

UDC 001.8+502.3 (99)

UKRAINIAN ANTARCTIC RESEARCH: CURRENT BIBLIOGRAPHY AND MAJOR TRENDS IN THEIR EVOLUTION (2016–2017)

N. G. Videnina¹, V. P. Rybachuk¹, A. P. Fedchuk², S. I. Prymachenko¹, N. S. Petrenko¹

¹ State Institution G.M. Dobrov Institute for Scientific and Technological Potential and Science History Studies, National Academy of Sciences of Ukraine, 60 Taras Shevchenko Blvd., Kyiv, 01032, Ukraine; rybachuk.victor@gmail.com

² State Institution National Antarctic Scientific Center, Ministry of Education and Science of Ukraine, 16 Taras Shevchenko Blvd., Kyiv, 01601, Ukraine

Abstract. Objectives of the study: to create a bibliography of scientific works of Ukrainian scientists and specialists on Antarctic research for the period 2007–2017. Bibliographic support and scientometric monitoring of the implementation of the State Special-Purpose Research Program in Antarctica for 2011–2020. Promoting the dissemination of scientific, popular scientific as well as other information about the activities of Ukraine in the Antarctic region of the planet. **Methods:** bibliographic search, scientometric analysis, bibliometric analysis, expert analysis, webometric analysis. **Results:** bibliographic descriptions and results of the bibliometric analysis of the compiled bibliography of academic papers of Ukrainian researchers on the problems of Antarctic research published in domestic and foreign publications as well as materials of international bodies of the Antarctic Treaty System from January 2016 to December 2017 are given. **Conclusions:** the data presented indicate a stable positive trend in the development of Ukraine's research in the Antarctica and the considerable contribution of domestic scientists and specialists to the world studies of the Antarctic region.

Key words: Antarctic Treaty, Antarctic region, Vernadsky station, Ukrainian Antarctic Expedition, National Antarctic Scientific Center of Ukraine, Antarctic bibliography, current bibliography, bibliographical search, scientometric analysis, bibliometric analysis.

ДОСЛІДЖЕННЯ УКРАЇНИ В АНТАРКТИЦІ: ПОТОЧНА БІБЛІОГРАФІЯ ТА ОСНОВНІ ТЕНДЕНЦІЇ ЇЇ ЕВОЛЮЦІЇ. ПУБЛІКАЦІЇ 2016–2017 рр.

Н. Г. Віденіна¹, В. П. Рибачук¹, А. П. Федчук², С. І. Примаченко¹, Н. С. Петренко¹

¹ Державна установа «Інститут досліджень науково-технічного потенціалу та історії науки ім. Г. М. Доброва НАН України» м. Київ; rybachuk.victor@gmail.com

² Державна установа Національний антарктичний науковий центр МОН України, м. Київ

Реферат. Мета роботи: створення бібліографії наукових праць українських учених і фахівців щодо дослідження Антарктики за період 2007–2017 рр. Бібліографічний супровід та наукометричний моніторинг виконання Державної цільової науково-технічної програми проведення досліджень в Антарктиці на 2011–2020 роки. Сприяння поширенню наукової, науково-популярної та іншої інформації щодо діяльності України в Антарктичному регіоні планети. **Методи:** бібліографічний пошук, наукометричний аналіз, бібліометричний аналіз, експертний аналіз, вебометричний аналіз. **Результати:** наведено бібліографічні описи та результати бібліометричного аналізу укладеної бібліографії наукових праць українських учених і фахівців з проблем дослідження Антарктики, опублікованих у вітчизняних і закордонних виданнях та матеріалах міжнародних органів системи Договору про Антарктику з січня 2016 по грудень 2017 року. **Висновки:** представлені дані свідчать про сталі позитивні тенденції розвитку досліджень України в Антарктиці та вагомий внесок вітчизняних учених і фахівців у світові дослідження Антарктичного регіону.

Ключові слова: Договір про Антарктику, Антарктичний регіон, Українська антарктична станція «Академік Вернадський», Українська антарктична експедиція, Національний антарктичний науковий центр, бібліографія Антарктики, поточна бібліографія, бібліографічний пошук, наукометричний аналіз, бібліометричний аналіз.

ИССЛЕДОВАНИЯ УКРАИНЫ В АНТАРКТИКЕ: ТЕКУЩАЯ БИБЛИОГРАФИЯ И ОСНОВНЫЕ ТЕНДЕНЦИИ ЕЕ ЭВОЛЮЦИИ. ПУБЛИКАЦИИ 2016–2017 гг.

