2025 Scientific Ocean Drilling Bibliographic Database and Publication Impact Report

Covering records related to the Deep Sea Drilling Project,
Ocean Drilling Program, Integrated Ocean Drilling Program,
and International Ocean Discovery Program
from 1969 through June 2025

Produced by
International Ocean Discovery Program
Publication Services

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Introduction

This Scientific Ocean Drilling Bibliographic Database and Publication Impact Report demonstrates the impact of Program science through publications from the Deep Sea Drilling Project (DSDP), Ocean Drilling Program (ODP), and Integrated Ocean Drilling Program/International Ocean Discovery Program (IODP). The first section presents statistics from the bibliographic records indexed by the American Geosciences Institute (AGI) in the Scientific Ocean Drilling Bibliographic Database (previously named the Ocean Drilling Citation Database) as of June 2025. The second section covers alternative impact metrics. Citation statistics obtained from Google Scholar in July 2025 and links to Altmetric scores for high-impact papers demonstrate trends in societal relevance and research usage.

Report categories

Data collected from the Scientific Ocean Drilling Bibliographic Database are divided into two main categories:

- Program records: publications produced and published by the ocean drilling Programs DSDP, ODP, and IODP. These records include but are not limited to
  - The *Initial Reports of the Deep Sea Drilling Project*,
  - The *Initial Reports* and *Scientific Results Proceedings* volumes of ODP,
  - The *Proceedings* volumes of IODP,
  - ODP and IODP *Preliminary Report*s,
  - IODP *Scientific Prospectus*,
  - The technical note series of ODP and IODP, and
  - The journal *Scientific Drilling* from 2006 to 2013.
- Non-Program records: Program-related scientific research published in the open literature. Non-Program publications are further categorized into three groups:
  - Serial records: drawn from any periodically produced analytic or monographic journal or report, especially those that are peer reviewed, but may also include reports from universities, organizations, or government entities (e.g., *Open-File Reports—U.S. Geological Survey*).
  - Theses and dissertations: Bachelor's and Master's theses and Ph.D. dissertations.
  - Miscellaneous records: books, reports, maps, abstracts, posters, newsletters, videos, and CD-ROM/DVD-ROMs.

Scientific Ocean Drilling Bibliographic Database

The Scientific Ocean Drilling Bibliographic Database is a subset of AGI's GeoRef database. To generate the GeoRef database, AGI indexes and records bibliographic data from more than 3,500 domestic and international publications. AGI also has arrangements to acquire metadata with many publishers including Springer, Elsevier, the American Association for the Advancement of Science, Copernicus, Wiley, the American Geophysical Union, MDPI, IOP, and most of the GeoScienceWorld publishers. In addition, IODP Publication Services notifies AGI when Program publications are released.

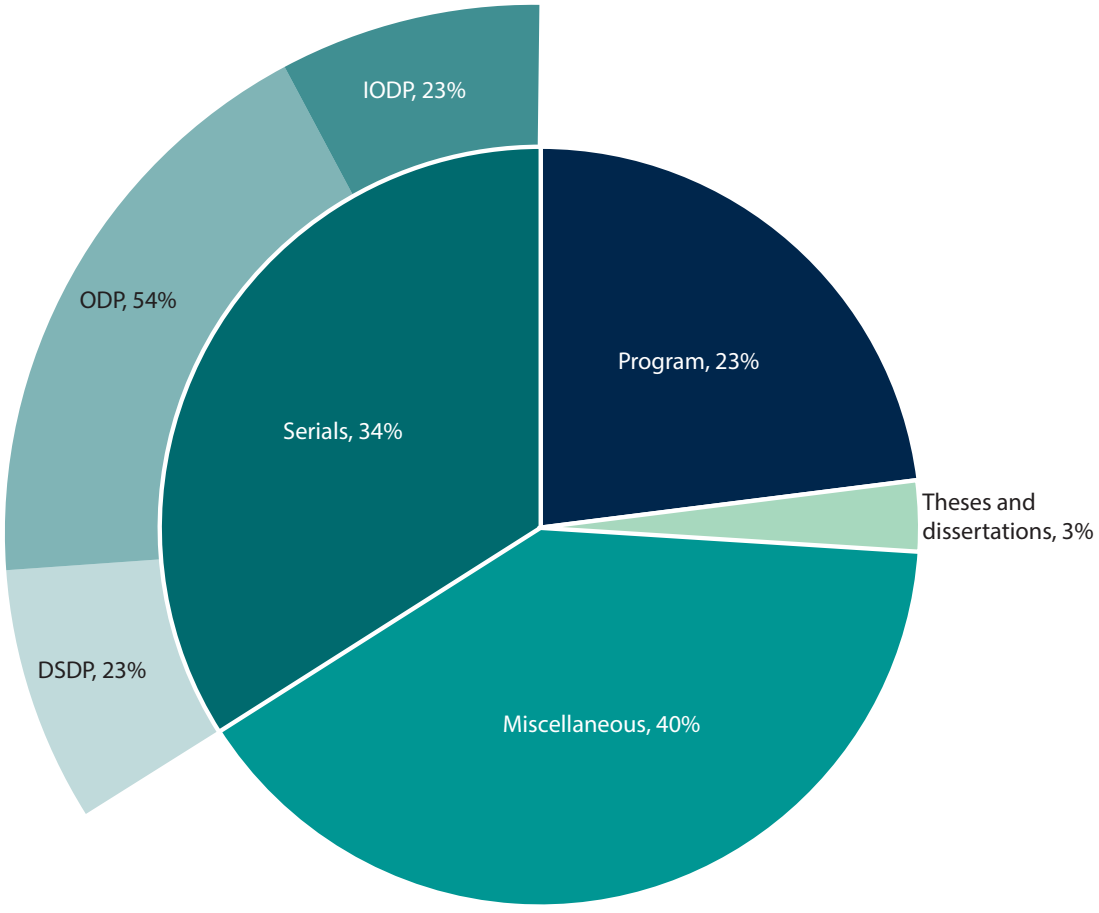
AGI produces the Scientific Ocean Drilling Bibliographic Database in collaboration with IODP. AGI uses a series of keywords to extract bibliographic records related to Program research from the GeoRef database. The database resides on the AGI server (**http://iodp.americangeosciences.org/vufind**) and is updated weekly. Metadata associated with each record can be saved to a personalized list, texted or

emailed, or exported into common bibliographic software. The database also generates references in several formats.

