Climate Change Impact Assessment and Visualization: Bridging Data to Decision-Makers

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Abstract:

Climate change is a pressing global challenge with far-reaching implications. To address the urgent need for actionable climate data, we propose a comprehensive project aimed at assessing climate change impacts and providing accessible data to diverse stakeholders. This project leverages the latest climate models, data from the World Climate Research Program website, and geospatial information to offer insights into projected climate changes at various scales, from global to local. By developing visualization tools and focusing on key questions, we aim to empower stakeholders to make informed decisions and take proactive measures in the face of climate change.

1. Introduction: Why This Project Is Important

Climate change is a defining challenge of our time, with severe consequences for ecosystems, economies, and societies worldwide. The imperative to understand and mitigate these impacts has never been greater. This project addresses the critical need for reliable and accessible climate data to inform decision-making, adaptation strategies, and policy development. By providing stakeholders with the tools and insights they need, we aim to contribute to a more resilient and sustainable future.

2. Data Sources

Climate Data: The core of our project relies on climate data from the World Climate Research Program (WCRP) website. Specifically, we will access climate models from the Coupled Model Intercomparison Project Phase 6 (CMIP6) under various Shared Socioeconomic Pathways (SSP). The Coupled Model Intercomparison Project Phase 6 (CMIP6) is an international project that coordinates the development and evaluation of climate models. CMIP6 is the sixth phase of the CMIP project, which began in 1995.

CMIP6 is a major undertaking involving more than 60 modeling groups from around the world. The project will produce a large dataset of climate model simulations that can be used to study a wide range of climate questions.

Geospatial Data: To enhance our assessments, we will incorporate geospatial data from Open Street Map (infrastructure), and other sources will enable us to estimate population distributions and identify infrastructure elements affected by climate change.

3. Project Objectives

Our project is guided by the following objectives:

a. Climate Assessment: Utilize climate models to assess projected changes in temperature, precipitation, and other climatic variables under various emission scenarios.

b. Data Aggregation: Aggregate daily climate data into monthly, seasonal, and yearly values within global climatic grids, enabling comprehensive analysis.

d. Key Questions: Answer critical questions related to climate change impacts, including identifying regions most affected, assessing population vulnerabilities, and understanding infrastructure risks.

In conclusion, this project addresses the urgent need for accessible and comprehensive climate data to tackle the challenges posed by climate change. By leveraging reliable climate models, integrating geospatial data, and developing user-friendly visualization tools, we aim to empower stakeholders to take proactive measures, ultimately contributing to a more sustainable and resilient future.

References

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