Н. Г. Виденина¹, В. П. Рыбачук¹, А. П. Федчук², С. И. Примаченко¹, Н. С. Петренко¹

¹ Государственное учреждение «Институт исследований научно-технического потенциала и истории науки им. Г. М. Доброва НАН Украины», г. Киев; rybachuk.victor@gmail.com

² Государственное учреждение Национальный антарктический научный центр МОН Украины, г. Киев

Реферат. Цель работы: создание библиографии научных трудов украинских ученых и специалистов по исследованию Антарктики за период 2007–2017 гг. Библиографическое сопровождение и наукометрический мониторинг выполнения Государственной целевой научно-технической программы проведения исследований в Антарктике на 2011–2020 годы. Содействие распространению научной, научно-популярной и другой информации о деятельности Украины в Антарктическом регионе планеты. **Методы:** библиографический поиск, наукометрический анализ, библиометрический анализ, экспертный анализ, вебметрический анализ. **Результаты:** приведены библиографические описания и результаты библиометрического анализа составленной библиографии научных трудов украинских ученых по проблемам исследования Антарктики, опубликованных в отечественных и зарубежных изданиях и материалах международных органов системы Договора об Антарктике с января 2016 по декабрь 2017 года. **Выводы:** представленные данные свидетельствуют об устойчивой позитивной тенденции развития исследований Украины в Антарктике и весомом вкладе отечественных ученых и специалистов в мировые исследования Антарктического региона.

Ключевые слова: Договор об Антарктике, Антарктический регион, Украинская антарктическая станция «Академик Вернадский», Украинская антарктическая экспедиция, Национальный антарктический научный центр, библиография Антарктики, текущая библиография, библиографический поиск, наукометрический анализ, библиометрический анализ.

1. Introduction

The last two years have been marked by important jubilee milestones in the contemporary history of Ukraine's activities in the Antarctica (Gozhik et al., 2015, 2017; Rybachuk, 2010). The past year 2017 marked the 25th anniversary of Ukraine's accession to the Antarctic Treaty and the beginning of the establishment of legal bases of the State policy on Ukraine's participation in the study of Antarctica. In 2016, it was 20 years since researches had been initiating on the Ukrainian Antarctic Akademik Vernadsky station¹. Two decades ago, the first domestic marine scientific expedition to Antarctica was also carried out (January 18 – May 15, 1997).

Scientific results of the study of Ukrainian scientists and specialists are reflected in thousands of published papers and recognized in the country and abroad as well. Forming the bibliographic databases of scientific publications, both retrospective and current has been the objective requirement. The creation of such bibliographies is an essential element of systematic information and bibliographic support and scientometric monitoring of development of Antarctic research, particularly in managing the development and implementation of State research programs (Rybachuk et al., 2013). Bibliographic databases and the results of bibliometric monitoring also play an important role as a unique information and analytical base for the dissemination and access of scientific, popular scientific, educational as well as other information on Ukraine's activities in the Antarctic region.

National and global databases on Antarctic research issues have been created and are being conducted in the Russian Federation, the United States, Australia, the United Kingdom, Spain, Poland and several other States Parties to the Antarctic Treaty. In Ukraine, monitoring bibliographic and bibliometric studies of the information array of scientific works of Ukrainian researchers in Antarctica has been carried out since 2003 by the G.M. Dobrov Institute for Scientific and Technological Potential and Science History Studies of the National Academy of Sciences of Ukraine² (Videnina et al., 2005, 2007) with support by the State Institution National Antarctic Scientific Center of the Ministry of Education and Science of Ukraine (NASC MES of Ukraine).

The first national bibliography of scientific publications related to survey and other activities of Ukraine in Antarctica was published in 2008 (Rybachuk et al., 2008). It covered the period from 1997 to 2007. In 2009, the publication of current abstract bibliography of Ukrainian scientific works on Antarctica was launched. Between 2009–2017, four issues of the current bibliography were published in the 'Ukrainian Antarctic Journal' (Rybachuk et al., 2009, 2010, 2012; Videnina et al., 2016).³

This article presents the main results of research on bibliographic search, compiling bibliography and scientometric analysis of scientific and professional works on Antarctica in Ukraine, published in domestic and foreign edition in 2016–2017, as well as publications of official documents of Ukraine granted to the international bodies of the Antarctic Treaty during this period. Thus, the second ten-year period of domestic Antarctic bibliography and bibliometrics has been completed.

