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Abstract

Scientometric methods and resulting citations have been applied to investigate the scientific performance of country. The study examines performance on the basis of output published in the Oceanographic Research output during the study period 2015 to 2019 at the world perspective. A total of 3212 articles were retrieved according to the selection criteria from Web of Science database. The study focuses on various aspect of the Oceanography Research such as growth of publications, prolific authors, document types and institutions involved. The highest number of publication is in the year 2016 with 1179 records, whereas the minimum records published in 2019 i.e. 370. The majority of articles were written by Chen XJ 22 articles. The USA was found to be leading the research with 1144 articles. The researcher suggests for further study of this area research can be carried out the Bradford's Law, Degree of collaboration (DC), and Geographical wise distribution of the Research.

Keywords: Oceanography, Scientometrics, Sources wise, Language wise and Institutions wise

Introduction

Oceanography, also known as oceanology is the study of the physical and biological aspects of the ocean. This is an important earth science, which covers a wide range of issues including ecosystem dynamics; Dynamics of ocean currents, waves and geophysical fluids; Plate tectonics and ocean floor geology; and fluxes of various chemicals and physical properties in the ocean and across its borders.

Four levels of oceanography physical oceanography, chemical oceanography, marine geology and marine ecology. The physical oceanography continues the movement of the ocean's seawater properties (temperature, density, pressure, and more) and the interactions between the sea water and atmosphere. Chemical oceanography deals with the composition of sea water and the biochemical substances that affect it. Marine geology focuses on the structure, characteristics and evolution of the ocean basin. Marine ecology, also known as biological oceanography, involves the study of ocean flora and fauna, including life cycle and food production. The first international organization of oceanography was created in 1902 as the International Council for the Exploration of the Sea.

Nolymov and Mulchenko (1971) used of the term "Scientometrics" in 1969 and defined it as a quantitative study of various types of intelligence processes in the development of science. The term has gained widespread acceptance from the journal Scientometrics, created in 1978. Scientometrics a discipline that can use mathematical methods to measure the success and performance of scientific research and provide scientific basis for scientific decision making and management. Scientometric suses data sources analysis and other quantitative methods to evaluate scientific research activities and thus guide science policy.

OBJECTIVES

The main objectives are to study the performance on Oceanography during 2015 to 2019, based on the publication of Web of Science Database. The specifics objectives are

- ➢ To study the Year wise distribution of publications
- ➢ To examine the Document type distribution of publications output
- ➢ To analyses the authorship pattern
- ➢ To identify the Language wise distribution of the articles
- ➢ To identify journal wise distribution of records output
- ➢ To identify the Institution wise research concentration
- ➢ To identify Country wise Collaborative Distribution of Publications

MATERIALS AND METHODOLOGY

This study was done based on the publication data from Web of Science (WoS) database at the Global for the last five years (2015 to 2019). A total of 3212 records were found. A number of keyword, such as 'oceanography' and were used in "title, abstract and keyword" tag and restricting it to during the period 2015 to 2019 in "date range tag" was used for searching the global publication data. It becomes the string of the original search.

LITERATURE REVIEW

(Ahmad & Batcha, 2019) analyzed research productivity in Journal of Documentation (JDoc) for a period of 30 years between 1989 and 2018. Web of Science database a service from Clarivate Analytics has been used to download citation and source data. Bibexcel and Histcite application software have been used to present the datasets. Analysis part focuses on the parameters like citation impact at local and global level, influential authors and their total output, ranking of contributing institutions and countries. In addition to this scientographical mapping of data is presented through graphs using VOSviewer software mapping technique.

(Batcha, 2018) studied on Cardiovascular disease research in eight countries (SAARC) based on publications output covered in Web of Science database. The objective has carried out the international cooperation study most productive SAARC shares 5 countries, compare research SAARC output with world output and its increased dynamically and its growth decline. The study restored and downloaded 15 years publication information of SAARC countries from cardiovascular disease research duration of Web of Science. The results of the study reveal that India can be a leading country among the SAARC countries with the main research about 77.81% followed by Pakistan 13.84 Cardiovascular disease research. In collaboration coefficient of India's cooperation rank is less but other SAARC countries relatively high.

(Chaman et al, 2017) they studies, India's performance based on its publication research output on authors, document types, documents, institution wise, source-based distribution, publications and international cooperation in various fields of oceanographic research during the period 2011-2015 years. The study reveals that most researchers prefer to publish the results of

their research in a journal; as 5.22% of articles were published in the journal, more articles were published in 2015. The study reveals that the overall average citations per paper were 2.32.