Depending on the source from which AGI acquires its information, there may be a significant delay after publication before a record is included in the GeoRef database and later in the Scientific Ocean Drilling Bibliographic Database. There is no guarantee that all publication venues for Program research are included in GeoRef or the Scientific Ocean Drilling Bibliographic Database, but scientific publications throughout the world are represented.

As of June 2025, the database contains 43,625 records, each including metadata, from publications published from 1969 to 2025 (beginning of DSDP to present), including ~77% non-Program records and ~23% Program records (Figure 1). Since the 2024 report, 880 records have been added to the database. Figure 1 highlights the ~3% theses and dissertations (total = ~1,300) in the database that illustrate early career scientific research relating to the Program and details serial and Program publications related to IODP and its predecessor programs.

Figure 1. Overview of records in the Scientific Ocean Drilling Bibliographic Database as of June 2025 (total = 43,625).



All Programs (1969–2025)

Publications from top-ranking peer-reviewed journals

Database records indicate that 14,800 Program-related papers have been published in non-Program, primarily peer-reviewed serial publications. A total of ~6,400 of these research papers (~43% of the serial publications in the database) were published in 25 highly ranked (impact factor > 3.0) peer-reviewed journals, based on the Clarivate Analytics 2024 Journal Impact Factor (JIF) Report (Figure 2). Starting in 1996, ODP encouraged scientists to publish postcruise research results in English language peer-reviewed journals rather than the Program *Proceedings* volumes. Figure 2 includes the highly ranked journals that have published a total of 40 or more research papers related to DSDP, ODP, and IODP. Journal impact factors are shown in parentheses. Table 1 presents the data behind this graph.

Figure 2. Highly ranked (JIF > 3.0) peer-reviewed serials that have published >40 Program-related expedition research manuscripts (1969–2025). * = includes Paleoceanography (name change in 2018).

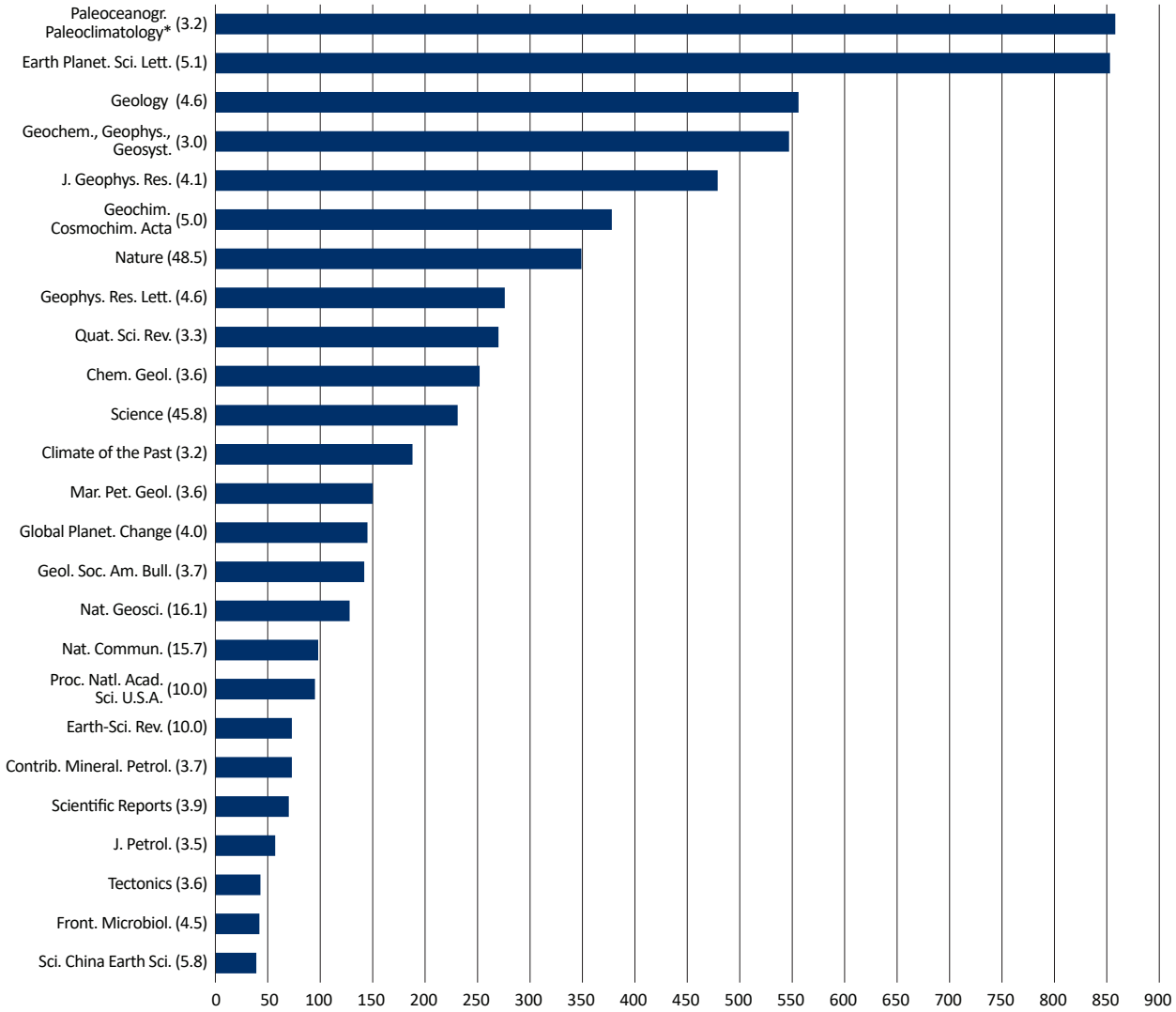


Table 1. Highly ranked peer-reviewed serials publishing Program-related expedition research results (1969–2024). * = includes Paleoceanography papers (name changed in 2018).

