

Project Phase - I

Project Title: Data analysis and visualization of Forest Fires

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Data Sources

- <https://www.nature.com/articles/s41597-019-0312-2>
- https://www.agriculture.gov.au/sites/default/files/documents/ABARES_Forest_Fire_area_2019_20_data_tables_28Apr.xlsx
- <https://data.gov.au/data/dataset/2020-operational-bushfire-boundaries>
- <https://data.sa.gov.au/data/dataset/?tags=bushfire>
- <https://www.firenorth.org.au/nafi3/>
- <https://storymaps.arcgis.com/stories/b7c3dd632a174d239bf72fa20226ca96>
- <http://nfdp.ccfm.org/en/data/fires.php>
- <https://gcp-asia-northeast1.app.carto.com/>
- <https://www.ncdc.noaa.gov/cdo-web/datasets>
- <https://www.tableau.com/learn/articles/free-public-data-sets>
- <https://www.snowflake.com/datasets/knoema-environment-data-atlas/>
- <https://aqicn.org/data-platform/register/>
- <https://www.biodiversityinternational.org/e-library/publications/detail/training-manual-on-spatial-analysis-of-plant-diversity-and-distribution/>
- <https://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.709.6831&rep=rep1&type=pdf>
- <http://globalfiredata.org/pages/data/>

Methodology

1. Time periods of the forest fires will be extracted and the impact of climate change on the overlapping effect of climate will be studied.
2. We will analyze multiple databases to further our understanding across multiple parameters.
3. The data is collected through the following category of websites
 - a. National Wildfire websites of different countries
 - b. Independant Forest Fire Databases
 - c. International Forest Conservation Organizations
4. We will apply the geo-spatial correlation algorithm to identify patterns and association between forest fires and predicted burns.
5. We will use regression and log-linear models to come up with a neural network which can predict forest fires based on given data.
6. Data visualization tools such as Matplotlib, Plotly and Corta will be utilized to provide an in-depth analysis of the data that is used.

Expected results/outcome

1. Visualize forest fires across selected regions
2. Calculate contribution of agricultural and non-agricultural lands
3. Analyze the root causes of the fires
4. Visualize the number and area of fires by cause class
5. Calculate and analyze forest fire occurrences by month and years
6. Visualize the number of fires by size class
7. Visualize the area burned by fire size class
8. Estimate the Property losses from fires
9. Evaluate and analyze the impact of the fires on the GDP of the regions
10. Analyze the adverse effects on flora and fauna
11. Discover the impact of the fires on the habitat
12. Understand the climate and temperature changes because of fires