

A Bibliometric Analysis Of Articles On Settlement In Scopus From 2000 To 2021 Using Social Network Analysis

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ABSTRACT

The aim of this study was to analyse the bibliographic characteristics and content of articles on settlement published in journals indexed by Scopus written by researchers from throughout the world from 2000 to 2021. We conducted a bibliometric and content analysis of publication in the Scopus database. We only retrieved articles written in English. We conducted content analysis using the VOSviewer software and visualized the co-occurrence of keywords and bibliographic coupling of sources and countries. Following the study protocol, we found 2200 articles on settlement over the past 22 years. The most productive journal that published these articles was Journal of Experimental Marine Biology and Ecology (n = 92). The most productive country were the United Kingdom (n = 671), respectively. Based on citations, the most influential authors, and journals were C. Small (n = 869), and Journal of Coastal Research (n = 1768), respectively. The keywords of research on settlement formed 8 clusters (e.g model, human settlement, structure, poverty, rural settlement, and urbanization). From a global perspective, settlement research in the past two decades has increased significantly. There were European published journals dominated publications. Thus, Asian country need to conduct more active research on this topic.

Keywords: Bibliometric; Settlement; Publications; Scopus; VOSviewer

INTRODUCTION

Studies on settlements have been carried out in many countries. The development issue on settlement is regarded as one of the contemporary international issues contained in one of the 17 Sustainable Development Goals (SDGs), namely goal 11: make cities and human settlements inclusive, safe, resilient and sustainable. Several countries have become the focus of attention. The various studies above show that the problem of settlement can no longer be considered a simple problem. Although some researchers have produced settlement articles, we have not found research in bibliometric articles on settlement utilized social network analysis.

This aim of this article was to provide useful data for understanding global publication trends regarding settlement. This study aimed to analyze the bibliographic characteristics and trends of articles on settlement published in journals indexed in Scopus written by researchers from throughout the world from 2000 to 2021 and to conduct an analysis of keyword co-occurrence using VOSviewer.

METHODOLOGY

This study did not involve human subjects; therefore, neither institutional review board approval nor informed consent was needed. This study was a descriptive and bibliometric analysis based on a literature database. The data in this study were retrieved from the Scopus database. To obtain the necessary data, this study used the keyword "Settlement" in the title, abstracts, and author's keywords. We also limited the searching criteria by only including articles in the last 22 years (2000 – 2021). In this step, we found 2200 articles. In the next step, we downloaded the articles from the scopus database and analyzed the 2200 articles that had been sorted by relevance.

In this study, the metadata and refined Scopus result values were retrieved in the RIS dataset format. However, before the bibliometric analysis, the consistency and reliability of the data were checked to address issues such as a lack of consistency

in country names and keywords. The data were also standardized to ensure consistency regarding key words that sometimes appeared in singular or plural, abbreviations, or other forms. The data obtained from the Scopus database were analyzed using VOSviewer software, and simple statistics were calculated using Microsoft Excel.

RESULT

Based on a search with the keyword "settlement", the result showed approximately 2200 documents. Most articles were listed under social sciences ($n = 710$, 32%), engineering ($n = 300$, 14%), agricultural and biological science ($n = 269$, 12%), environmental science ($n = 250$, 12%), and earth and planetary sciences ($n = 157$, 7%). The full distribution of settlement articles across the top 10 subject areas is shown in Fig. 1.

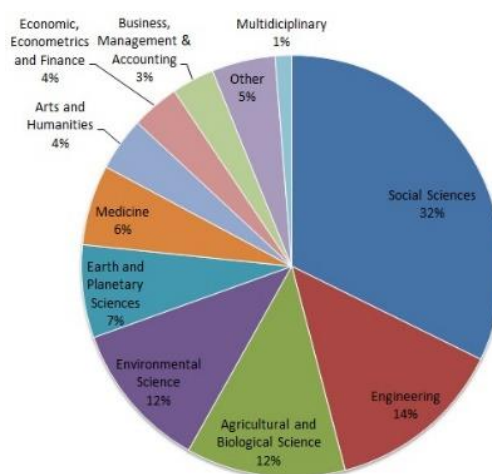


Fig. 1. Distribution of settlement based on subject area.

