Analysis of the Temporal Evolution of Climate Variables Such as Air Temperature and Precipitation at a Local Level: Impacts on the Definition of Strategies for Adaptation to Climate Change

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Climate change is a global issue that impacts neighboring regions and their communities in diverse ways. The unique characteristics of each territory necessitate adaptive measures to address climate change-induced challenges and build more resilient communities capable of adapting to this new reality. Tailoring measures to the specific needs of territories and their communities enhances their effectiveness. A deep understanding of local climate evolution and the requirements of resident populations is crucial for this purpose.

A survey conducted among citizens in Portugal revealed a consensus that climate change affects geographically close areas differently. In this study, Guimarães, a municipality in northern Portugal, was used as a case study. A comparative analysis was performed between the current climate, characterized by the 1971-2021 period, and the climate from a century ago, represented by the 1896-1905 decade. The goal was to identify trends in air temperature and precipitation variables.

The analysis showed an increase in winter temperatures and less uniform precipitation distribution throughout the year. These changes in air temperature and precipitation necessitate planning adaptive measures to enhance the territory's and its communities' resilience to climate change. By understanding the local climate changes and addressing the specific needs of resident populations, tailored solutions can be implemented to create more adaptable and robust communities.

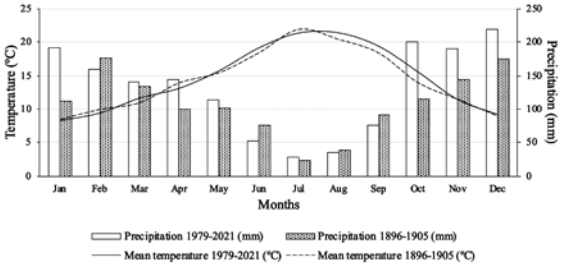

FIGURE 1
Overlay of climate data for the period of 1979–2021 and climate data for the period of 1896-1905.