Flood Damage Detection and Community Awareness System

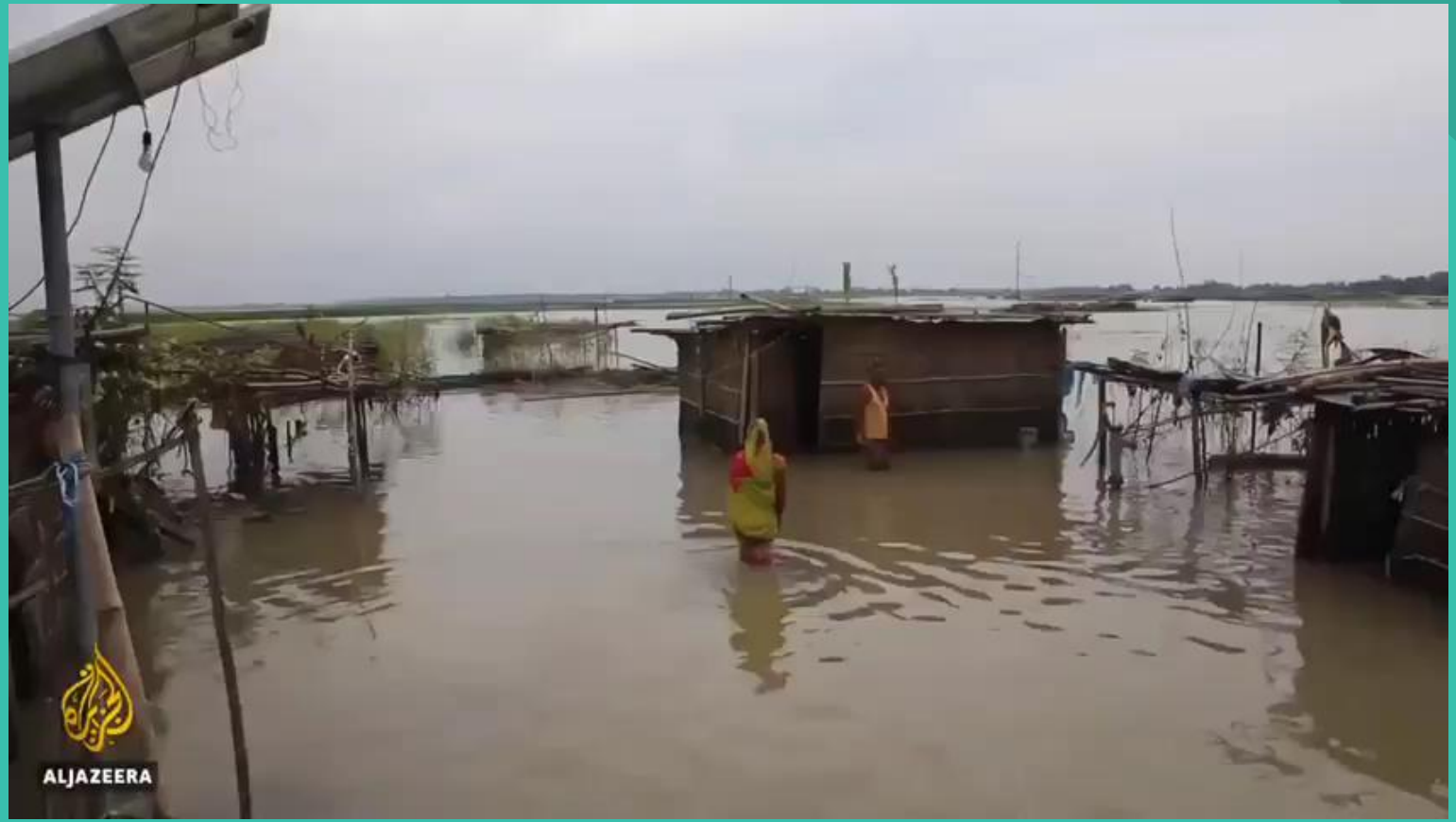
Team 47 Peony

Summary

In the last ten years, there has been approximately three million seven hundred fifty thousand natural disasters. According to the data published by the World Health Organization, in just nineteen years floods, which constitute half of these natural disasters and are caused by heavy rains as a result of global warming has affected more than two billion people worldwide and resulted in the death of more than seven hundred thousand people. Many of these are due to the lack of adequate aid. Deaths and damage to infrastructure including buildings, bridges, sewage systems, roads and canals are among the primary effects of floods.

