IGNITING CONVERSATION: North Abaco fire chief participates in landmark climate change

Science News *from research organiz*

Endangered Bahamas bird may be lost from island follo ing hurricane

Date: February 8, 2023

Source: University of East Anglia

Summary: The endangered Bahama Warbler may be surviving on just one island following Hurricane Dorian's devastation in 2019, according to researchers. A new study shows the bird's distribution and ecology on Grand Bahama before the hurricane struck. But the team says that the warbler may now only survive on neighboring Abaco island, after hurricane Dorian destroyed the bird's forest habitat on Grand Bahama. The research comes from the same team that found what is thought to have been the last living Bahama Nuthatch, previously thought to have been extinct.

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Late Dry Season Fires Burn Bush Areas, Impacting Utility Services and Buildings

By Staff1 / in Eleuthera News, In The News: / on Saturday, 19 Jun 2021 07:00 AM / Comments Off / 3110

ry and hot weather during the month of pril and early May was noted as the ossible catalyst for bush fire incidences corded during the same time, as the gion's dry season, which generally runs m about February to June drew to a se. Bush fires in areas just north of mes' Cistern, along Queen's Highway, as

eleutheranews.com

OUR Our News Bahamas · Follow
May 17, 2021

Bush fires in Grand Bahama impacts Internet services
By David Burrows, Cable Bahamas
Feb 9, 2014 - 7:06:21 PM

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Mobile friendly page

cablebahamas
technology unleashed

Cable Bahamas reports services

now fully restored

NASSAU, The Bahamas - Cable Bahamas advises that cable-based broadband Internet subscribers in New Providence, Grand Bahama, Abaco and Eleuthera were affected by the

#BAHAMAS – March 30, 2020 — Bahamas Power and Light Company Ltd. (BPL) wishes to advise that brush fires, said to have been started by persons burning debris, have destroyed poles and caused outages to all of North Abaco (Blackwood included). Lines have been felled as a result of damaged poles. This has also hampered restoration efforts as crews have had to move to dealing with this immediate concern instead of continuing restoration activities. BPL asks that residents please use the sanctioned landfills/dumpsites and not try to dispose of debris by lighting uncontrolled fires. BPL continues to work with authorities to extinguish fires posing threats to the utility infrastructure. We also wish to sincerely thank the

Local

Big Bush Fire alongside Bishop Wenith Davis Church on Zion Blvd.

May 27, 2021

👁 1960   💬 0

f 𝕏 G+ P ✆

PROJECT IGNITE

USING GEO AI AND PREDICTIVE ANALYTICS AGAINST CLIMATE CHANGE-INDUCED BUSHFIRES IN THE BAHAMAS

BUSHFIRE CRISIS TIMELIME

BEFORE 2019

BUSHFIRES ARE A SIGNATURE EVENT DURING THESE DRY SEASONS MOSTLY.

DURING 2019

BUSHFIRES OUTSIDE OF THE DRY SEASON BECAME WIDESPREAD & UNCONTROLLABLE AFTER HURRICANE DORIAN.

AFTER 2019

BUSHFIRES CAUSED BY HUMANS & NATURAL OCCURENCES HAVE BECOME A NORM.

FOCUS ISLAND: GRAND BAHAMA

Sentinel-2 (LIC) stitched composite image (Res: 10m).
Source: ESA Copernicus 2023

WHY IS IT IMPORTANT TO STUDY BUSHFIRES?

- The impact of bushfires on human and animal life, property, and livelihoods;
- The **emergence** of year-round bushfires following Hurricane Dorian in 2019, which can be attributed to climate change;
- **Overutilization** of emergency instruments and services, including firetrucks and ambulances;
- **Disruptions** in transportation and utility services;
- **Desensitization** of citizens to the risks of bushfires due to its frequent occurrence;

WHY IS IT IMPORTANT TO STUDY BUSHFIRES? CONT'D

- **Health concerns**, particularly long-term respiratory conditions such as asthma. Census data can help identified issues across the population;
- Ecological **disturbances** and **loss** of biodiversity caused by bushfires; and
- The **interconnectedness** of bushfires with other disasters, such as flooding, and their potential to arise as a result of a disaster such as a hurricane.

THE SOLUTION PROTOTYPE INFORMATION FOR GRAND BAHAMA

GRAND BAHAMA BUSHFIRE 'N TINGZ DASHBOARD

A bushfire can affect any person at any given point in time now. However, the level of effect varies and so does the needs of the person. Hence, an all-encompassing pre-disaster, during or post-disaster solution requires the person to have access to the resource they need quickly and in a easily consumable manner.

This solution proposes **an interactive dashboard** depicting bushfires in a historical, present and futuristic context. It also includes community participation as well.

To ensure that all three contexts were targeted, the use of geo-ai and a plethora of geoinformatics techniques were deployed. This resulted in the creation of three areas in the Dashboard.

