Analysis of Wildfires in Brazil

Mantina Bhavani Sai Praneeth Varma

Mantina Bhavani Sai Praneeth Varma, Department of Information Technology, Malla Reddy College of Engineering and Technology, Telangana, India

---***---

Abstract - *A wildfire is an unplanned fire that burn in a natural area such as forest, grassland, or prairie. Wildfires are often caused by human activity or a natural phenomenon such as lightning, and they can happen at any time or anywhere. Wildfires and volcanic activities affected 6.2 million people between 1998-2017 with 2400 attributable deaths worldwide from suffocation, injuries, and burns, but the size and frequency of wildfires are growing due to climate change. The slash and burn methods are used to clear the forest to make way for agriculture, livestock, logging, and mining, leading to deforestation of the Amazon rainforest area, Large amount of deforestation has occurred in Brazil's Amazon rainforest area since years. In this paper, I have analyzed the data of wildfires in Brazil from 1998-2017, I have made conclusion based on the analysis.*

Key Words: Amazon rainforest, Data Analysis, Brazil, Wildfires, Global Warming, Climate change, Deforestation.

1. INTRODUCTION

Wildfires increased dramatically in the last 20 years, from 20,000 in 1998 to almost double in 2017. What's also alarming is that there is also an increasing trend in the data. The 2003 and 2016 years had the most wildfires throughout Brazil. Wildfires in Brazil occur every year when farmers illegally start them to either clear new land for farming and cattle ranching or to prevent new vegetation from sprouting, which is common in a tropical, humid climate, Mato Grosso is Brazil's third largest state. This state has a small weight of people from total population of Brazil, about 1.5%, but a very strong agricultural industry. In the past, the state of Mato Grosso has been one of Brazil's largest emitters of CO_2, due to forest fires and deforestation, driven by its strong agriculture-based economy.

2. Analysis

The data of forest fires in Brazil from 1998 – 2017 has been used for analyzing the destruction happened Amazon rainforest.
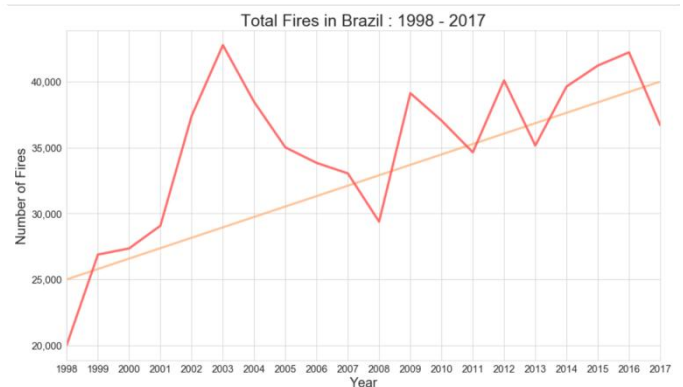

Chart -1: Total Fires in Brazil: 1998 - 2017

In 1998, The number of fires happened is 20000 and it almost doubled in 2017. The main causes are deforestation, agricultural activities, cattle grazing, etc. As the rate of deforestation increases, the wildfires will also increase.
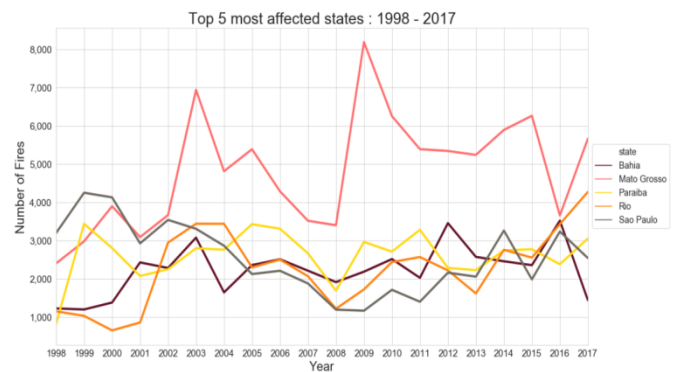

Chart -2: Top 5 most affected states: 1998 - 2017

The most affected state is Mato Grosso with 96246 fires from 1998 – 2017 followed by Paraiba with 52435, Sao Paulo with 51121, Rio with 45160 and Bahia with 44746. The Amazon rainforest spread across many states and deforestation is leading to wildfires every year and number of wildfires are increasing year by year.
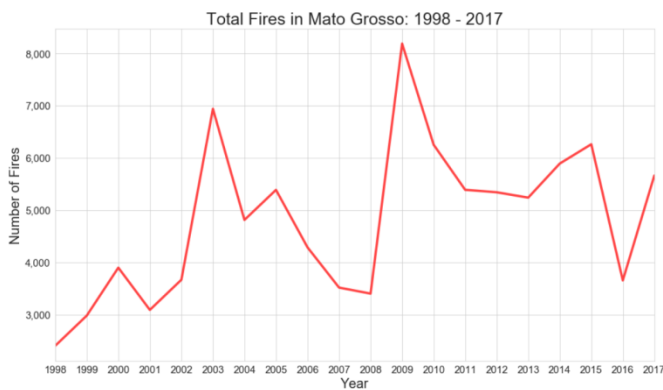
Chart -3: Total Fires in Mato Grosso: 1998 - 2017

