Nasa Global Land-Ocean Temperature Index Data Set Analysis

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For my Milestone Project we conducted over the course of the semester, I decided to analyse the Nasa Global Land-Ocean Temperature Index Data Set. This dataset is one file with 3 columns, the year, the temperature anomaly, and the smoothed temperature anomaly. Temperature anomalies are the differences from the average temperature of a certain period. In this dataset, they were measuring the temperature compared to the average temperature from 1951 - 1980. I cleaned this dataset using Jupyter Notebook, where I further used the Pandas Dataset to import the file and convert it to CSV from an Excel file. Then, I created graphs using MatPlotLib and NumPy to calculate the quadratic coefficient for curve steepness, the linear coefficient, and create multiple trend lines to show the positive correlation of temperature acceleration and time.

I asked the following specific questions; Does the global mean temperature anomaly show evidence of accelerating warming since 1880? What is the rate of warming per decade, and has that rate accelerated? Are there detectable periodic patterns in temperature anomalies, and are they linked to natural climate cycles? Based on historical trends, what is the probability of exceeding a 1.5°C global mean anomaly by 2050 under accelerating warming scenarios? I discovered with these graphs that global warming has been accelerating rapidly since 1960, and that the warming rates have been increasing at alarming rates. I also learned that natural climate cycles do not play a big role in global warming, meaning that human activity is a leading cause of climate change. If I were to recommend an insight to a client, I'd tell them to focus on the future patterns, as the graphs projecting the future show we are going to surpass the critical temperature anomaly of 1.5 ° C by 2050, and by then irreversible damage will have been done. With this data, I'd like to continue analyzing climate trends, as well as predicting how different prevention methods would affect the climate trends of today and how they would decrease the effects of global warming in the future. Overall, this project was educational and insightful on the trends of global warming, and I hope to explore these results more in the future!