An example of how the solution is used;

Grand Bahama Fire Risk Potential Map ➤ Users can determine whether an area is at risk for a fire by selecting various layers which depicts hotspots, fire indices etc. The nearest fires station and other data is available to make queries also.

A Fire Activity Prediction Map ➤ Users can determine the likelihood of a fire occuring years from now by selecting spatial interpolation layers.

Community Involvement ➤ Users can complete bushfire sighting forms, get information on the Dos and Donts, contact relevant agencies etc.
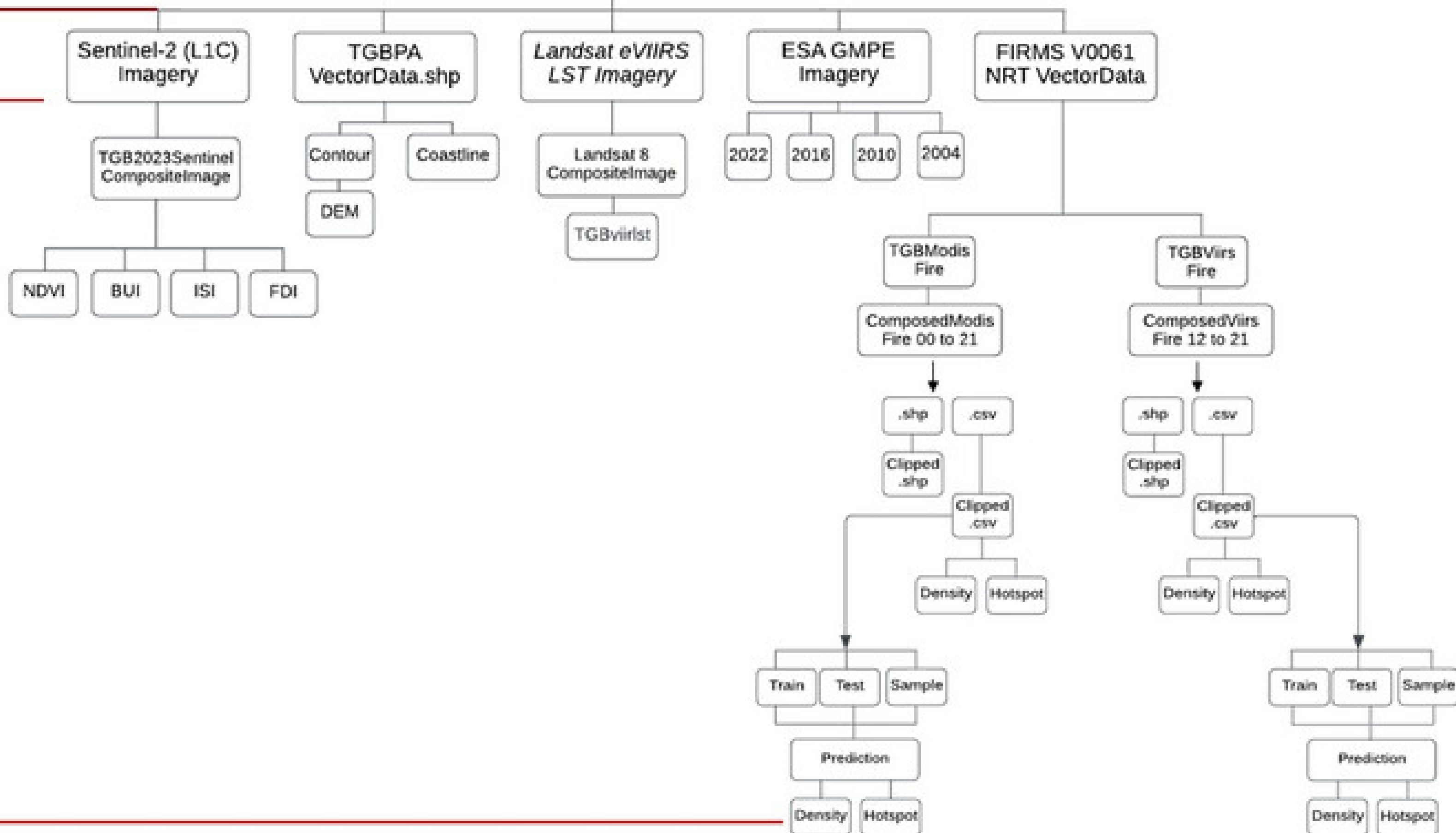
To re-iterate, this solution is meant to be utilized by anyone on the Grand Bahama Island who is experiencing or experienced a fire. It is built using Open Source Data and Open Source Technology.

The geospatial data products utilized were extensive.