Journal	Journal Impact Factor (2024)	Number of Program-related papers published
Nature	48.5	349
Science	45.8	231
Nature Geoscience	16.1	128
Nature Communications	15.7	98
Earth-Science Reviews	10.0	73
Proceedings of the National Academy of Sciences of the USA	10.0	95
Science China Earth Sciences	5.8	39
Earth and Planetary Science Letters	5.1	853
Geochimica et Cosmochimica Acta	5.0	378
Geology	4.6	556
Geophysical Research Letters	4.6	276
Frontiers in Microbiology	4.5	42
Journal of Geophysical Research	4.1	479
Global and Planetary Change	4.0	145
Scientific Reports	3.9	70
Geological Society of America Bulletin	3.7	142
Contributions to Mineralogy and Petrology	3.7	73
Marine and Petroleum Geology	3.6	150
Chemical Geology	3.6	252
Tectonics	3.6	43
Journal of Petrology	3.5	57
Quaternary Science Reviews	3.3	270
Climate of the Past	3.2	188
Paleoceanography and Paleoclimatology*	3.2	858
Geochemistry, Geophysics, Geosystems	3.0	547

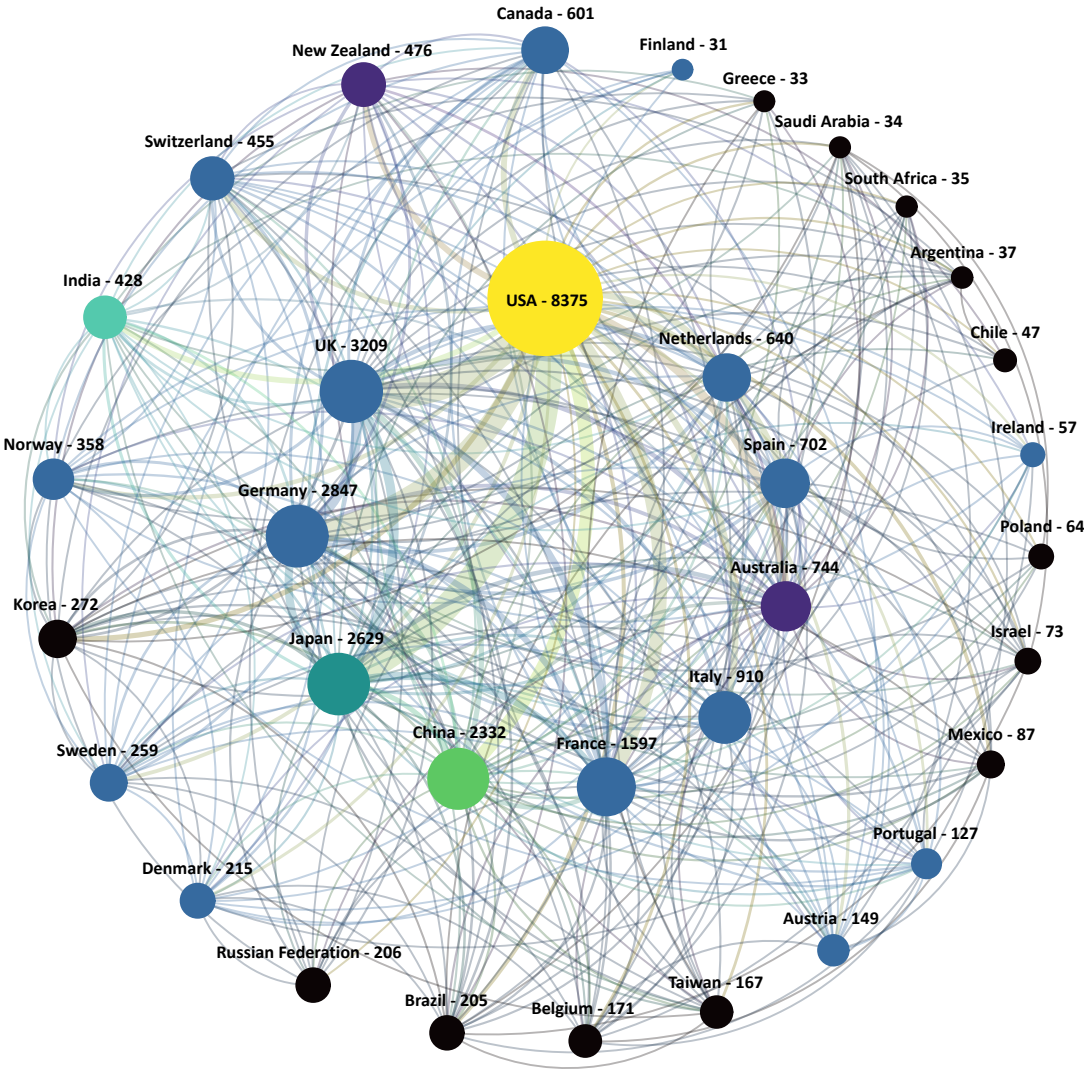
Publication co-author networks

Figure 3 shows co-author networks by country based on the serial records in the database for DSDP, ODP, and IODP. Each time authors publish a paper together, a line connects their countries; no line is shown if authors from the same country publish together. Each connecting line shows a minimum of 5 collaborations; line thickness indicates relative number of individual collaborations between authors from the two countries. All countries in the database that have a total of 30 or more author contributions are included in the figure.

The numbers next to the country names indicate the total number of times affiliations from each country are listed for authors and include first and contributing authors and multiple contributors from a single country per paper. The size of the circle indicates the relative number of authors. The circle colors indicate IODP member countries at the end of the program in 2024 (black = nonmember countries). Line colors are a mixture of the colors between collaborating countries.

Co-author networks were generated in Gephi (**https://gephi.org**) with the help of the Convert Excel and CSV files to Networks and Give Colors to Nodes plug-ins (**http://www.clementlevallois.net**).

Figure 3. Co-author networks for all authors of Program-related peer-reviewed journal articles (2003–2024).



Integrated Ocean Drilling Program and International Ocean Discovery Program

Publications by expedition

Figures 4 and 5 show the number of Program (scientific prospectus, preliminary reports, expedition reports, and data reports) and non-Program serial (peer-reviewed journal) publications for IODP expeditions for which Expedition Reports volumes are published (August 2025: Expeditions 403 and 405 are not included). Figure 6 shows student theses and dissertations published related to IODP expeditions.

Figure 4. Number of Program and serial publication records for Integrated Ocean Drilling Program Expeditions 301–348.