(Chandrakasan, R. 2014) he examines the research of oceanography in India. The data was collected from Aquatic Science and Fisheries Abstract (ASFA) data base for Fifteen years from 2008 to 2013. It was found that the analysis was a research growth, authors productivity, authorship Pattern, Geographical Distribution of Literature, Global Publications' Share, International Cooperation articles and Major collaboration Partner Countries and Research in most productive journals is a type of communication. The result was found mostly Researchers prefer to publish the results of their research in the journal, 61.78% article was published in the magazine in 2013. He observed that the author is not in agreement with the Lotka's Law.

(Weiwei et al, 2009) they examine on a bibliometric analysis in ocean circulation research during 1991 to 2005. The data was retrieved from the Science Citation Index (SCI) database of Institute of Scientific Information (ISI). The study analysed Includes document types, article output, journal distribution and publication country activity. An indicator, citation per publication (CPP) a publication was applied to evaluate the scientific impact. The cumulative relationship between them Articles and years were modeled. Three dominant categories are selected and their output Growth was modeling.The result found, 47% articles sharedby the United States with CPP up to 5.9. The Woods Hole Oceanography Institute was the highest in the United States Productive Institute with a CPP of 6.8. In the citation analysis, a 5th year citation mode was found. A paper life model was applied to compare the cumulative citation of the increasing rates of different years.

RESULTS

Table 1: Year wise Distribution of Oceanography Research Output in the World

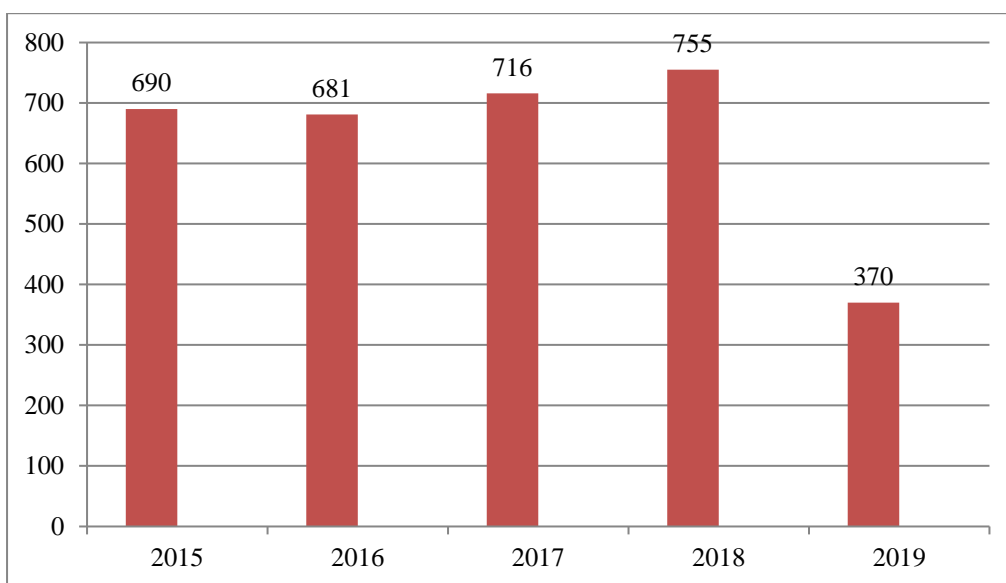| Year	Recs.	%	TLCS	TGCS
2015	690	21.48	525	7872
2016	681	21.20	352	4781
2017	716	22.29	232	3027
2018	755	23.51	91	1164
2019	370	11.52	8	105
Total	3212	100	1208	16949

Figure: 1 Year wise Distribution

Table 1 shows the year wise distribution of Oceanographic Research output at the World from the year 2015 to 2019. A total of 3212 records published during the study period. The highest number of publication is in the year 2018 with 755 (23.51%) records, having a Total Global Citation Score of 1164 and a Local Citation Score of 91 followed by 716 (22.29%) papers in the year 2017 with a TGCS of 3027 and a TLCS of 232.The year 2015 has scored the maximum Global citation score of 7872 with 690 (21.48%) articles. Next in the year of 2016 with 681 (21.29%) publications. 2019 year is the lowest articles published i.e. 370 (11.52%). It could be found from the table that even minimum numbers of records have scored higher global citation scores.

