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IAF EARTH OBSERVATION SYMPOSIUM (B1)
Mitigating the Climate Crisis from Space (6)

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EARTH OBSERVATION DATA, A WAY TO FIND SUITABILITY FOR SHELTERS SITES AND TO CREATE RESILIENCE IN THE CARIBBEAN COAST OF NICARAGUA

Abstract

According to the National Oceanic Atmospheric Administration (NOAA) there are many situations that can cause floods, and some of them are: heavy rainfall, ocean waves coming on shore, such as a storm surge, melting snow and ice, dams or levees breaking. As for Central America the two main reasons are ocean waves on shore, and heavy rainfall. The Atlantic coast of Central America is subject to destructive tropical storms and hurricanes specially from July through October. These hurricanes are accompanied by high winds and floods.

In 2020, two of the strongest hurricanes on record that year made landfall in the Atlantic coast of Central America, ETA was the first one and followed by IOTA which was stronger than ETA. There are many indigenous communities living in the Atlantic coast of Central America who were also affected by these hurricanes. One of them was the Miskito community of Haulover in the Atlantic coast of Nicaragua whose coastline area transformed, the mangrove forest was broken and drinking wells were contaminated by saltwater. A wedge of ocean cut through the middle of the small village. Since many years ago, specifically the case of Nicaragua, many of the indigenous communities find schools and churches as shelters to protect themselves from hurricanes and they are not as strong as they should be to be safe either because of the infrastructure or the land where they are built.

During the Free and Open-Source Software for Geospatial (FOSS4G) Hackathon a solution to determine the safest, most suitable sites for shelters, in addition to harvesting local information to assess site locations and identify the best places to build shelters for the villagers of the Caribbean region in Nicaragua to be safe in during floods was produced.

This paper will cover the tool concept, design and solution provided during the Hackathon to tackle this big issue that the community faces yearly. Additionally, the solution links perfectly with the Goal #2 of the UN Climate Change Conference (COP) which states, “Adapt to protect communities and natural habitats”. As the COP Goal #2 explains, climate change is already happening and natural hazards such as hurricanes, rainfalls and floods are difficult to prevent, although we can find innovative and creative solutions to protect the community as well as restoring ecosystem.