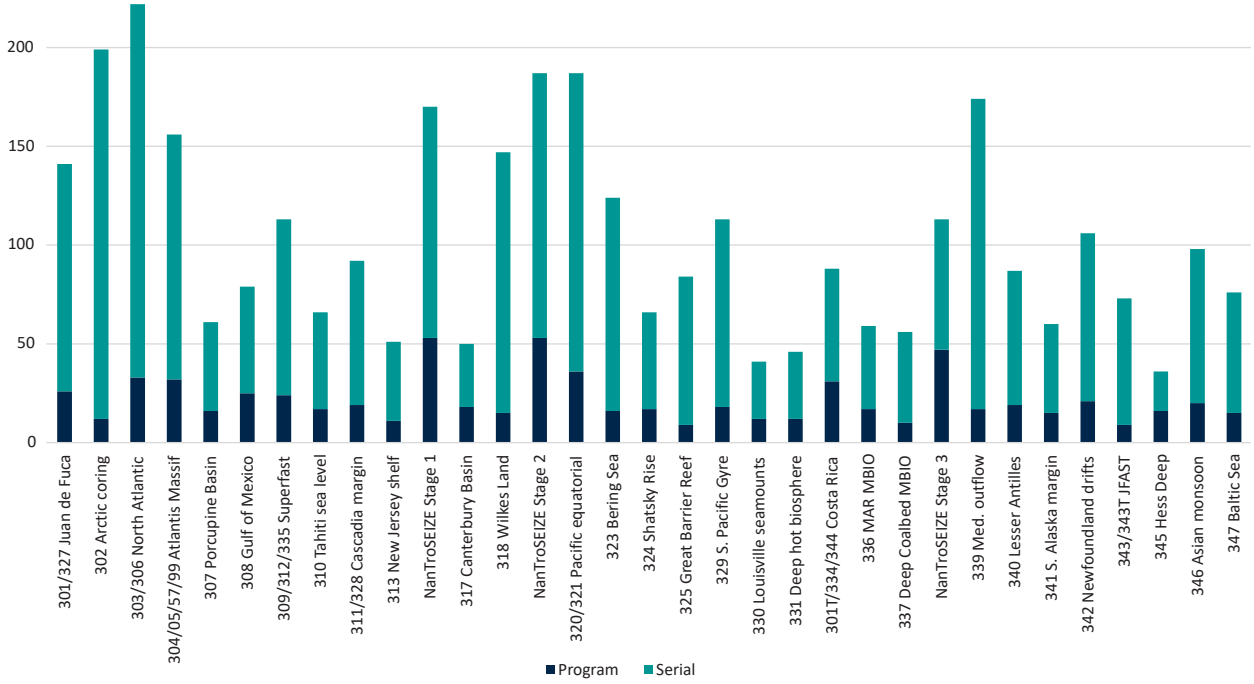


Figure 5. Number of Program and serial publication records for IODP Expeditions 349–402.

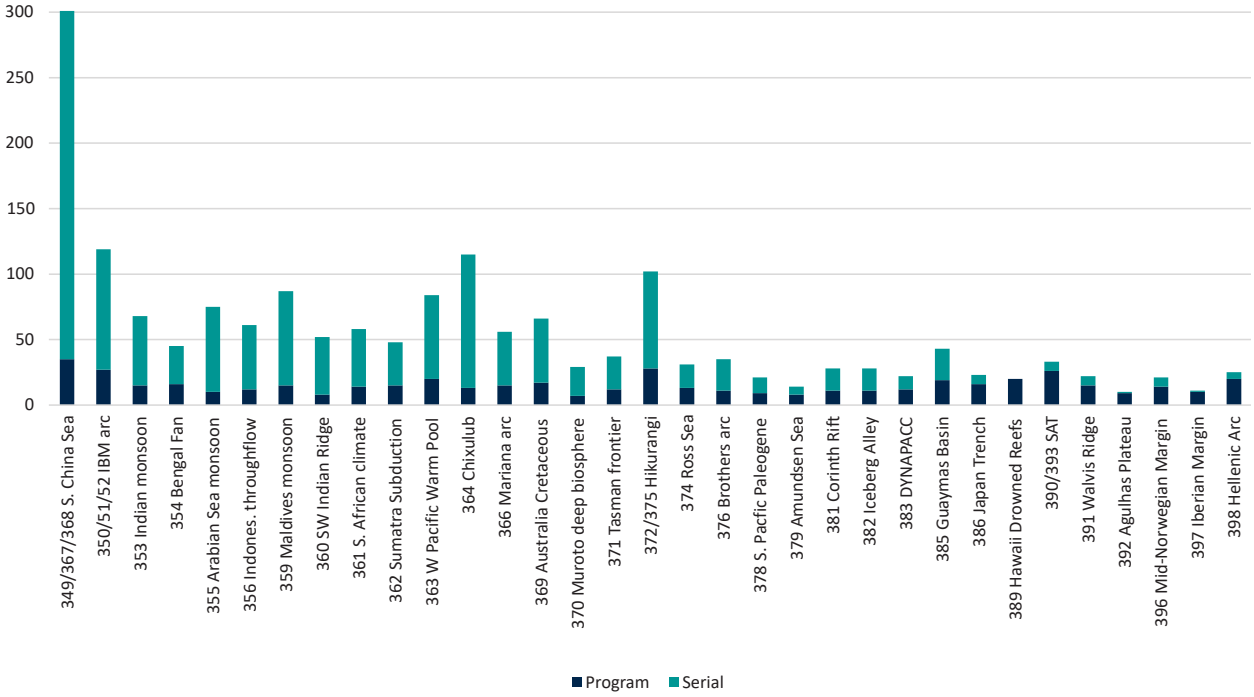
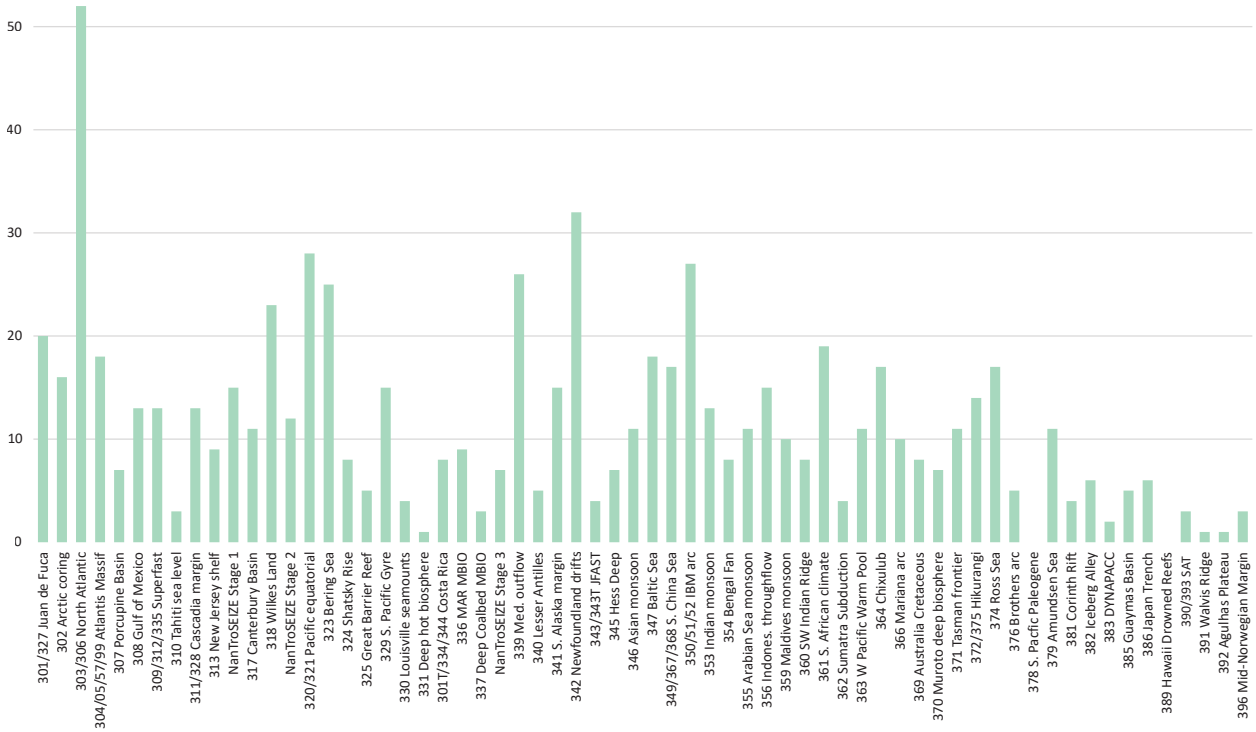