Table 2: Documents Type Analysis of Oceanography Research in the World

Sl. No.	Document	Recs.	%	TGCS	TLCS
1	Article	2928	91.2	1066	15138
2	Review	120	3.7	90	1193
3	Article; Proceedings Paper	97	3	31	423
4	Editorial Material	22	0.7	2	35
5	Article; Data Paper	20	0.6	6	57
6	Review; Book Chapter	8	0.2	11	95

7	Correction	6	0.2	0	3
8	Article; Early Access	3	0.1	0	0
9	Meeting Abstract	2	0.1	0	0
10	News Item	2	0.1	0	0
11	Article; Retracted Publication	1	0	2	4
12	Letter	1	0	0	0
13	Reprint	1	0	0	1
14	Retraction	1	0	0	0
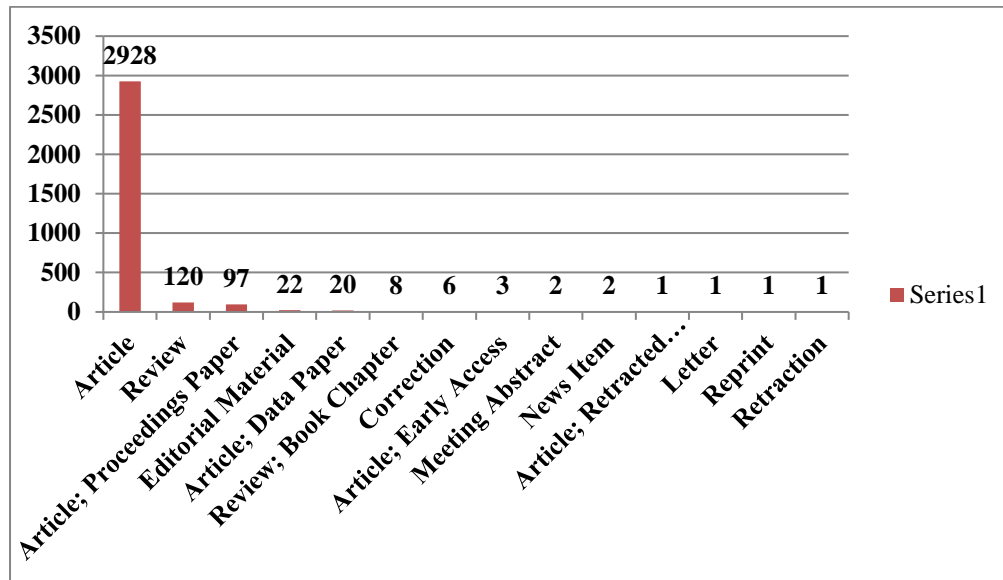
Figure: 2 Document Types

Table 2 reveals that the majority of 2928 (91.2%) papers Articles has been in first position followed by Reviews120 (3.7%), Article Proceeding Papers 97 (3%), Editorial Materials 22 (0.7%), Article Data Papers 20 (0.6%) and Retraction is the lowest record i.e. 1. It is interesting to note that based on the Global Citation Score in the field of Oceanographic research; Article placed in first position with 1066 TGCS, and followed by Review with 90 TGCS which has occupied in the second place and Articles Proceeding Papers with 31 TGCS.

Table 3: Top 20 Prolific Authors of Oceanography Research in the World

Sl. No.	Author	Recs.	%	TLCS	TGCS
1	Chen XJ	22	0.7	21	50
2	Bograd SJ	19	0.6	40	300
3	Chen Y	17	0.5	13	43
4	Hazen EL	17	0.5	40	297
5	Hernandez-Molina FJ	12	0.4	7	61
6	Chavez FP	11	0.3	13	146
7	Gaxiola-Castro G	11	0.3	9	81
8	Landaeta MF	11	0.3	3	19
9	Li Y	11	0.3	3	20
10	Mazzola S	11	0.3	16	40
11	Serrao EA	11	0.3	7	74
12	Bonanno A	10	0.3	15	36
13	Carniel S	10	0.3	13	77
14	van Sebille E	10	0.3	9	58
15	Yu W	10	0.3	17	34
16	Benetazzo A	9	0.3	11	80
17	Costa DP	9	0.3	22	144
18	Cuttitta A	9	0.3	12	42
19	Durazo R	9	0.3	8	69
20	Guinet C	9	0.3	8	94

Table 3 indicates that top twenty authors written between 2015 to 2019. It was interesting to know who was the most productive written in the field of Oceanographic Research during this period. The search revealed that Shubert with 22 (0.7%) articles was the most productive Scientist in Oceanographic Research. Bograd SJ has written 19 (0.6%) articles and ranked second position. Chen Y and Hazen EL each with 17 (0.5%) articles appeared in the next positions, respectively.