2. Methodological aspects

The methodological approaches worked out by the authors in previous scientific studies were used in this work (Videnina et al., 2005, 2007; Rybachuk et al., 2008).

Domestic printed scientific monographs and periodicals (journals and collections) abstracts of dissertations, materials of national and international conferences, accessible websites of foreign journals were the main sources for compiling the bibliography. Also, bibliographic information was collected from domestic and foreign abstracting journals, bibliographic databases, and from those available in Web databases including: "Ukrainika scientific" (Bibliographic..., 2017), "Scientific Periodicals of Ukraine" (Scientific ..., 2017), and "Bibliometryka of Ukrainian Science" information-analytical system (Bibliometryka ..., 2017) of the Vernadsky National Library of Ukraine; as well as resources of the website and library funds of the NASC MES of Ukraine (National..., 2017); scientometric databases and specialized research web search engines Web of Science, Scopus, Google Scholar, E-Library.ru, and others.

¹ Ukrain'ska antarktychna stantsiya Akademik Vernadsk'kyj = Ukrainian Antarctic Akademik Vernadsky station.

² State institute «G.M. Dobrov Institute for Scientific and Technological Potential and Science History Studies of the National Academy of Sciences of Ukraine» (G.M. Dobrov Institute of the NAS of Ukraine). [G.M. Dobrov Center for Scientific and Technological Potential and Science History Studies of the NAS of Ukraine before 2015].

³ As of 2010, the monitoring of scientific and professional works on Antarctica in Ukraine and compiling of current bibliography have been carried out with the financial support of the National Antarctic Scientific Center of Ukraine under of the State Programs of Ukrainian research in Antarctica for 2002–2010 and 2011–2020.

It should be noted, above all, that over the last decade the status of systematic information and bibliographic as well as scientometric support of Antarctic research has changed to some extent. Namely, there was an increased tendency in creating problem-oriented and subject-matter bibliographic databases and registers. Significant changes have also taken place (major changes can be seen) in compiling universal bibliographies of Antarctic scientific literature and the use of web search information systems. Since November 2011, the ‘Antarctic bibliography’ database (Antarctic..., 2017) is not updated, the universal Web search scientific information system, Scirus (Scirus..., 2017)⁴, retired in 2014.

Bibliographic descriptions in the bibliography list were prepared according to the state and international standards requirements in force in Ukraine⁵. Some differences are allowed in cases of unavailability of the full text of the original or from methodological considerations (in particular, general material designation [Text]⁶ is not used in the bibliographic descriptions of printed publications. Bibliographic descriptions listed herein are arranged under the subject headings.

3. Results and discussion

The current bibliography presented in this article includes in total 233 bibliographic descriptions of publications in 2016–2017. Most of them, as always, are articles in periodicals (90 descriptions), conference and symposia proceedings (122 descriptions)⁷.

The review of the above bibliography confirms stable rates of publication activity of scientists and specialists of scientific institutions, higher educational establishments and other research organizations, characteristic of the previous 10 years (1997–2006) (Fig. 1, 2).

However, the analysis of the bibliography gives grounds to conclude there are significant changes in the dissipation of publications both by themes and vectors of document flows. Thus, the reduction of oceanographic publications is obvious primarily due to lack of opportunities for the country to carry out their own marine Antarctic expeditions. On the other hand, the results of research on geophysics, biology and medicine, technical and technological support and logistics are actively published; certain changes take place in separate areas of the social sciences and the humanities (economics, history, science of science, etc.).