Figure 6. Number of expedition-related theses and dissertations related to IODP Expeditions.

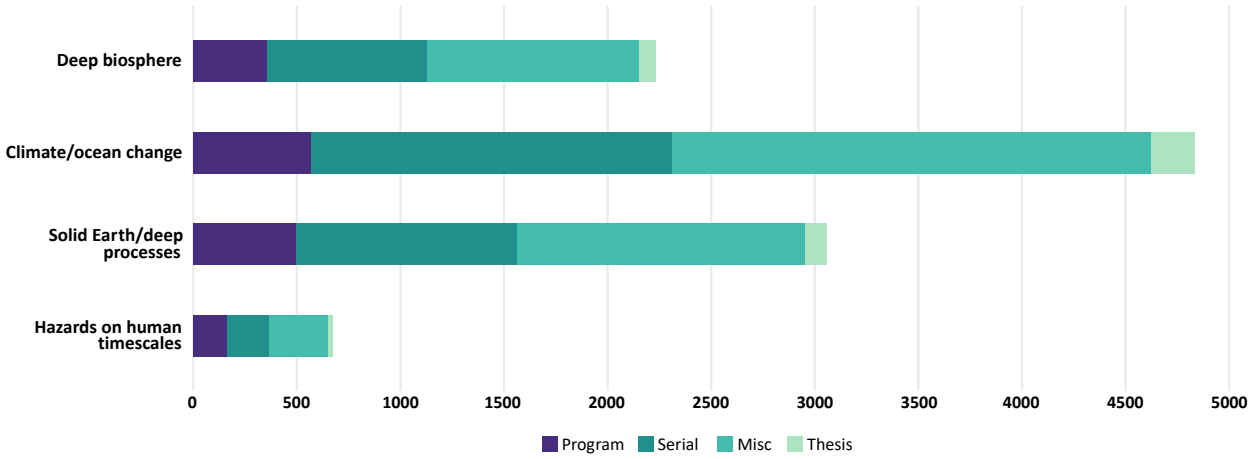


Publications by Science Plan theme

Figure 7 shows database records related to IODP expeditions sorted by the broad science plan themes that guided both the Integrated Ocean Drilling Program and International Ocean Discovery Program. Science plan themes are tied to the primary objectives of each expedition.

- Deep Biosphere: Expeditions 301, 307, 308, 311, 327, 329, 330, 331, 334, 336, 337, 344, 347, 357, 364, 366, 370, 374, 376, 385, 390, 393.
- Climate and ocean change: Expeditions 302, 303, 306, 310, 313, 317, 318, 320, 321, 323, 325, 339, 341, 342, 346, 347, 353, 354, 355, 356, 359, 361, 363, 364, 369, 371, 374, 378, 379, 382, 383, 389, 392, 396, 397, 400, 401, 403.
- Solid Earth and Deep Processes: Expeditions 304, 305, 309, 312, 314, 315, 316, 319, 322, 324, 326, 332, 333, 335, 338, 340, 343, 345, 348, 349, 350, 351, 352, 356, 357, 360, 367, 368, 369, 371, 376, 381, 384, 390, 391, 392, 393, 395, 396, 398, 399, 402.
- Hazards on Human Timescales: Expeditions 357, 358, 362, 365, 366, 372, 395, 376, 380, 381, 386, 398, 389, 405.

Figure 7. Number of publications related to IODP science plan themes (2003–2025).



Citation statistics

As indexing and interconnectivity of scientific research results increase, we are better able to illustrate how often scientific publications are cited in other research articles. Citation data, in the form of number of times an article has been cited, are used to measure the impact and influence of research. Citation data can be accrued through several venues: Scopus, Web of Science, Google Scholar, CrossRef, and others. The number of citations reported by each of these sources differs because of the way they collect the citation information. Additionally, comprehensive citation data may be unavailable because not all publishers participate in citation data compilers. For this report, we collected citation data through Google Scholar in July 2025.