Table 4: Journal wise Contribution of Oceanography Research in the World

Sl. No.	Name of the Journal	Recs.	%	TLCS	TGCS
1	Plos One	97	3	0	705
2	Marine Ecology Progress Series	94	2.9	57	462

3	Journal of Geophysical Research-Oceans	79	2.5	29	428
4	Progress in Oceanography	75	2.3	65	598
5	Deep-Sea Research Part Ii-Topical Studies in Oceanography	68	2.1	48	458
6	Frontiers in Marine Science	64	2	0	171
7	Fisheries Oceanography	57	1.8	35	171
8	Scientific Reports	51	1.6	0	367
9	Journal of Marine Systems	45	1.4	29	194
10	Estuarine Coastal and Shelf Science	44	1.4	13	179
11	Continental Shelf Research	40	1.2	20	152
12	Deep-Sea Research Part I-Oceanographic Research Papers	40	1.2	23	236
13	Palaeogeography Palaeoclimatology Palaeoecology	39	1.2	8	223
14	Ices Journal of Marine Science	37	1.2	23	194
15	Journal of Coastal Research	33	1	3	45
16	Marine Biology	33	1	5	113
17	Fisheries Research	32	1	19	157
18	Oceanography	30	0.9	27	171
19	Marine Geology	28	0.9	23	177
20	Quaternary Science Reviews	28	0.9	29	176

Table 4 reveals the contribution of top twenty journals in Oceanography Research. It found out that Plos One journal stands first with 97 (3%) articles followed by the journal Marine Ecology Progress Series with 94 (2.9%) articles. It has clearly seen that the Journal of Geophysical Research-Oceans 79 (2.5%) stands third with 1600 records. The Journal Progress in Oceanography i.e. 75 (2.3%) records and it stands fourth position. In the fifth place, the Deep-Sea Research Part Ii-Topical Studies in Oceanography having 68 (2.1%) records.

Table 5: Institution wise Contribution of Oceanography Research in the World

Sl. No.	Institution	Recs.	%	TLCS	TGCS
1	NOAA	179	5.6	119	1433
2	University Washington	84	2.6	44	851
3	Woods Hole Oceanography Inst.	84	2.6	47	897

4	CSIC	75	2.3	26	387
5	Oregon State University	75	2.3	50	755
6	University Calif Santa Cruz	74	2.3	67	650
7	Chinese Academy Science	65	2	17	373
8	CNR	62	1.9	32	343
9	University Calif San Diego	61	1.9	31	447
10	Russian Academy Science	56	1.7	23	130
11	University Concepcion	54	1.7	29	266
12	University Tasmania	50	1.6	28	307
13	University Bremen	49	1.5	33	312
14	IFREMER	47	1.5	36	327
15	University Nacl Autonoma Mexico	43	1.3	2	97
16	University Southampton	43	1.3	31	460
17	US Geol Survey	42	1.3	14	299
18	CNRS	40	1.2	33	400
19	Hokkaido University	40	1.2	41	201
20	University Sao Paulo	38	1.2	15	149

Table 5 shows that the top 25 were selected Institutions for the present study. It could be seen that from the table, the highest number of 179 (5.6%) records contributed by NOAA has occupied the first position. The University of Washington and Woods Hole Oceanography Institution same contributed 84 (2.6%) articles. It is interesting to know which institutions were the most productive shared records in the field of Oceanographic research were during the period. CSIC and Oregon State University the same record contributed i.e. 75 (2.3%).

Table 6: Language wise distribution of Oceanography Research Output in the World

Sl. No.	Language	Recs.	%	TLCS	TGCS
1	English	3173	98.8	1208	16914
2	Spanish	25	0.8	0	20
3	French	6	0.2	0	9
4	Chinese	5	0.2	0	6
5	Japanese	3	0.1	0	0

Table 6 indicates that, for all of the 3212 records, the language of the publication was examined. The language distribution of the 3212 articles, though overwhelming majority English language 3173 (98.8%), includes Spanish 25 (0.8%) articles, French 6 (0.2%), Chinese 5 (0.2%) articles

and Japanese 3 (0.1%) articles. It is interesting from the above Table shows that TLCS has scored zero in Spanish, French, Chinese Japanese language.

