

BIBLIOMETRIC ANALYSIS OF COASTAL ZONE MANAGEMENT

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1. Introduction

Bibliometric analysis is one of the most widely used and accepted tools for measuring the productivity of scientific. Bibliometrics, first introduced by Pritchard [1], has been widely used in recent years in a variety of research fields.. The main steps include collecting data from relevant databases, cleaning and processing data, and submitting the data to various bibliometric methods [2]. Bibliometric analysis has been used to study various scientific fields, such as in environmental issues]3-5], in order for research findings to highlight the areas that attract the interest of scientists and indicate future research directions. The present study aims to investigate and analyze the scientific production related to coastal zone management, through bibliometric analysis.

2. Methodology

In this paper, Elsevier's Scopus database is used, as it covers a significant part of the world's scientific production. We searched using Scopus for topics that contained three keyword combinations: "coastal AND zone AND management". The option to have these words in the title, abstract and keywords was chosen. We limited this search to material published up to 2024. Only works published in English (more than 95% of all documents) are selected. In addition, "trade journal" documents of the "source type" are excluded (approximately 274 documents). This initial search returned 23,450 documents.

3. Results

3.1. Analysis of documents per year

In order to have a comprehensive overview of research production, the number of documents and reports each year is analyzed. The first documents on the subject was published in 1967. Until 1990, the number of documents is low (double digits) with the exception of the years 1987 and 1989. From 1991 onwards there has been a continuous increase in documents on coastal zone management. It is characteristic that from 2017 onwards the number of documents amounts to over 1,000 documents per year, with a maximum in 2024 with a number of documents of 1,572 (Fig.1).

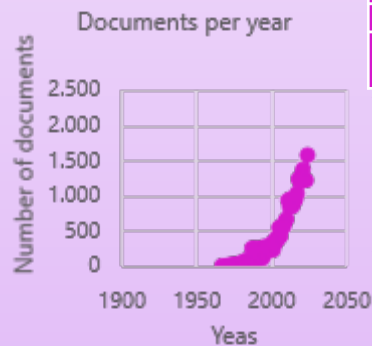


Fig.1. Documents per year.

3.2. Document type and source

Of the 23,450 documents recorded in Scopus from 1967 to 2024, fourteen document types are identified in the search. The types with the most documents are: articles in peer-reviewed scientific journals (17,393 articles - 74.2% of all publications), followed by conference papers (3,959 articles - 16.9%), reviews (996 articles - 4.2%) and book chapters (707, 3.2%). The remaining types correspond to <0.5% of documents (Table 1).

Table 1. Most popular document type.

| Document type | Documents (%) |
|------------------|---------------|
| Article | 74.20 |
| Conference Paper | 16.90 |
| Reviews | 4.20 |
| Book Chapter | 3.20 |

3.3. Analysis of the main sources of documents

There is an extraction limit of 160 terms when searching in Scopus. Consequently, all journals that published the research articles cannot be extracted. Thus, we analyze only the first 160 journals based on the number of documents. Almost 27% (6,381 documents) of the total number have been published in the first 10 journals. That is, almost a quarter of the documents are concentrated in the first 10 papers. Table 2 below presents the first 10 sources and the number of documents.

Table 2. Contribution of the top 10 source title.

| N | Source title | Documents |
|----|---|-----------|
| 1 | Ocean and Coastal Management | 1,831 |
| 2 | Journal of Coastal Research | 886 |
| 3 | Coastal Zone Proceedings of the Symposium on Coastal and Ocean Management | 571 |
| 4 | Coastal Management | 550 |
| 5 | Marine Policy | 524 |
| 6 | Marine Pollution Bulletin | 508 |
| 7 | Journal of Coastal Conservation | 444 |
| 8 | Science of the Total Environment | 420 |
| 9 | Estuarine Coastal and Shelf Science | 370 |
| 10 | Journal of Environmental Management | 277 |

Table 3 shows the contribution to documents of the top 10 producing countries. The most productive country is the USA in terms of the number of total documents from articles in a single country and international collaborations (5,553 documents), followed by the UK (2,350), China (2,106), Australia (2,027), Spain (1,263), Italy (1,189), France (1,047), Canada (1,030), India (1,028) and Germany (875).

Table 3. top 10 productive countries.

| Country | Documents |
|----------------|-----------|
| United States | 5553 |
| United Kingdom | 2350 |
| China | 2106 |
| Australia | 2027 |
| Spain | 1263 |
| Italy | 1189 |
| France | 1047 |
| Canada | 1030 |
| India | 1028 |
| Germany | 875 |

3.5. Affiliation Analysis

Among the top 160 most productive affiliations, Chinese Academy of Sciences is the most productive affiliation with 434 documents, followed by the CNRS Centre National de la Recherche Scientifique (372), the National Oceanic and Atmospheric Administration (282), the United States Geological Survey (246), the University of Queensland (235), the Ministry of Education of the People's Republic of China (233), the Ministry of Natural Resources of the People's Republic of China (231), the Commonwealth Scientific and Industrial Research Organisation (224), the James Cook University (214) and the University of Rhode Island (212).

3.6 Scientific field

The three most common scientific fields are: Environmental Science, Earth and Planetary Sciences, Agricultural and Biological Sciences - which is expected to focus research in these fields. However, the fourth most common scientific field is Social Sciences, reflecting the social dimension of this scientific field. The first two scientific fields account for 100% of the publications. It should be noted, however, that since a work can be classified in more than one scientific field, the sum of the percentages for each field exceeds 100%.

3.7. Keyword Analysis

The keywords extracted are a combination of author keywords (assigned to documents by authors) and keywords that have been indexed. In our research, a total of about 160 keywords were returned (131,721 total frequencies). The top keyword (based on frequency of use) is 'Coastal Zone Management' (frequency 8,019) which also represents our search. The next two top keywords are 'Coastal Zone' and 'Coastal Zones' with frequencies of 6,253 and 5,790 respectively. The fourth top keyword is interesting: 'Climate change' (frequency 2,676), revealing the direct relationship of coastal zone management with climate change.

4. Conclusions

Coastal zone management is an important scientific field, where a large number of documents deal with this important field, giving 23,450 documents from 1967 to 2024, with the largest number of documents being found from 2000 onwards. The type with the most documents is articles in scientific journals, followed by conference papers. The journals with the largest supply are related to this scientific field such as: Ocean and Coastal Management and the Journal of Coastal Research, which are in the first two positions. The USA and the UK are the two countries with the most relevant publications, leaving China in third place, while on the contrary the Chinese Academy of Sciences is the affiliation with the most documents. Environmental Science is, as expected, the top scientific field, while the keywords (coastal zone management and coastal management) directly represent the scientific field under investigation. In conclusion, it appears that coastal zone management is a widely studied scientific field, with significant contributions to science and growing interest among scientists worldwide.

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