According to VOSviewer, the articles were published in 704 different journals. The highest number of articles were published in *Journal of Experimental Marine Biology and Ecology*, with 92 publications, followed by *Journal of Archaeological Science* ($n = 81$), *Journal of Geotechnical and Geoenvironmental Engineering* ($n = 67$), *Journal of International Economic Law* ($n = 52$), and

Yanshilixue Yu Gongcheng Xuebao/Chinese Journal of Rock Mechanics and Engineering (50). The other most productive journals with the most publications are shown in Table 1. There were five journals from United States, three journals each from Netherlands and United Kingdom, two journals from China, and one journals each from Canada and Switzerland.

In the period 2000 to 2021, the United Kingdom was the country with the most

Table 1. The most production journals based on the number of publications

Rank	Journal	No. of Publication	Country
1	Journal of Experimental Marine Biology and Ecology	92	Netherlands
2	Journal of Archaeological Science	81	United States
3	Journal of Geotechnical and Geoenvironmental Engineering	67	United States
4	Journal of International Economic Law	52	United Kingdom
5	Yanshilixue Yu Gongcheng Xuebao/Chinese Journal of Rock Mechanics and Engineering	50	China
6	Yantu Gongcheng Xuebao/Chinese Journal of Geotechnical Engineering	50	China
7	Canadian Geotechnical Journal	46	Canada
8	International Journal of Geomechanics	39	United States
9	Journal of World Trade	30	Netherlands
10	Journal of Anthropological Archaeology	30	United States
11	Journal of Field Archaeology	29	United Kingdom
12	International Journal of Environmental Research and Public Health	22	Switzerland
13	Journal of Shellfish Research	20	United States
14	Journal of Archaeological Science: Reports	18	Netherlands
15	Journal of Ethnic and Migration Studies	18	United Kingdom

Table 2 lists the most influential authors based on citations recorded by the Scopus database. The most influential author was C.

Citations	Authors	Title
869	C. Small	A global analysis of human settlement in coastal zones
404	B. van Geel	Environmental reconstruction of a Roman period settlement site in Uitgeest (the Netherlands), with special reference to coprophilous fungi
366	F. Neuner	A comparison of narrative exposure therapy, supportive counseling, and psychoeducation for treating posttraumatic stress disorder in an African refugee settlement
253	H. Liu	A geographically explicit genetic model of worldwide human-settlement history
250	M. Pesaresi	A global human settlement layer from optical HR/VHR RS data: Concept and first results
240	G. Fenton	Probabilistic foundation settlement on spatially random soil
227	G. Kung	Simplified model for wall deflection and ground-surface settlement caused by braced excavation in clays
218	F. Neuner	Treatment of Posttraumatic Stress Disorder by Trained Lay Counselors in an African Refugee Settlement: A Randomized Controlled Trial
209	M. Shahin	Predicting settlement of shallow foundations using neural networks
208	S. Kitayama	Voluntary settlement and the spirit of independence: Evidence from Japan's "northern frontier"
178	S. Dashti	Mechanisms of seismically induced settlement of buildings with shallow foundations on liquefiable soil
171	J. Buhl	Topological patterns in street networks of self-organized urban settlements
166	G. Zhang	Estimating liquefaction-induced ground settlements from CPT for level ground
164	B. Kemp	Genetic analysis of early holocene skeletal remains from Alaska and its implications for the settlement of the Americas
163	G. Fenton	Three-dimensional probabilistic foundation settlement
161	R.H. Lamprey	Expansion of human settlement in Kenya's Maasai Mara: What future for pastoralism and wildlife?
155	S. Gajan	Capacity, settlement, and energy dissipation of shallow footings subjected to rocking
153	S. Herzka	Changes in isotopic composition of red drum (<i>Sciaenops ocellatus</i>) larvae in response to dietary shifts: Potential applications to settlement studies
151	N. Patela	Multitemporal settlement and population mapping from landsat using google earth engine
144	R. Shahack-Gross	Geo-ethnoarchaeology of pastoral sites: The identification of livestock enclosures in abandoned Maasai settlements

publications on settlement, with 671 articles, followed by the United States with 637 articles. China, Pakistan, and India were the Asian countries ranked in the top 10 countries in terms of the most settlement publications. These three Asian countries ranked fourth, eighth, and tenth, respectively. The top 10 countries can be seen in Fig. 2.

