Tracking fires worldwide

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Objective

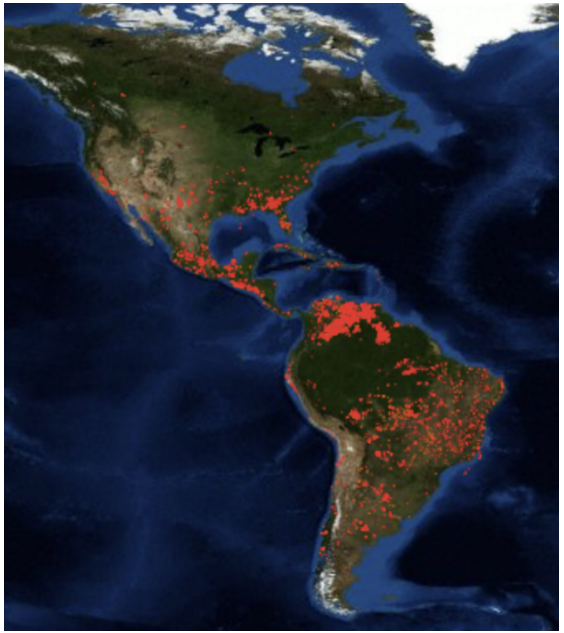
- **Provide a geographical visualization of fires around the world and contrast them with spatial data of human settlements**
- Daily updates
- Useful to enhance resource allocation, particularly in organizations providing assistance to vulnerable populations
- Extensions include tracking forest fires, land-clearing fires, and others

Data: Thermal anomalies

MODIS (Moderate Resolution Imaging Spectroradiometer)

- The thermal anomalies are represented by the center of a 1km pixel that is flagged as containing one or more fires within the pixel
- Updated daily

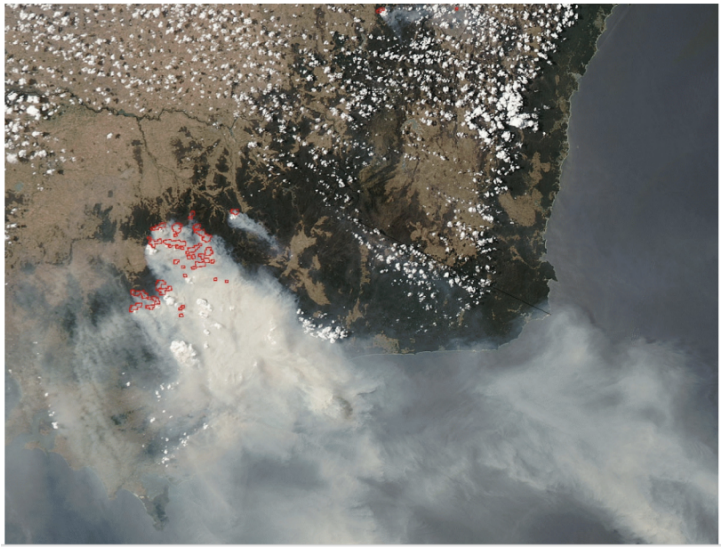
Source: https://earthdata.nasa.gov



Data: Thermal anomalies

VIIRS (Visible Infrared Imaging Radiometer Suite)

- Full global coverage every 12 hours from the VIIRS sensor aboard a NASA satellite. Updated daily
- Provides a greater sensitivity to detect fires of relatively small areas
- 750 m spatial resolution



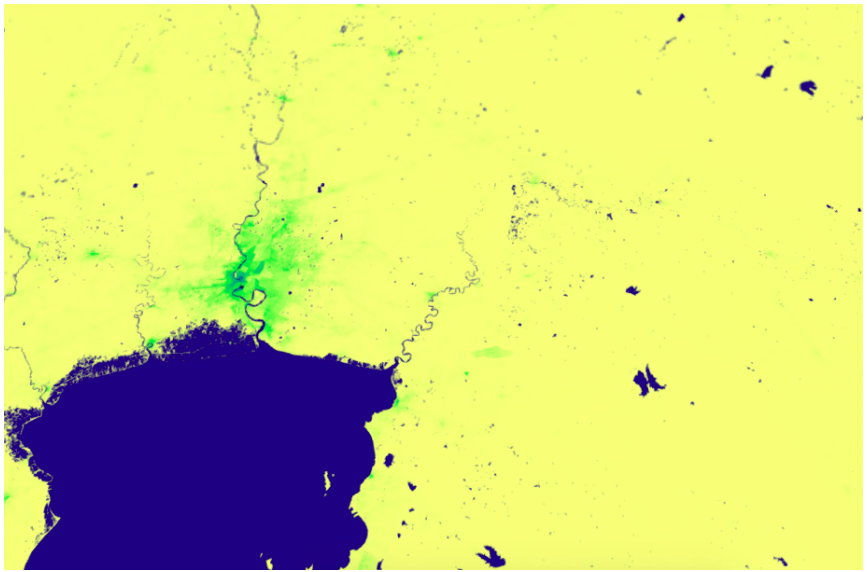
Source: https://earthdata.nasa.gov

Data: High resolution population distribution maps

Worldpop

- Estimates of the number of people living in each 100x100m in developing countries
- Integrates census, survey, satellite and GIS data in a machine learning framework.

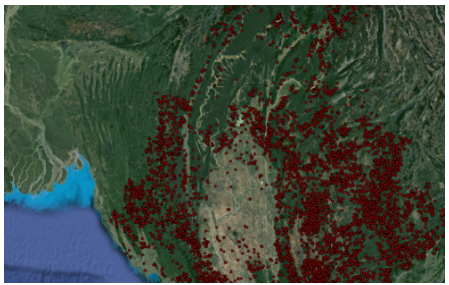
Source: http://www.worldpop.org.uk



Expected Outcome

User friendly user platform that allows users to extract maps and data at the country level.

User will be able to obtain a map and download shapefiles for a specific country.



Steps:

1. Data collection
2. Merge archive data for fires with human settlement data. This code will be built in a way such that information on fires is easily updated.
    a. **Outcome:** Map and a csv file.
3. Generate a code that performs Web scraping to extract thermo anomalies data from NASA's webpage.
    a. **Outcome:** Data in a format that is ready to be used by code made in step 2.
4. Generate interactive platform

Schedule

Activity	Week							Responsible
	3	4	5	6	7	8	9	
I. Data Collection A. Thermal anomalies B. Population distribution								LD & JQ JA
II. Overlap maps								JA & LD
III. Web scraping: thermal anomalies								JQ
IV. User friendly platform								JA & LD

Libraries

GIS

Geopandas and Pyqgis (spatial data analysis)

Gdal and Fiona (for reading and writing different geospatial data formats)

Pyshp (for reading and writing shapefiles)

Pyproj (to convert between different projections of geospatial data)

Interactive Visualization

Geoplotlib

Bokeh

GeoViews

Plotly