**An exploratory data analysis of climate change and natural disasters**

The goal is to investigate and analyze climate change and its relationship to natural catastrophes (occurrence and economic impact). Global temperature rise is utilized as an indication of climate change in this investigation.

1. **Global Temperature**

Table

Description automatically generated

After observing the data, remove the data not required for the analysis and keep only the relevant data.The global temperature dataset has monthly granularity. It can be resampled annually to reduce the number of entries, without losing the average temperature information.

In climate science, temperature anomaly represents temperature pattern accurately than absolute temperature. Basically, it indicates how much warmer or cooler it is than the baseline. The baseline used here is the average temperature over the 30-year period 1951-1980 (base period used by NASA).

Chart

Description automatically generated

The warming of the Earth is easily seen when the temperature difference is plotted over time. From 1920 onwards, the warming becomes increasingly noticeable. The Earth is 0.76 degrees Celsius warmer than normal in 2015. The finding backs up the scientific consensus that the world is warming.

1. **Natural disasters**

Let's explore the natural disaster data and analyses how the occurrence of various types of natural disasters has changed over the years.

Table

Description automatically generated with medium confidence

Figure 1: The 'Entity' column contains 10 types of natural disaster entries and their summation, 'All natural disasters'. There are several 'NaN' numbers, which could indicate missing data or unreported disasters. We'll replace them with 0 for our study, which means there will be no disasters, and it will also make charting the data easier.

Chart

Description automatically generated

The left-sided chart shows a positive relationship between surface temperature and the occurrence of natural events.

Natural disasters are on the rise globally, particularly after 1940, when temperatures begin to rise above average.

Chart, bar chart

Description automatically generated

Figure 2: The bar plot above, with unique stacks for each catastrophe category, illustrates that the occurrence of floods has grown dramatically in comparison to other disasters throughout the years. Extreme weather is the second most common rise in incidence, followed by earthquakes. The graphic also illustrates that the overall number of natural catastrophes has been steadily increasing throughout the world. The graphic below demonstrates this more clearly.

1. **Economic Impact**

Let us also look into the economic impact of natural calamities. However, one crucial tendency that emerges from the plot is that the overall economic loss from all calamities is growing over time. The major factor is an increase in catastrophe occurrences (linked to global temperature rise), albeit not all disasters contribute equally to economic harm. Another explanation for increased economic harm might be more income development, which leads to greater infrastructure, land productivity, and so on.

Chart

Description automatically generated

Figure 4: Economic damage is very varied since it is determined by numerous aspects such as catastrophe kind, disaster location, disaster intensity, disaster management activities, and so on.