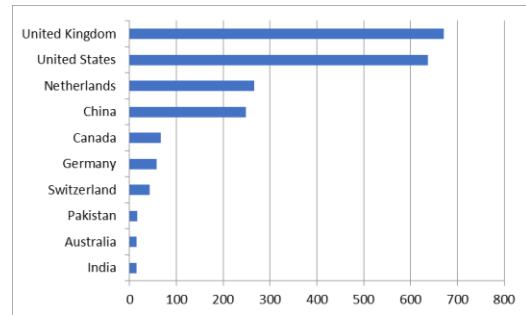


Fig. 2. Top 10 countries with publication of settlement.

Small, with 869 citations, followed B. Van Geel (n = 404), F. Neuner (n = 366), H. Liu (n = 253), and M. Pesaresi (n = 250). Table 3 present the influential source (i.e journals) based on citations. Journal of Coastal Research (n = 1768) was the most influential journal, followed by Topics in Applied Earth Observations and Remote Sensing (n = 1323), European Physical Journal B (n = 844), Journal of Biogeography (n = 680), and American Journal of Physical Anthropology (n = 590).

Table 2. The most influential authors and source based on citation analysis.

Table 3. The most influential countries and source based on citation analysis.

Source	Citations	Country
Journal of Coastal Research	1768	United States
IEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing	1323	United States
European Physical Journal B	844	Germany
Journal of Biogeography	680	United Kingdom
American Journal of Physical Anthropology	590	United States
Canadian Journal of Fisheries and Aquatic Sciences	560	Canada
American Journal of Human Genetics	523	United States
International Journal of Applied Earth Observation and Geoinformation	520	Netherlands
Journal of Geotechnical and Geoenvironmental Engineering	504	United States
Canadian Geotechnical Journal	395	Canada

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A content analysis was performed of the 2200 publications sorted by relevance. Next, we performed a co-occurrence analysis with VOSviewer, using the “all keyword” analysis unit and the “full counting” method. We limited the frequency of keyword occurrence to 5 times; out of 6761 keywords VOSviewer found 236 keywords that met the threshold. The results of this analysis are presented in Fig. 2.

Settlement (901), analysis (136), and informal settlement (90) were the top three keywords that appeared most frequently. Moreover, we found eight clusters in this analysis. Fig. 3 shows these keywords divided into 8 clusters (each with a different number of keywords), which are represented by colors. The first cluster (red, 65 keywords) focused on analysis, method, model, foundation, soil, and influence. The second cluster (green, 38 keywords) centered on human settlement, impact, dispute settlement, case, and implication. The third cluster (blue, 34 keywords) related to settlement, effect, structure, response, and role. The fourth cluster (yellow, 33 keywords) related to informal settlement, study, factor, poverty, and child. The five cluster (purple, 23 keywords) focused on case study, rural settlement, development, change, and research. The sixth cluster (light blue, 22 keywords) dealt with housing, cape town, condition, landscape, and urbanization. The seventh cluster (orange, 14 keywords) focused on evidence, area, evolution, land, and identification. The eight cluster (brown, 7 keywords) focused on subgrade settlement, system, and track.

Fig. 4 shows an overlay visualization of the settlement literature with the average number of publications from 2008 to 2014. There was a shift in topics; around 2010, the literature on settlement contained extensive discussions of the terms “settlement”, “structure” and “model”, and then the last 3 years discussed “informal settlement”, “refugee settlement”, and “urbanization”.

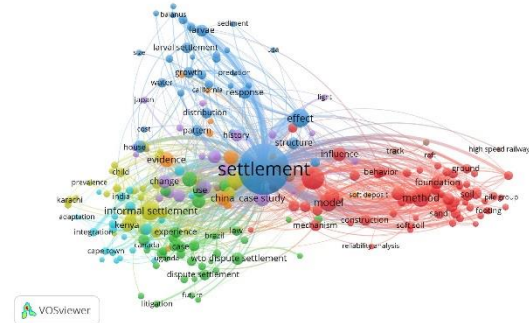


Fig. 3. Network visualization of settlement articles published globally in the Scopus database from 2000 to 2021

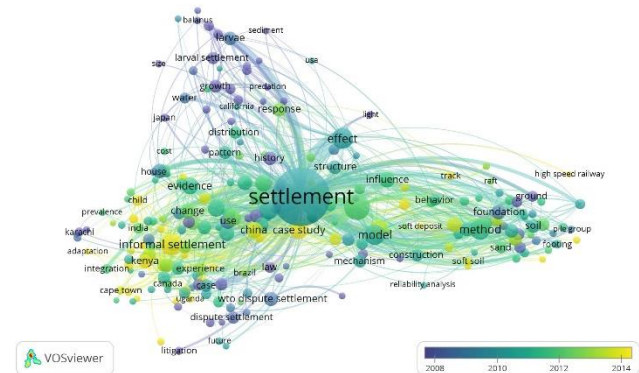


Fig. 4. Overlay visualization of global settlement articles.