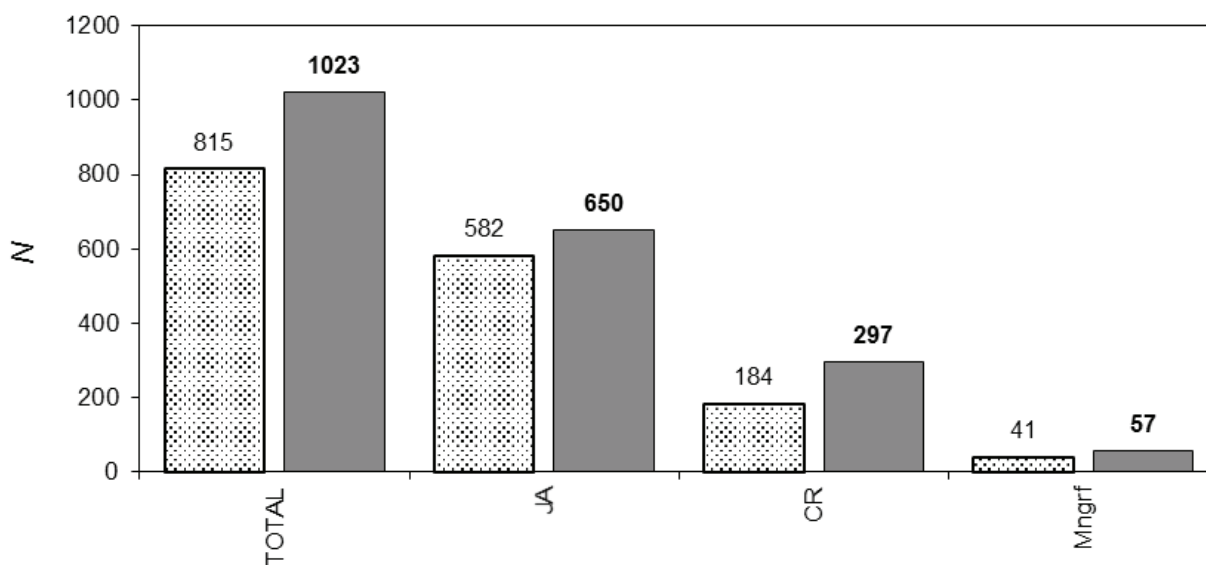


Fig. 1. Bibliography in 2007-2017 compared with bibliography in 1997-2006.

Legend⁸:

N – number of publications (1997-2006 – light hatching; 2007-2017 – dark background)

TOTAL – total number of publications

JA – number of articles in journals and collections

CR – number of conference papers (reports)

Mngrf – number of monographs, collections, book chapters, thesis abstracts

⁴ Scirus, launched in 2001 by Elsevier Publishers, was unique in its untold geographical, species, thematic and linguistic coverage of scientific information resources, as well as the capabilities of the search engine. This platform indexed not only printed publications available through Web, but also web pages and segments of sites of scientific and educational institutions, personal research sites, online publishing platforms, and other specialized web resources. Later this approach was implemented on the bibliometric Web-platform Google Scholar (USA). Since 2014, it has remained the only bibliometric search engine processing the entire world scientific documentary stream, including in the Internet space, except for those with restricted access.

⁵ First of all – the State Standard of Ukraine DSTU GOST 7.1: 2006 ‘System of standards for information, library and publishing business, bibliographic record, bibliographic description, general requirements and rules of compilation’

⁶ The approach is allowed by the State Standard of Ukraine DSTU 8302:2015. ‘Information and documentation. Bibliographic reference. General principles and rules of composition’, which came into force on July 1, 2016.

⁷ Not including the reports at the International Conferences on Antarctica, hosted by the NASC of MES of Ukraine in 2015, and 2017, that, as always, hereinafter are presented as articles in the Ukrainian Antarctic Journal and other publications.

⁸ It is presented in the format used in the work (Rybachuk et al., 2008, c. 54).

