

# Analysis report on the relationship between world forest area data and global temperature data

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## 1 Introduction

The goal of this report is to examine how global temperature changes have impacted changes in forest area over the last thirty years. The aim is to analyze the global impact of temperature fluctuations on forest ecosystems by utilizing historical data on average temperature changes and forest area measurements between 1990 and 2021.

This report discusses the results of the analysis, providing details on the impact of temperature changes on the extent of forested areas. The visuals and statistical patterns talked about here give a better insight into the intricate relationship between climate change and forest ecosystems.

The analysis conducted in this report seeks to answer several key questions regarding the relationship between global temperature changes and forest area variations. These questions include:

1. How have global temperatures changed over the past three decades?
2. How has the forest area globally changed over the same period?
3. Is there a correlation between temperature changes and forest area variations?
4. What are the overall trends in the data?

## 2 Used Data

### World Forest Area

This dataset is of CSV data type. It is licensed by World Bank Dataset stating that it is allowed to extract, download, and make copies of the data in their dataset. Also, this dataset is provided under a Creative Commons Attribution 4.0 International License (CC BY 4.0). This dataset contains information about the world's forest area changes in km and % for years 1990-2021.

## All Countries Temperature Statistics 1970-2021

This dataset is also of CSV data type. It is licensed under CC0: Public Domain making it possible to use and modify data in this dataset without prior permissions. This dataset provides information on changes in global surface temperature across all countries from 1970 to 2021. For this project, only data for years 1990-2021 is used to match the other dataset

### 3 Analysis

Figure 1 shows the global average temperature change from 1991 to 2021. It displays an increasing trend indicating that global surface temperatures have increased drastically from 0.4 °C increase in 1991 to 1.39°C increase in 2021.

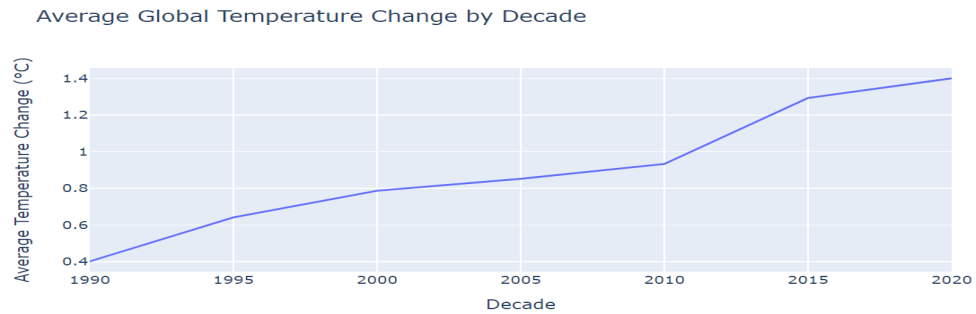


Figure 1: Average global temperature decade wise (1991-2021)

Average Temperature by Country

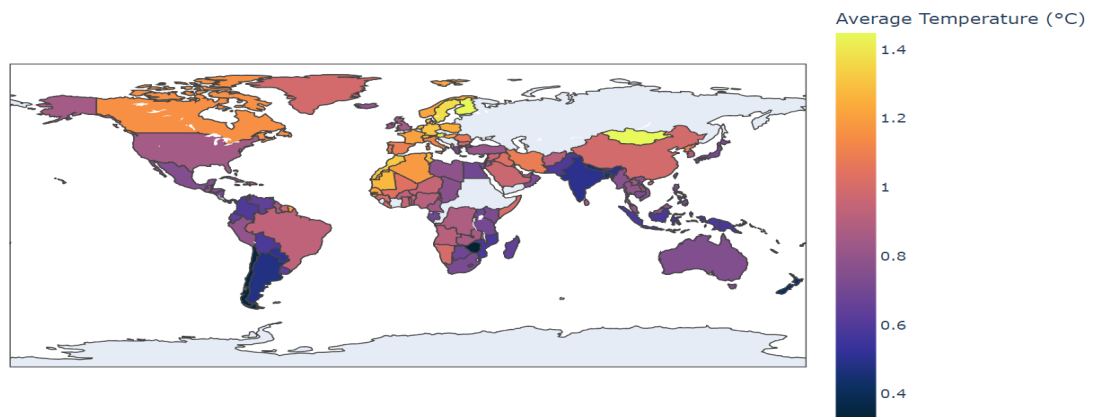


Figure 2: Average Temperature by Country (1991-2021)