The Mato Grosso state has most wildfires over the years. In 1998, It had less than 3000 and in 2017 it had nearly 6000 fires. Mato Grosso is Brazil's third largest state. This state has a small weight of people from total population of Brazil, about 1.5%, but a very strong agricultural industry. In the past, the state of Mato Grosso has been one of Brazil's largest emitters of CO^2, due to forest fires and deforestation, driven by its strong agriculture-based economy. However, they reduced the massive deforestation starting 2004. The majority of Mato Grosso area possesses high to extreme fire occurrence risk (55.76%).
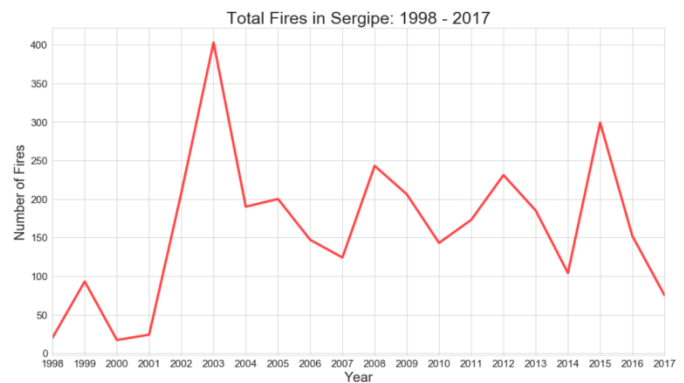

Chart -4: Top 5 Least affected states: 1998 - 2017

The Least affected state is Sergipe with total of 3237 fires followed by Distrito Federal with 3561, Alagoas with 4644, Espirito Santo with 6546 and Acre with 18464.

Chart -5: Total Fires in Sergipe: 1998 - 2017

The Wildfires in Sergipe is the lowest in country, The Total number of fires occurred is 3237.

In 2019, A large fire outbreak occurred in Amazon rainforest which destroyed large amount of ecosystem in Amazon rainforest.

3. CONCLUSIONS

The Wildfires across the world increasing every year since decades. In 2019, A large fire outbreak occurred in Amazon rainforest which destroyed 906,000 hectares (2,240,000 acres). The majority of the forest is contained within Brazil, with 60% of the rainforest, followed by Peru with 13%, Colombia with 10%, and with minor amounts in Venezuela, Ecuador, Bolivia, Guyana, Suriname and France (French Guiana). More than 167,000 forest fires were recorded from January 30 until 30 October. The increased rates of fire counts in 2019 led to international concern about the fate of the Amazon rainforest, The increased rates of fire counts in 2019 led to international concern about the fate of the Amazon rainforest, which is the world's largest terrestrial carbon dioxide sink and plays a significant role in mitigating global warming. In addition to the impact on global climate, the fires created environmental concerns from the excess carbon dioxide and carbon monoxide within the fire emissions, potential impacts on the biodiversity of the Amazon, and threats to indigenous tribes that live within the forest. Amazon is the largest rainforest in the world and a vital carbon store.

Cutting down trees in the rainforest produces 8% of net global emissions, more than the entire European Union. People can follow different steps to reduce deforestation in Amazon rainforest like Protect an acre of rainforest through the Rainforest Action Network. Help buy land in the rainforest through the Rainforest Trust, Support the rainforest's indigenous populations with Amazon Watch. Reduce your paper and wood consumption or buy rainforest safe products through the Rainforest Alliance. Support arts, science, and other projects that raise awareness about the Amazon through the Amazon Aid Foundation.
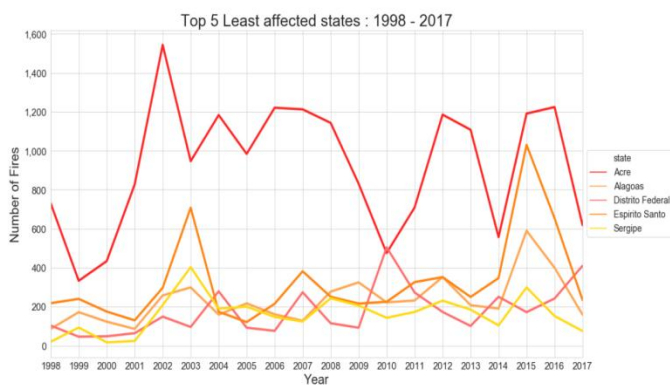
REFERENCES

1. DATABASE USED
   https://www.kaggle.com/gustavomodelli/forest-fires-in-brazil

2. Houghton, R.A., 2012. Carbon emissions and the drivers of deforestation and forest de-gradation in the tropics. Curr. Opin. Environ. Sustain. 4, 597–603.
   https://doi.org/10.1016/j.cosust.2012.06.006.

3. Alegre, J.C., Cassel, D.K., 1996. Dynamics of soil physical properties underalternative systems to slash-and-burn. Agric. Ecosyst. Environ. 58, 39–48.

4. Bolker, B.M., Brooks, M.E., Clark, C.J.S., Geange, W., Poulsen, J.R., Stevens, M.H.H.,White, J.S.S., 2009. Generalized linear mixed models: a practical guide forecology and evolution. Trends Ecol. Evol. 24, 127–135.

5. MMA, Environmental Ministry, ICMBio. Brazilian Red List of Threatened Species.⟨http://www.icmbio.gov.br/portal/fauna brasileira/lista-de-especies⟩(accessed 22 September 2015), 2015.

6. D.E. Wilson, D.M. Reeder, Mammal Species of the World–a Taxonomic and Geographic Reference, 3ed, The John HopkinsUniversity Press, Baltimore (2005) 142.S. Torrecilha et al. / Data in Brief 17 (2018) 1326–13301330.