THE GRAND BAHAMA'S BUSH FIRE AWARENESS DASHBOARD

Sentinel-2 (L1C) Imagery

- TGB2023Sentinel CompositeImage
  - NDVI
  - BUI
  - ISI
  - FDI

TGBPA VectorData.shp

- Contour
  - DEM
- Coastline

Landsat eVIIRS LST Imagery

- Landsat 8 CompositeImage
  - TGBviirlst

ESA GMPE Imagery

- 2022
- 2016
- 2010
- 2004

FIRMS V0061 NRT VectorData

TGBModis Fire
- ComposedModis Fire 00 to 21
  - .shp
    - Clipped .shp
  - .csv
    - Clipped .csv
      - Density
      - Hotspot
  - Train / Test / Sample
    - Prediction
      - Density
      - Hotspot

TGBViirs Fire
- ComposedViirs Fire 12 to 21
  - .shp
    - Clipped .shp
  - .csv
    - Clipped .csv
      - Density
      - Hotspot
  - Train / Test / Sample
    - Prediction
      - Density
      - Hotspot

Project Ignite: Using Geo AI and Predictive Analytics Against Climate Change-Induced Bushfires in the Bahamas
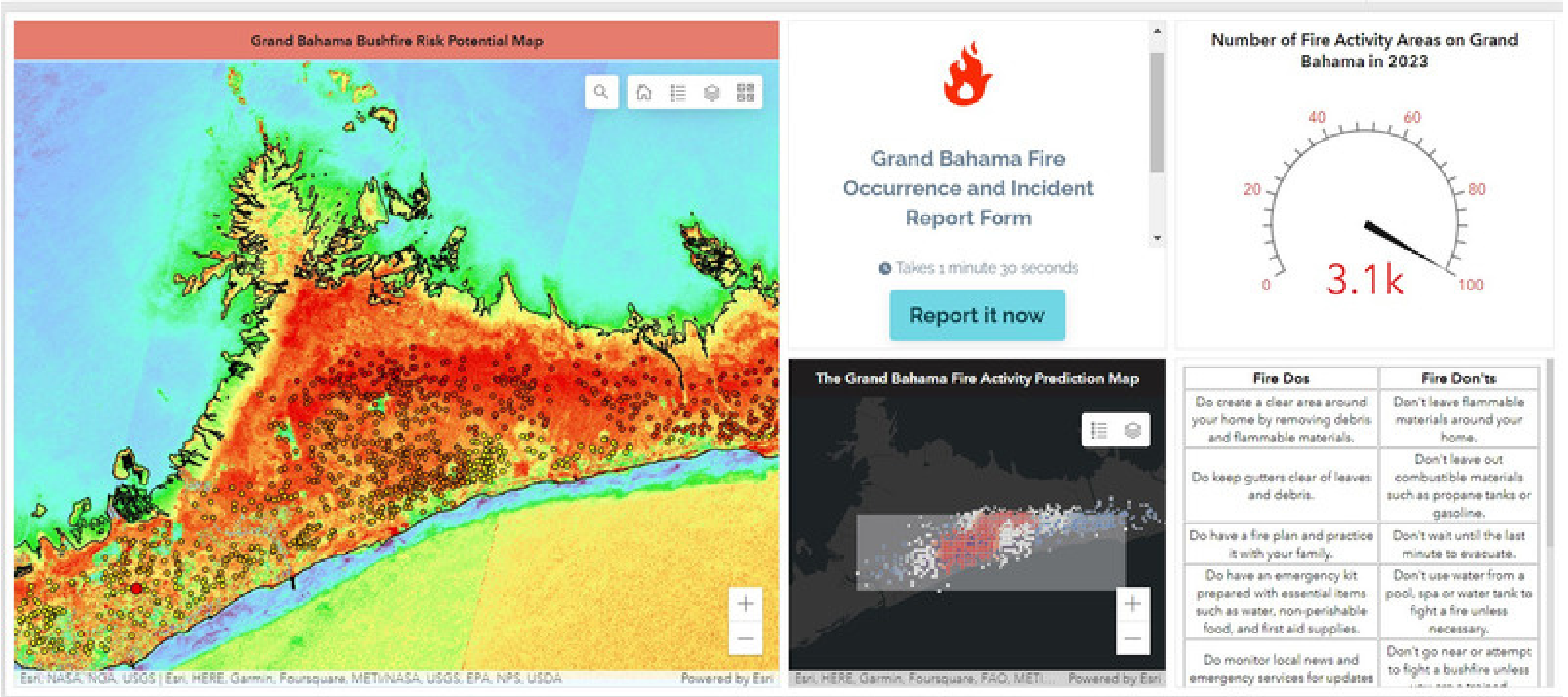
Giatri Lalla - Department of Geomatics Engineering and Land Management, Faculty of Engineering, UWI - St. Augustine
</div>

In [1]:

```
import os
import rasterio
import numpy as np


#First Sentinel Image
```

Link: https://www.kaggle.com/code/giatrilalla01/project-ignite-foresight-drm-disaster-mapping

Link: https://www.arcgis.com/apps/dashboards/d89cf80428e54df49519256d73b7fb01