Figure 2 depicts the global average temperature of 214 countries spanning over the years 1991-2021

Average forest area by Country

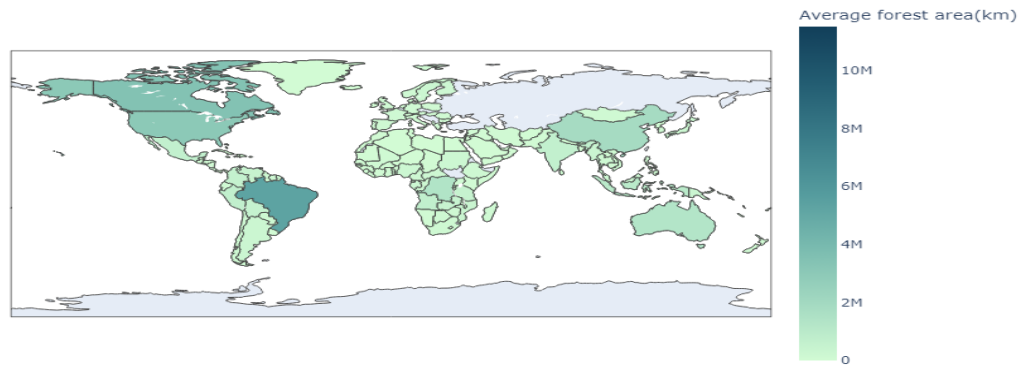


Figure 3: Average Forest Area by Country (1991-2021)

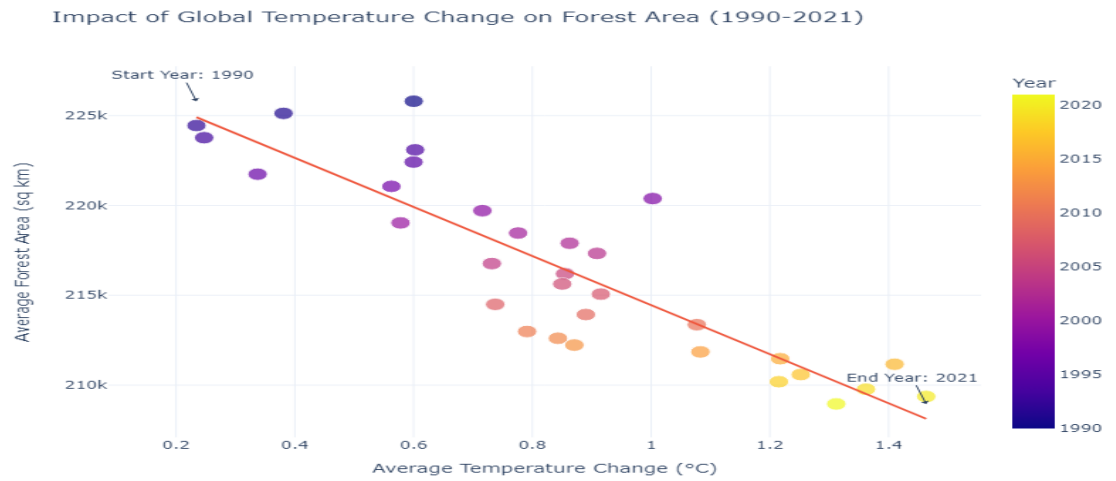


Figure 4: Impact of global surface temperature changes on forest area (1991-2021)

Figure 3 depicts the forest year across the world over the from 1991 to 2021. It shows the average forest area in km in 214 countries of the world.

Figure 4 illustrates the Impact of global surface temperature changes on forest area from the years 1991 to 2021. It evidently depicts that with rise in global surface temperature from 0.4 °C increase in 1991 to 1.39°C increase in 2021, the global forest area has decreased from 221.91K sq km in 1991 to 208.13K sq km in 2021.

## 4 Conclusion

This data analysis shows significant trends in global surface temperature changes and forest area variations. Over the period of 3 decades, global surface temperatures have consistently risen, with notable increases in recent years, highlighting the ongoing issue of global warming. Along with this, forest areas have fluctuated but overall shown a decline, particularly during periods of significant surface temperature increases. The data shows a definite negative relationship between changes in surface temperatures and the amount of forest cover; higher surface temperatures lead to less forest cover, which is indicative of the detrimental effects of climate change on forests. The overall trends confirm that rising surface temperatures contribute to forest degradation.