We used two satellite data for this; a system that shows the quality of water and a system that shows us the level of the water. Meteorology data are processed at the moment, our purpose is to designed an application to estimate future data by averaging the past flood data of twenty years by statistical calculation method. Satellite data showing the level of the water, but also, allows us to calculate how much area and person it harms. Meteorology data helps us to calculate the amount of rain per square meter and the size of the flood that will occur according to the intensity of rainfall.

Depiction of Flood Damage


ALJAZEERA

Our Challenge

Our challenge is to develop a new methodology or algorithm that leverages Earth observation and critical infrastructure datasets to estimate damages to infrastructure caused by flooding.

Our Solution:
In application, historical data are shown on the map and also forecast data are written. The views from satellites are combined and a new forecast is obtained. Information that given us from the satellites, we can predict the infrastructure damage by looking at this calculation . In addition to the infrastructure, help and notice lines have been put in the app to help people. They can reach the emergency phone number of the place where the flood may be exposed and help can arrive in a short time. We aimed to minimize loss of life and property by raising awareness.

What Inspired Us?

According to the data that announced by the World Health Organization (WHO), the flood constitutes 90% of natural disasters in the last 10 years and affected more than 2 billion people in just 19 years and caused millions of dollars of financial damage every year. Even though we have to stay at home during this pandemic process we wanted to take action and find a solution to this disaster, which caused short and long-term material and moral damages despite the fact that it occurred in a short time, and which we frequently encounter in the news.

What's Our Difference?

The difference of our project from previous similar studies is that we aim to save lives and raise awareness, while those studies are only used to be data. Different than past studies we calculate the statistics of historical data and combined them with satellite data to offer you an estimate.

Our Demo

We made a demo fort his and a small trial analysis to show how the algorithm works. We selected the Brahmaputra River as an example because it is one of the most critic areas for overflow . We took a few years data of the river to show how the algorithm works . With this project, we wanted to minimize the economic loses and loss of lives which caused by flood. We want to take a step towards raising awareness of infrastructure problems in cities. With this application we want to save people who exposed to flood and provide occurring the damage of underground lines and systems such as electricity, sewerage, and telephone. Our goal is to help people and to increase the resistance of nations.

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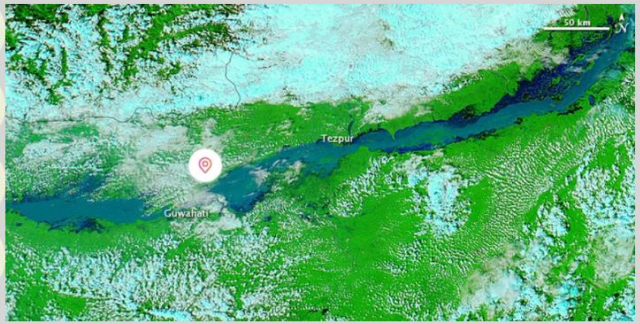
-DEMO-

Brahmaputra River Satellite Map

- Disaster Hand Book
- Charities
- Helpline
- Hotline
- Historical Data



SUN	MON	TUE	WED	THU	FRI	SAT	SUN	MON
29° 26°	32° 26°	32° 26°	32° 27°	33° 27°	32° 27°	32° 27°	31° 26°	31° 26°

Weather

Informations

-Flood, which completely or partially submerged the soil in a region for a certain period of time; It is the name given to sudden, large and irregular water currents.

- Half of natural disasters are caused by floods.

-According to the data released by the World Health Organization, in just nineteen years floods affected more than two billion people worldwide, more than seven hundred thousand people died.

Which Data and Resources We Used For This?

01 Satellites

-Nasa's NRC Global Flood Mapping
-Copenicus sentiel -2
-Copenicus sentiel -3

02 Data Bases

SQL

03 Systems

-EOMAP's satellite-based water quality monitoring system
-Essential climate variable (ECV)
-Altimeters sensor

04 Languages

JS

«You can’t solve a problem on the same level that it was created. You have to rise above it to the next level»
-Albert Einstein