ODP serial records published since 2000 have been cited ~311,000 times in other research articles. Program publications and non-Program serial publications related to IODP expeditions have been cited in other research articles for many years after publication. Figures 8 and 9 include Google Scholar citation counts for all IODP expeditions as of July 2025.

Figure 8. Number of times Program and non-Program serial publications from Integrated Ocean Drilling Program expeditions were cited by other research articles. Note the y-axis scale break.

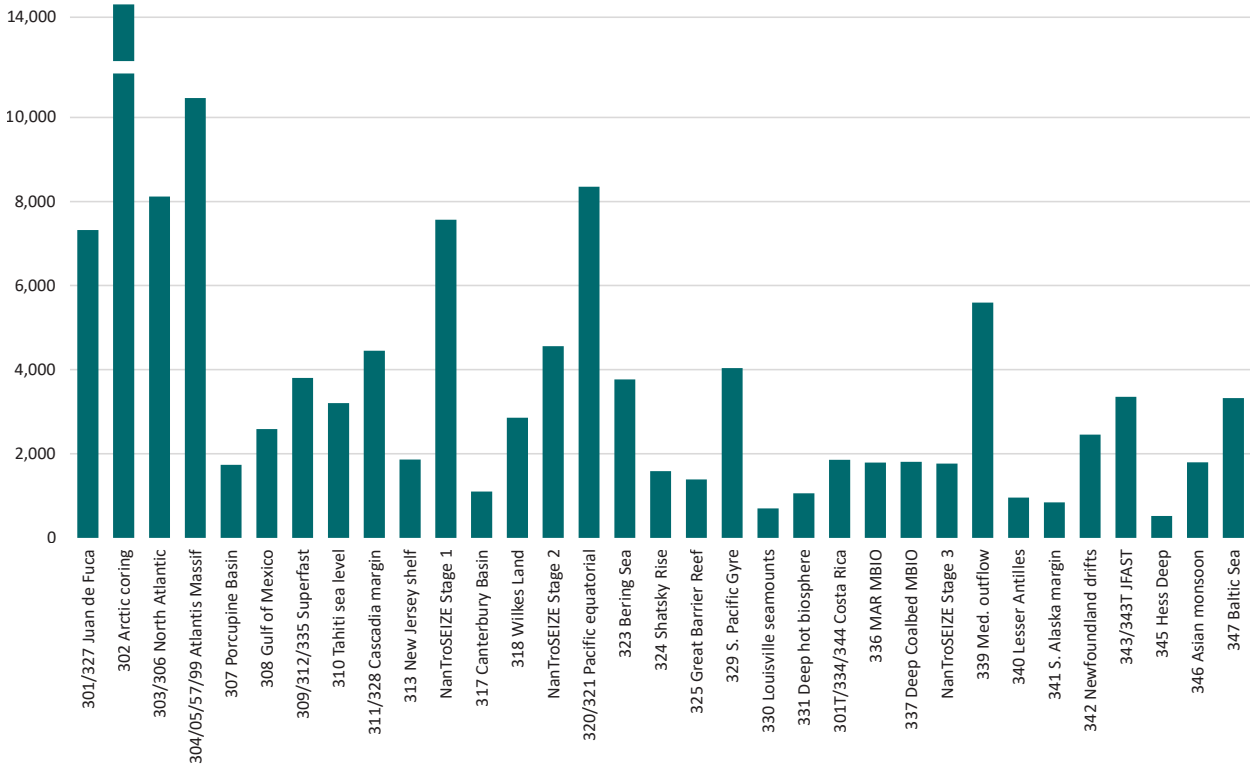
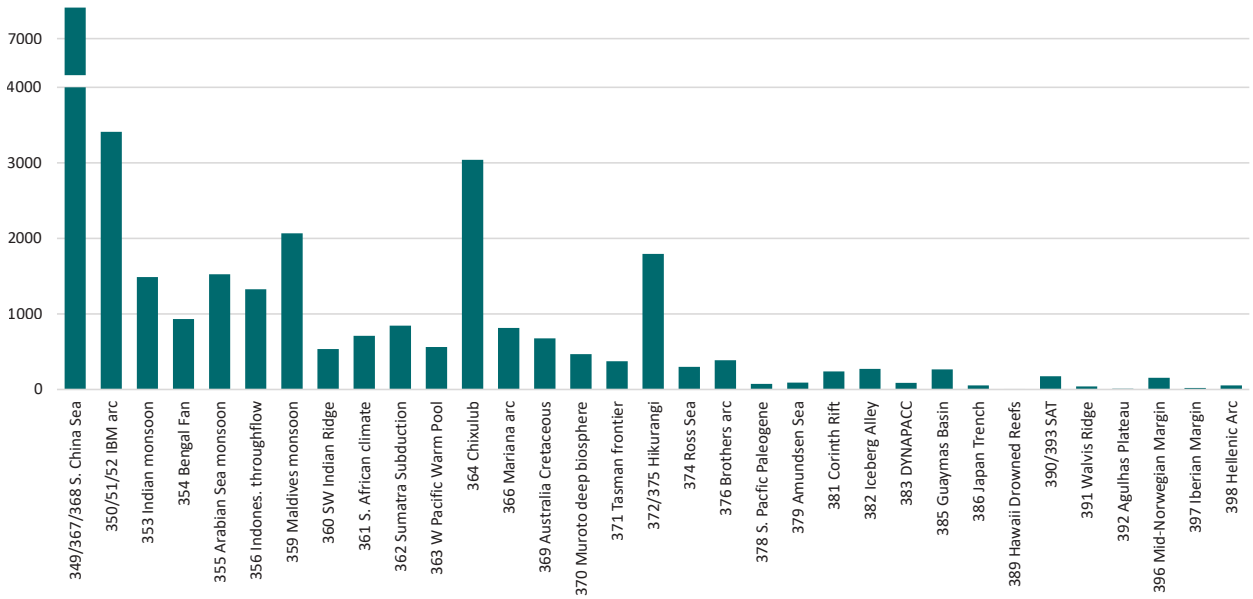


Figure 9. Number of times Program and non-Program serial publications from International Ocean Discovery Program expeditions were cited by other research articles. Note the y-axis scale break.