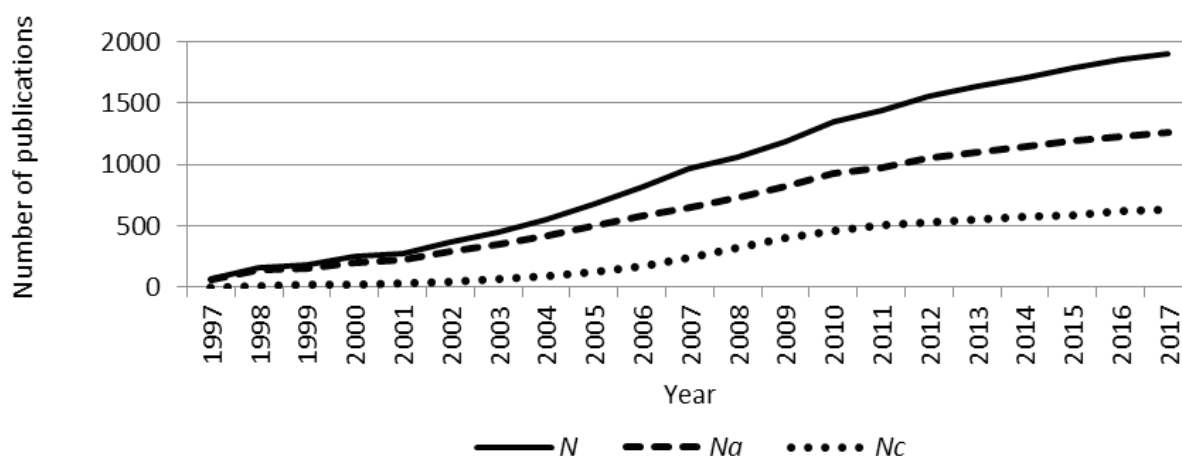


Fig. 2. Dynamics of formation of information arrays of bibliography (cumulative curves).

Legend:

N – total number of publications per year;

N_a – articles in journals and prolonged publications;

N_c – conference reports (excluding the conferences hosted by NASC of MES of Ukraine).

Distinguishing characteristics of the dissipation of publications over the past 10 years is the tendency, firstly, to increase the number of scientific journals, in which the results of research are published, and, secondly, to reorient the authors to a new group of scientific journals (relative to the previous decade), with both domestic, and foreign ones. In total, the number of domestic journals in 2007–2016 has doubled in comparison with the period of 1997–2006, and foreign ones – almost one and a half times. Regarding the stable top-group of scientific journals, there are 7 domestic and 5 foreign publications (Table).

Table

Rank distribution of journals by the number of publications of domestic scientists and specialists in the study of Antarctica

Rating	Journal	2007–2016	1997–2006
A. Domestic journals			
1	Ukrainian Antarctic Journal (from 2003). Bulletin of the Ukrainian Antarctic Centre (1997 – 2002)	224 x	109 164
2	Geophysical journal	32	24
3	Radio Physics and Radio Astronomy	15	11
4	Microbiology Journal, Reports of the National Academy of Sciences of Ukraine	12 8	1 22
5	Marine Ecological Journal, Marine Gydrophysical Journal	11 3	4 15
B. Foreign journals			
1	International Journal of Remote Sensing	11	2
2	Journal of Atmospheric and Solar-Terrestrial Physics	5	1
3	Polar Biology	4	0
4	Annales Geophysicae, Geophysical Research Abstracts, Polarforschung, Sun and Geosphere	3 3 2	2 0 0

“Ukrainian Antarctic Journal” remains the main information source for Ukrainian scholars’ publications. So, there is an urgent need to integrate it into international databases. As before, about one third of the total Ukrainian scholars’ articles published in Ukrainian scientific journals and collections that are indexed in international databases, about 20% of them are presented in foreign publications. It should also be emphasized the expediency of the further increased use of the information-analytical system ‘Bibliometrics of Ukrainian Science’ to disseminate information and recognize the results of Ukrainian scientists in the Antarctic research (Kostenko, 2017).

4. Conclusions

The bibliography of scientific works of Ukrainian scientists and experts on the problems of the Antarctic research, published in domestic and foreign publications and materials of the international bodies of the Antarctic Treaty system in 2016–2017, is completed. The second ten-year period of domestic Antarctic bibliography and bibliometrics is completed.

The bibliographic and scientometric data presented in the article testify to the positive tendencies of development of Ukrainian studies in Antarctica and the significant contribution of domestic scientists and specialists in the world researches of the Antarctic region.

An objective need is the formation of retrospective and current bibliographic databases of scientific publications, primarily for the purpose of systematic informational and bibliographic support and scientometric monitoring of the development of research in Antarctica, especially with regard to the implementation of state scientific and scientific and technical programs.

5. Acknowledgment

The authors are grateful to the personnel of the State Institution National Antarctic Scientific Center, Ministry of Education and Science of Ukraine for the systematic support of those research and the implementation of their results.

6. Information about grant support

The research was carried out within the framework of the applied departmental theme of G. M. Dobrov Institute for Scientific and Technological Potential and Science History Studies of the NAS of Ukraine and a competition project for the implementation of the State Special-Purpose Research Program in Antarctica for 2011–2020. (under the agreement with the State Institution National Antarctic Scientific Center, Ministry of Education and Science of Ukraine: "Contribution of Ukraine to modern Antarctic research: bibliography and bibliometric analysis of scientific works of domestic scientists and specialists (2007–2017); state registration number 0117 U 003755).

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