Research Trends in the Field of Black Carbon Monitoring: A Bibliometric Analysis

Nurzawani Md Sofwan

Environmental Health Program, Faculty of Health Sciences, Universiti Teknologi MARA Sarawak, Jalan Meranek, 94300 Kota Samarahan, Sarawak, Malaysia. Occupational Health and Safety Risk Management (OHSeRM) Research Initiative Group and Centre of Environmental Health and Safety, Faculty of Health Sciences, Universiti Teknologi MARA, 42300 Puncak Alam, Selangor, Malaysia

Author list (excluding presenting author)

Abstract

Black carbon (BC), which comes from a variety of sources of local or regional emissions, is one of the main components of PM. BC is also referred to as short-lived climate pollutants (SLCPs), which are linked to climate change. A bibliometric analysis was conducted to investigate the state of black carbon monitoring within air pollution research, utilizing a dataset from Scopus database, comprising 2146 articles published between 2000 and 2023. Less than 50 research articles were published annually in 2000, and beginning in 2009, a clear upward trend was seen. Institutions from both the United States and China accounted for 64.17 percent of all publications, indicating a significant interest in monitoring black carbon and raising awareness about black carbon pollution. A mere 3.31 percent of publications originated from institutions in Southeast Asia. This lower representation may be attributed to various factors such as disparities in research funding, infrastructure limitations, and differing research priorities compared to other regions. Cluster analysis revealed four main research topics for the BC monitoring: exposure assessment and health impacts, source of BC in the environment, environmental impacts and advanced techniques for monitoring and analysis. Black carbon research appears to span multiple disciplines, including environmental science, atmospheric chemistry, public health, and data science, highlighting the interdisciplinary nature of efforts to understand and mitigate its environmental and health impacts. The bibliometric analysis provides valuable insights into the current state of black carbon research, highlighting regional disparities, the evolving role of machine learning, and key areas of focus within the field. These findings can inform future research directions and collaborative efforts aimed at addressing the environmental and health impacts of black carbon pollution on a global scale.

Early Career Scientist

YES, I am an early career scientist.

IGAC Activities

ACAM: Atmospheric Chemistry and the Asian Monsoon, GEIA: Global Emissions Initiative, MAP-AQ: Monitoring, Analysis and Prediction of Air Quality

IGAC Regional Working Groups

MANGO: Monsoon Asia and Oceania Networking Group