Google Scholar profiles

Current citation counts for ODP and IODP leg/expedition-related papers can be accessed through Google Scholar profiles at the following links:

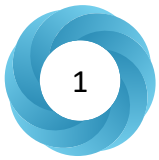
- **International Ocean Discovery Program** (Expeditions 349–405)
- **Integrated Ocean Drilling Program** (Expeditions 301–348)
- **Ocean Drilling Program** (Legs 101–210 published since 2000)

Alternative impact metrics

Table 2 lists IODP expedition-related papers that have been most cited as of July 2025. It takes several years to conduct research and publish papers, and even more time for these papers to build citation counts. All of the top-cited papers listed in Table 2 were published in the highest impact journals by JIF (as shown in Figure 2). The Altmetric score for each paper is listed along with the number of citations. See the next section for a discussion of Altmetric scores.

Table 2. Top cited (>574 citations) Program-related serials as of July 2025 with corresponding Altmetric scores from August 2025. Click on the graphic to view the live current Altmetric data.

Article	Expedition	Citations (*N*)	Altmetric Score
Westerhold, T., et al., 2020. An astronomically dated record of Earth's climate and its predictability over the last 66 million years. Science. 10.1126/science.aba6853	IODP 320/321; ODP 154, 184, 199, 207, 208	1631	
Kallmeyer, J., et al., 2012. Global distribution of microbial abundance and biomass in subseafloor sediment. PNAS. 10.1073/pnas.1203849109	IODP 323; ODP 146, 164, 168, 177, 190, 201	1087	
Grimes, C.B., et al., 2007. Trace element chemistry of zircons from oceanic crust: A method for distinguishing detrital zircon provenance. Geology. 10.1130/G23603A.1	IODP 301; ODP 176, 209	1028	
Rebesco, M., et al., 2014. Contourites and associated sediments controlled by deep-water circulation processes. Mar. Geol. 10.1016/j.margeo.2014.03.011	IODP 339, 303, 307, 342, 317, 318	870	
Sluijs, A., et al., 2006. Subtropical Arctic Ocean temperatures during the Palaeocene/Eocene thermal maximum. Nature. 10.1038/nature04668	IODP 302	858	

Article	Expedition	Citations (*N*)	Altmetric Score
Miller, K.G., et al., 2020. Cenozoic sea-level and cryospheric evolution from deep-sea geochemical and continental margin records. Science Adv. 10.1126/sciadv.aaz1346	IODP 320/321; ODP 138, 184, 198, 199	772	
Grimes, C.B., et al., 2015. "Fingerprinting" tectono-magmatic provenance using trace elements in igneous zircon. Cont. Mineral. 10.1007/s00410-015-1199-3	IODP 304/305; ODP 176, 209	770	
Li, C.F., et al., 2014. Ages and magnetic structures of the South China Sea constrained by deep tow magnetic surveys and IODP Expedition 349. G3. 10.1002/2014GC005567	IODP 349	725	
Moran, K., et al., 2006. The Cenozoic palaeoenvironment of the Arctic Ocean. Nature. 10.1038/nature04800	IODP 302	709	
Lipp, J.S., 2008. Significant contribution of Archaea to extant biomass in marine subsurface sediments. Nature. 10.1038/nature07174	IODP 301, 311; ODP 201, 204, 207	692	
Jorgensen, B.B., et al., 2019. The biogeochemical sulfur cycle of marine sediments. Front. Microbiol. 10.3389/fmicb.2019.00849	IODP 347, 323	657	
Deschamps, P., et al., 2012. Ice-sheet collapse and sea-level rise at the Bølling warming 14,600 years ago. Nature. 10.1038/nature10902	IODP 310	637	
Saffer, D.M., et al., 2011. Hydrogeology and mechanics of subduction zone forearcs: fluid flow and pore pressure. Ann. Rev. Earth Planet. Sci. 10.1146/annurev-earth-040610-133408	NanTroSEIZE	599	
Frost, B.R., and Beard, J.S., 2007. On silica activity and serpentinization. J. Petrol. 10.1093/petrology/egm021	IODP 304/305	574	

Altmetric scores

Altmetric scores demonstrate the more immediate impact of research papers by tracking online mentions by news outlets, blogs, Wikipedia pages, and other social media. Table 3 lists the IODP expedition-related papers (except for Expedition 364) with the highest Altmetric scores as of August 2025. Table 4 lists IODP Expedition 364 (Chixulub K-Pg Impact Crater) papers with high online attention separately. All of the papers in Tables 3 and 4 were published in top-ranked journals by impact factor (as shown in Figure 2). Altmetric scores are color-coded to represent online sources as follows: red = news outlets, orange = blogs, teal = X, dark blue = Facebook, gray = Wikipedia, purple = policy source, plum = Google+, light blue = Reddit, light green = video uploader, and pink = research highlight platform. Click on the Altmetric donut to view the details of online attention along with readership demographics. Visit the Altmetric website for more information about Altmetric scores (**https://www.altmetric.com**). Note that high altmetric scores do not necessarily reflect how many times the paper has been cited.

Table 3. Expedition-related papers with the highest Altmetric scores as of August 2025, along with the number of times they had been cited as of July 2025. Click on the graphic to view the live Altmetric data and links to news articles and social media stories about each article.

