a catchment area of a few hundred square kilometres or less.

A flash flood alert system is a hazardous weather statement issued by national weather forecasting agencies throughout the world to alert the public that a flash flood is imminent or occurring in the warned area and rural areas. A flash flood is a sudden, violent flood after a heavy rain, or occasionally after a dam break. Rainfall intensity and duration, topography, soil conditions, and ground cover contribute to flash flooding. That's was the reason behind that made of this model. It is useful for People.



Objectives:

In this project we used Hardware and some useful garbage material. This device not required any software. In the project if your made government level then we can also use float Switch sensor, arduino. etc

We easily handle this device and device quickly perform action of water level (high-low) Also, we have not issue to NDRF team come or not.

2. PROBLEM STATEMENT

Several factors contribute to flash flooding. The two key elements are rainfall intensity and duration. Intensity is the rate of rainfall, and duration is how long the rain lasts. Topography, soil conditions, and ground cover also play an important role.

Flash floods occur within a few minutes or hours of excessive rainfall, a dam or levee failure, or a sudden release of water held by an ice jam. Flash floods can roll boulders, tear out trees, destroy buildings and bridges, and scour out new channels. Rapidly rising water can reach heights of 30 feet or more. Furthermore, flash flood-producing rains can also trigger catastrophic mud slides. You will not always have a warning that these deadly, sudden floods are coming. Most flood deaths are due to FLASH FLOODS.

Most flash flooding is caused by slow-moving thunderstorms, thunderstorms repeatedly moving over the same area, or heavy rains from hurricanes and tropical storms.

Flash floods most often occur in dry areas that have recently received precipitation, but they may be seen anywhere downstream from the source of the precipitation, even many miles from the source. In areas on or near volcanoes, flash floods have also occurred after eruptions, when glaciers have been melted by the intense heat. Flash floods are known to occur in the highest mountain ranges of the United States and are also common in the arid plains of the Southwestern United States. Flash flooding can also be caused by extensive rainfall released by hurricanes and other tropical storms, as well as the sudden thawing effect of ice dams. Human activities can also cause flash floods to occur. When dams fail, a large quantity of water can be released and destroy everything in its path.



Fig: Flash Flood

3. PROJECT SCOPE & DERIVALABLES

This project is useful for government project because it is saves people .who are alive in rural areas and near dam also, In this project we used Hardware And some useful garbage material. This device not required any software. In the project if your made government level then we can also use sensor, arduino Etc.

We easily handle this device and device quickly perform action of water level (high-low)

Also, we have not issue to NDRF team is comes or not.

It's Automatic close and open the Door with the help of male/female connected or comfortable sapare parts.

How Automatic close /open (works :

1. When the level of water Flow is increased then door is automatic close and give a signal red, and Buzzer
2. And when the level of water flow is Decreased then the door is automatic open and give a signal yellow, Buzzer:

4. PLATFORM TOOLS & TECHNIQUES

Hardware Requirement:

PRODUCT	QUANTITY
Resistance	2(1k)
LED light	2
Buzzer	2(as comfortable)
House model	(As room 1/2)
Can	Teen/plastic
Teen	
Theormocol	
Pin	
Wood	
Colors	
Power supply	Solar panel (small 1), batterybattery, cables,charger etc

5. PROJECT METHODOLOGY

5.1 Structure of Project:



5.2 Automatic Close /open the Door and give signal/Buzzer:

It's Automatic close and open the Door with the help of male/female connected or comfortable spare parts. L

How Automatic close/open Doors (works):

1. When the level of water Flow is increased then door is automatic close and give a signal red, and on buzzer. People may not cross bridge. And save your life.

2. And when the level of water flow is Decreased then the door is automatic open and give a signal Green and off Buzzer. People may cross easily and safely.

6. SYSTEM DEVELOPMENT:



Fig: (a)Power House

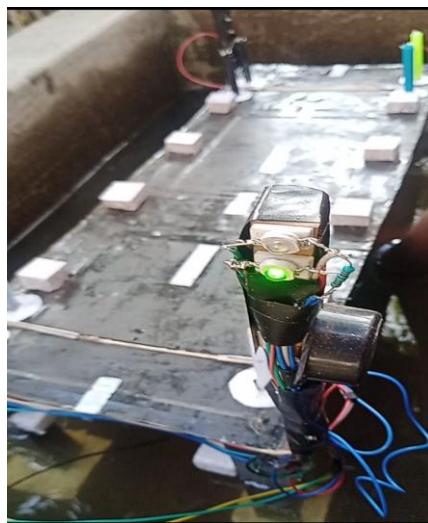


Fig: (b)Level of water is decreased



Fig:(C) Level of water is Increased

FUTURE SCOPE:

This project is useful for government project because it is saves people .who are alive in rural areas.and near dam also, In this project we used Hardware And some useful garbage material.This device not required any software. In the project if your made government level then we can also use sensor, ardinio. Etc

7. CONCLUSION

1. Save time of NDRF TEAM.
2. Easy to made.
3. Low cost
4. Most important because it save people.
5. In future government can work in this project.

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