Table 7: Country wise contribution of Oceanography Research Output in the World

| Sl. No.	Country	Recs.	%	TLCS	TGCS
1	USA	1144	35.6	516	7529
2	UK	423	13.2	206	3329
3	Spain	321	10	122	1586
4	France	306	9.5	135	1769
5	Germany	296	9.2	149	2112
6	Italy	263	8.2	118	1420
7	Australia	255	7.9	138	1867
8	Canada	245	7.6	129	1718
9	Peoples R China	221	6.9	64	1213
10	Mexico	158	4.9	30	456
11	Brazil	154	4.8	40	605
12	Japan	139	4.3	70	847
13	Chile	138	4.3	50	531
14	Norway	134	4.2	57	1007
15	Portugal	111	3.5	47	553
16	South Africa	97	3	53	715
17	Russia	90	2.8	29	306
18	India	86	2.7	18	219
19	Netherlands	84	2.6	30	530
20	Denmark	78	2.4	39	429
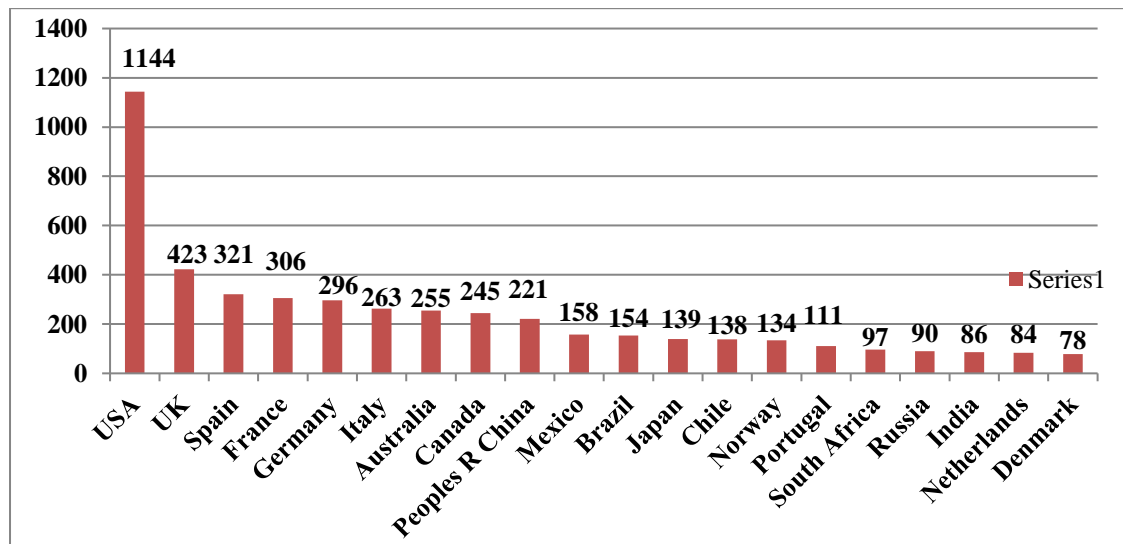
Figure: 3 Country Wise Contribution

The following Table 7 represents there are 3212 records publication on Oceanographic Research at the world from 120 countries. The United States publishes 1144 (35.6%) records with 7529 TGCS and 516 TLCS followed by the United Kingdom 423 (13.2%) and Spain 321 (10%) publications at this time on Oceanographic. India has published 86 records (2.7%) and occupied 18 rank. The articles shared by five countries (South Africa, Russia, India, Netherlands and Denmark) contributions below 100.

CONCLUSION

On the basis of this analysis, it could be concluded based on the results on Oceanographic Research output at the World perspective from 2015 to 2019 (five years). A total 3212 records retrieved from Web of Science (WoS) in the field study of Oceanography. The maximum number of articles published in 2018 with 755 records. It is inference that dominant sources are compared in the format of journal articles from other sources. English is the medium of communication in Oceanography Research output at the world for it is widely recognized all over the world. The majority English language was written by authors. It is also inference that the majority of 2928 (91.2%) records from Articles have been placed in first rank. The USA country stood first rank for contributing 1144 articles. Finally, it is concluded that the result of a Scientometric study that focuses on the field of Oceanographic research output and the collaboration among authors, institutions and countries at the World Oceanography Research output has been gradually increased year by year.

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