Article	Expedition	Citations (*N*)	Altmetric Score
Morono, Y., et al., 2020. Aerobic microbial life persists in oxic marine sediment as old as 101.5 million years. Nature Comm. 10.1038/s41467-020-17330-1	IODP 329	112	
Lissenberg, C.J., et al., 2024. A long section of serpentinized depleted mantle peridotite. Science. 10.1126/science.adp1058	IODP 399	18	
Westerhold, T., et al., 2020. An astronomically dated record of Earth's climate and its predictability over the last 66 million years. Science. 10.1126/science.aba6853	IODP 320/321; ODP 154, 184, 199, 207, 208	1671	
Trubovitz, S., et al., 2020. Marine plankton show threshold extinction response to Neogene climate change. Nature Comm. 10.1038/s41467-020-18879-7	IODP 320/321	49	
Starr, A., et al., 2025. Shifting Antarctic Circumpolar Current south of Africa over the past 1.9 million years. Science Adv. 10.1126/sciadv.adp1692	IODP 361; ODP 177	2	
Bova, S., et al., 2021. Seasonal origin of the thermal maxima at the Holocene and the last interglacial. Nature. 10.1038/s41586-020-03155-x	IODP 363	286	

Article	Expedition	Citations (*N*)	Altmetric Score
Longmann, J., et al., 2021. Late Ordovician climate change and extinctions driven by elevated volcanic nutrient supply. Nature Geosci. 10.1038/s41561-021-00855-5	IODP 323, 340	77	
Armbrecht, L., et al., 2022. Ancient marine sediment DNA reveals diatom transition in Antarctica. Nature Comm. 10.1038/s41467-022-33494-4	IODP 382	67	
Sager, W.W., et al., 2013. An immense shield volcano within the Shatsky Rise oceanic plateau, northwest Pacific Ocean. Nature Geosci. 10.1038/ngeo1934	IODP 324; ODP 198	152	
Webster, J.M., et al., 2018. Response of the Great Barrier Reef to sea-level and environmental changes over the past 30,000 years. Nature Geosci. 10.1038/s41561-018-0127-3	IODP 325	150	
Suzuki, Y., et al., 2020. Deep microbial proliferation at the basalt interface in 33.5–104 million-year-old oceanic crust. Nature Comm. Biol. 10.1038/s42003-020-0860-1	IODP 329	51	
Gase, A.C., et al., 2023. Subducting volcaniclastic-rich upper crust supplies fluids for shallow megathrust and slow slip. Science Adv. 10.1126/sciadv.adh0150	IODP 372/375	21	
Gustafson, C., et al., 2019. Aquifer systems extending far offshore on the U.S. Atlantic margin. Nature Sci. Rep. 10.1038/s41598-019-44611-7	IODP 313	86	
Druitt, T., et al., 2024. Giant offshore pumice deposit records a shallow submarine explosive eruption of ancestral Santorini. Nature Comm. Earth & Env. 10.1038/s43247-023-01171-z	IODP 398	13	
Clemens, S.C., et al., 2021. Remote and local drivers of Pleistocene South Asian summer monsoon precipitation: A test for future predictions. Science Adv. 10.1126/sciadv.abg3848	IODP 353	107	

Table 4. Expedition 364-related papers with the highest Altmetric scores as of August 2025. This table lists only papers from Expedition 364 because it was an extremely high impact expedition. Click on the graphic to view the live Altmetric data and links to news articles and social media stories about each article.

Article	Expedition	Citations (*N*)	Altmetric Score
Collins, G.S., et al., 2020. A steeply-inclined trajectory for the Chicxulub impact. Nature Comm. 10.1038/s41467-020-15269-x	364	92	
Junium, C.K., et al., 2022. Massive perturbations to atmospheric sulfur in the aftermath of the Chicxulub impact. PNAS. 10.1073/pnas.2119194119	364	25	
Ocampo-Torres, R., et al., 2019. The first day of the Cenozoic. PNAS. 10.1073/pnas.1909479116	364	158	
Morgan, J.V., et al., 2016. The formation of peak rings in large impact craters. Science. 10.1126/science.aah6561	364	238	
Goderis, S., et al., 2021. Globally distributed iridium layer preserved within the Chicxulub impact structure. Science Adv. 10.1126/sciadv.abe3647	364	111	
Artemieva, N., et al., 2017. Quantifying the release of climate-active gases by large meteorite impacts with a case study of Chicxulub. Geophys. Res. Lett. 10.1002/2017gl074879	364	100	
Lowery, C.M., et al., 2018. Rapid recovery of life at ground zero of the end Cretaceous mass extinction. Nature. 10.1002/2017gl074879	364	153	

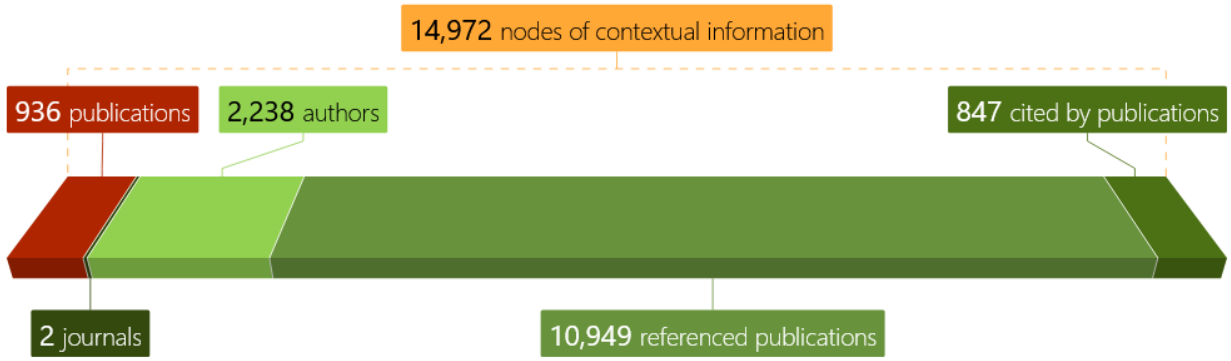
ScienceOpen indexing

ScienceOpen is a discovery platform with interactive features for scholars. IODP maintains two publication collections at ScienceOpen, and statistics from these collections can be used to demonstrate the wide-reaching impact of Program publications.

Program publications starting with Expedition 301 are indexed in the *Proceedings of the International Ocean Discovery Program* collection (**https://www.scienceopen.com/collection/IODP_Publications**).

The 936 Program publications included in the collection represent 2,238 authors, cite 10,949 references, and have been viewed 40,981 times through ScienceOpen (Figure 10).

Figure 10. *Proceedings of the International Ocean Discovery Program* collection's content in context.



The Scientific Ocean Drilling Expedition Research Results collection contains 11,445 non-Program serials representing DSDP, ODP, and IODP (**https://www.scienceopen.com/collection/8b0582f6-47bf-4988-b90a-8533135e6fcc**). The publications in the collection represent 23,972 authors, cite 119,887 references, and have been viewed 171,700 times through ScienceOpen (Figure 11).

Figure 11. Scientific Ocean Drilling Expedition Research Results collection's content in context.