DISCUSSION

Based on data from Scopus, the publication trends, journal performance, content analysis, and bibliographic coupling of countries and sources were analysed for research on settlement issues throughout the world. The current study focused on articles published in settlement. This study aimed to provide information on the status of publications in these fields. A total of 2200 studies published were recorded in the scopus database. The data showed the rapidity of article publications and the responsiveness of researchers in analyzing on settlement around the world. However, limited research from a global perspective on settlement in the past 3 years has discussed settlement and its relationship with governance within the scope of social science.

Based on Fig. 2, the most productive and influential country was the United Kingdom followed by the United States and Netherlands. Although country from Europe dominated the top

10 countries with the most publications by affiliated researchers, China, Pakistan and India is the country from Asia in the top 10.

The current study has limitations, we only retrieved studies from Scopus and did not use other source such as Web of Science, Crossref, or PubMed Central. Finally, we did not use other analyses in VOSviewer, such as co-citation or co-authorship. Thus, we hope that bibliometric research on this topic will expand in terms of the databases used, the subject areas, and the analyses conducted in order to provide a broader overview of the issue.

CONCLUSION

In the past two decades, global research on settlement has increased significantly. The theme of research on settlement related to environmental policy, policy implementation, and local government could be interesting for future discussions. There are also opportunities to foster discussion about settlement in social science journals related to public administration. Finally, Europe dominated this field in terms of publications, while research from Asia on this topic remains limited, and further research is therefore necessary.

CONFLICT OF INTEREST

No potential conflict of interest relevant to this article was reported.

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REFERENCES

Buhl, J. (2006). Topological patterns in street networks of self-organized urban settlements. *European Physical Journal B*, 49(4), 513-522, ISSN 1434-6028, <https://doi.org/10.1140/epjb/e2006-00085-1>

Dashti, S. (2010). Mechanisms of seismically

induced settlement of buildings with shallow foundations on liquefiable soil. *Journal of Geotechnical and Geoenvironmental Engineering*, 136(1), 151-164, ISSN 1090-0241, [https://doi.org/10.1061/\(ASCE\)GT.1943-5606.0000179](https://doi.org/10.1061/(ASCE)GT.1943-5606.0000179)

Fenton, G. (2002). Probabilistic foundation settlement on spatially random soil. *Journal of Geotechnical and Geoenvironmental Engineering*, 128(5), 381-390, ISSN 1090-0241, [https://doi.org/10.1061/\(ASCE\)1090-0241\(2002\)128:5\(381\)](https://doi.org/10.1061/(ASCE)1090-0241(2002)128:5(381))

Fenton, G. (2005). Three-dimensional probabilistic foundation settlement. *Journal of Geotechnical and Geoenvironmental Engineering*, 131(2), 232-239, ISSN 1090-0241, [https://doi.org/10.1061/\(ASCE\)1090-0241\(2005\)131:2\(232\)](https://doi.org/10.1061/(ASCE)1090-0241(2005)131:2(232))

Gajan, S. (2008). Capacity, settlement, and energy dissipation of shallow footings subjected to rocking. *Journal of Geotechnical and Geoenvironmental Engineering*, 134(8), 1129-1141, ISSN 1090-0241, [https://doi.org/10.1061/\(ASCE\)1090-0241\(2008\)134:8\(1129\)](https://doi.org/10.1061/(ASCE)1090-0241(2008)134:8(1129))

Geel, B. van (2003). Environmental reconstruction of a Roman period settlement site in Uitgeest (the Netherlands), with special reference to coprophilous fungi. *Journal of Archaeological Science*, 30(7), 873-883, ISSN 0305-4403, [https://doi.org/10.1016/S0305-4403\(02\)00265-0](https://doi.org/10.1016/S0305-4403(02)00265-0)

