**Climate Analysis with LLMs: Examining the Inevitable Destruction of the Planet**

**Abstract:**

In the context of Technological Foresight, this article investigates the potential of Large Language Models (LLMs) to automate the generation of climate reports, focusing on the projected climate evolution in Brazil over the next 50 years. This study addresses the challenge of rapidly and accurately analyzing extensive climate datasets, utilizing generative AI to interpret outputs from predictive climate models and generate detailed reports that facilitate strategic decision-making. The proposed approach aims to streamline the integration of predictive insights related to Brazil’s climate by automating report generation, thus supporting governmental and organizational efforts with timely and reliable information on future climate scenarios. This project includes the collection of historical climate data specific to Brazil and the development of time series predictive models that estimate temperature and other climate metrics for each decade over the next half-century. Visualizations of Brazil's projected climate trends are also generated, providing clear insights into anticipated changes. The outputs from these predictive models are processed by agents and generative AI systems to produce comprehensive, automated reports. Ultimately, this study contributes to the advancement of automated climate analysis, enabling informed decisions driven by AI and expediting the generation of strategic climate reports.

**Introduction**

Concern for climate analysis is not a recent phenomenon. [1] As early as the 19th century, Luke Howard, in his seminal work *The Climate of London*, published in 1833, presented the results of a series of experiments and observations on the impacts of human activity on the climate, with a specific focus on the city of London. Although his analysis was limited to a geographically specific area, this work demonstrates that both concern for climate change and the need to study climate were already relevant issues at that time. To comprehend the increasing importance of climate change research for the public, it is essential to consider the growing body of studies focused on science communication. [2] A 2015 study by Jing Shi et al. investigates this relationship, illustrating how scientific knowledge and cultural perspectives collectively shape public perception of climate change and support for related policies. Their findings underscore the need for public communication strategies that convey scientific knowledge in ways that are culturally sensitive. By respecting the diversity of cultural values, such approaches can enhance public acceptance and foster a collective commitment to sustainable actions, as the authors conclude.

Recent studies in climate science emphasize that the impacts of human-induced climate change are critical and cannot be ignored. [3] Donald J. Wuebbles identifies global warming as partly attributable to the accumulation of greenhouse gases from fossil fuel combustion. While he acknowledges that greenhouse gases are essential for maintaining Earth’s habitability, he warns that human activities are elevating concentrations of carbon dioxide and other greenhouse gases to unprecedented levels, resulting in dire future projections if no substantial changes in energy policy are made. Supporting this, [4] J. Lelieveld shows that removing fossil fuel emissions could prevent about 3.6 million annual deaths, and eliminating all anthropogenic sources could increase this number to 5.5 million. Furthermore, aerosol removal would raise global temperatures by up to 0.73 °C but improve precipitation patterns in critical regions, enhancing water security. Lelieveld stresses that to limit warming to 2 °C, rapid elimination of fossil fuel emissions and reduction of short-lived greenhouse gases, such as methane, are essential. [5][6] The greenhouse gases are atmospheric components that, although present in smaller quantities, play a crucial role in global warming. These gases, such as carbon dioxide, water vapor, methane, and nitrous oxide, have the capacity to absorb longwave radiation emitted from Earth’s surface, thereby trapping heat in the atmosphere. This process, known as the greenhouse effect, raises temperatures at Earth’s surface and in the troposphere while causing cooling in the stratosphere. Increased concentrations of these gases intensify the greenhouse effect, resulting in shifts in precipitation and evaporation patterns and significantly impacting the global hydrological cycle, which may increase the frequency of extreme weather events, such as droughts and floods

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**Section 2. Related Works**

**Section 3. Research Methodology**

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