Chapter 17
A Scientometric Analysis of Climatology Research Literature

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ABSTRACT

Climatology, the scientific study of climate and its long-term patterns and changes, has emerged as one of the most discussed subjects in the present day. This article presents a comprehensive analysis of climatology research through scientometric methods, aiming to track its growth, identify research trends, assess impact, and understand collaboration patterns. The analysis of publication data from 2013 to 2022 reveals a steady increase in the number of publications, indicating sustained growth in climatology research. Time series analysis predicts future trends, projecting a potential growth in literature in the coming years. The study explores various aspects, including document types, open access publications, language distribution, top publishers, and categories of research. Country-wise analysis highlights the prominent contributions of countries like the United States, China, and Germany to climatology research. The identification of prolific authors and their collaboration networks provides insights into key contributors and research partnerships in the field.

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1. INTRODUCTION

Climatology is the scientific study of climate, including long-term patterns, variations, and changes in long-term climates. This includes analyzing historical climate data, studying atmospheric processes, and using computer models to understand and predict climate patterns. Scientific measurement is the quantitative study of science, including publication trends, citations, and collaborations. By analyzing research outputs on climate, scientists can assess overall growth and development over time. They can identify emerging research areas, popular research topics, and patterns of collaboration among scientists. Analyzing climate research publications allows researchers to identify current research trends and areas of focus in the field. By examining the frequency of specific keywords or subject areas in publications, scientists can identify topics that receive significant attention from researchers. This helps researchers, policymakers, and funding agencies to effectively allocate resources and address pressing climate-related issues. The impact of scientific publications can be measured by analyzing citation patterns. Citation analysis helps identify influential research articles, leading researchers, and research groups that have made significant contributions to the field. Assessing the impact of climate research publications allows us to recognize groundbreaking discoveries, identify key contributors, and assess the impact of research on subsequent studies. In summary, analyzing research output in climate using scientometric methods helps track progress in the field, identify research trends, assess impact, and support evidence-based decision-making. It provides valuable insights to researchers, policy makers and society as a whole in addressing the challenges posed by climate change.

2. REVIEW OF LITERATURE

A clear understanding of the current state of knowledge in the field is established via review of literature. After conducting a comprehensive literature review, several notable articles making significant contributions to climatology and scientometrics studies were identified.

Yang Q, Zheng X, Jin L, Lei X, Shao B, Chen Y.were analyzed 3314 articles in the field of urban floods research from the beginning to the present using CiteSpace and VOSviewer. They identified two stages in the field: the first stage (2006–2015) with a low number of publications and the second stage (2016—present) with a progressive increase in publications, with 61.24% of articles published in the last five years. The study identified seven main clusters of keywords, focusing on topics such as model building and simulation, urban stormwater pollution, vulnerability and resilience, and urban stormwater management. However, limitations include