Herzka, S. (2000). Changes in isotopic composition of red drum (*Sciaenops ocellatus*) larvae in response to dietary shifts: Potential applications to settlement studies. *Canadian Journal of Fisheries and Aquatic Sciences*, 57(1), 137-147, ISSN 0706-652X, <https://doi.org/10.1139/f99-174>

Kemp, B. (2007). Genetic analysis of early holocene skeletal remains from Alaska and its implications for the settlement of the Americas. *American Journal of*

- Physical Anthropology*, 132(4), 605-621, ISSN 0002-9483, <https://doi.org/10.1002/ajpa.20543>
- Kitayama, S. (2006). *Voluntary settlement and the spirit of independence: Evidence from Japan's "northern frontier"*. *Journal of Personality and Social Psychology*, 91(3), 369-384, ISSN 0022-3514, <https://doi.org/10.1037/0022-3514.91.3.369>
- Kung, G. (2007). *Simplified model for wall deflection and ground-surface settlement caused by braced excavation in clays*. *Journal of Geotechnical and Geoenvironmental Engineering*, 133(6), 731-747, ISSN 1090-0241, [https://doi.org/10.1061/\(ASCE\)1090-0241\(2007\)133:6\(731\)](https://doi.org/10.1061/(ASCE)1090-0241(2007)133:6(731))
- Lamprey, R.H. (2004). *Expansion of human settlement in Kenya's Maasai Mara: What future for pastoralism and wildlife?*. *Journal of Biogeography*, 31(6), 997-1032, ISSN 0305-0270, <https://doi.org/10.1111/j.1365-2699.2004.01062.x>
- Liu, H. (2006). *A geographically explicit genetic model of worldwide human-settlement history*. *American Journal of Human Genetics*, 79(2), 230-237, ISSN 0002-9297, <https://doi.org/10.1086/505436>
- Neuner, F. (2004). *A comparison of narrative exposure therapy, supportive counseling, and psychoeducation for treating posttraumatic stress disorder in an African refugee settlement*. *Journal of Consulting and Clinical Psychology*, 72(4), 579-587, ISSN 0022-006X, <https://doi.org/10.1037/0022-006X.72.4.579>
- Neuner, F. (2008). *Treatment of Posttraumatic Stress Disorder by Trained Lay Counselors in an African Refugee Settlement: A Randomized Controlled Trial*. *Journal of Consulting and Clinical Psychology*, 76(4), 686-694, ISSN 0022-006X, <https://doi.org/10.1037/0022-006X.76.4.686>
- Patela, N. (2015). *Multitemporal settlement and population mapping from landsat using google earth engine*. *International Journal of Applied Earth Observation and Geoinformation*, 35, 199-208, ISSN 1569-8432, <https://doi.org/10.1016/j.jag.2014.09.005>
- Pesaresi, M. (2013). *A global human settlement layer from optical HR/VHR RS data: Concept and first results*. *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, 6(5), 2102-2131, ISSN 1939-1404, <https://doi.org/10.1109/JSTARS.2013.2271445>
- Shahack-Gross, R. (2003). *Geo-ethnoarchaeology of pastoral sites: The identification of livestock enclosures in abandoned Maasai settlements*. *Journal of Archaeological Science*, 30(4), 439-459, ISSN 0305-4403, <https://doi.org/10.1006/jasc.2002.0853>
- Shahin, M. (2002). *Predicting settlement of shallow foundations using neural networks*. *Journal of Geotechnical and Geoenvironmental Engineering*, 128(9), 785-793, ISSN 1090-0241, [https://doi.org/10.1061/\(ASCE\)1090-0241\(2002\)128:9\(785\)](https://doi.org/10.1061/(ASCE)1090-0241(2002)128:9(785))
- Small, C. (2003). *A global analysis of human settlement in coastal zones*. *Journal of Coastal Research*, 19(3), 584-599, ISSN 0749-0208, https://api.elsevier.com/content/abstract/scopus_id/0042427253
- Zhang, G. (2002). *Estimating liquefaction-induced ground settlements from CPT for level ground*. *Canadian Geotechnical Journal*, 39(5), 1168-1180, ISSN 0008-3674, <https://doi.org/10.1139/t02-047>