PAN

POLISH ACADEMY OF SCIENCES

INITIATIVES

of the

Polish Academy of Sciences

IN SUPPORT OF UKRAINE

August 2024

The Polish Academy of Sciences is a Polish state institution that conducts scientific research on an international scale and works to advance, promote, and disseminate science. The Academy fulfills its mission through an elected body of scholars, a network of scientific institutes, and an array of committees and advisory panels.

Immediately after Russia's invasion of Ukraine, the Polish Academy of Sciences (PAS) launched a range of aid initiatives, driven by our conviction that **ensuring Ukraine's lasting sovereignty, identity, and prosperity will be impossible without a strong system of science, innovation, research, and education in the country.** These efforts are primarily focused on the Ukrainian scientific community, with the main goal of **preserving Ukraine's scientific potential by supporting its scientists and scholars, ensuring their continued access to research infrastructure, and integrating them into the European scientific system.**

Key outcomes of the PAS aid initiatives to date:

- **355 scientists and scholars from Ukraine** have received individual assistance,
- **88 scholars from Ukraine** have received funding under 18 projects of the Long-Term Support Program, with a total budget of over **8 million USD** secured by the US National Academy of Sciences (NAS) and the Polish Academy of Sciences (PAS) from international partners.
- Approx. **40 million PLN** has been allocated in total to support Ukrainian scientists and scholars, mostly secured from over **40 foreign sponsors**.
- **15 scientific and popular-science events** have been organized or co-organized in Ukraine since the start of the war.
- Over **700 scientists and scholars from Ukraine** have participated in in-person or online training organized by the Polish Academy of Sciences.
- **28 scientific units of the Polish Academy of Sciences** have been involved in direct aid initiatives.

The success of these efforts has solidified the Polish Academy of Sciences' position as a reliable partner, capable of implementing effective and transparent programs, and well-positioned to undertake further initiatives with both existing and new partners worldwide.

Main Areas of Activity

Support for scientists:

- **Individual Fellowship Program:** Launched on March 1, 2022, this program provides funding for Ukrainian scientists and scholars to undertake several months of research in Poland.
- **Long-Term Support Program (LTP):** Initiated in December 2022, this program funds two- to three-year research projects to be carried out in Poland and Ukraine by Ukrainian research teams.
- **Immediate Humanitarian and Organizational Assistance:** Offering urgent support to refugees from Ukraine.

Institutional expert and logistical support:

- **Plan for Supporting Science in Ukraine:** A 10-point reconstruction plan, which was approved by representatives of seven leading foreign science academies gathered in Warsaw in June 2022.
- **Programs and Support Mechanisms:** Developed and coordinated by the PAS as part of the plan to rebuild science in Ukraine.
- **International Network of Sponsors:** Inspired by the PAS, this network provides funding for both existing and planned support programs for Ukraine.

Recommendations

- **Working to secure additional European funds** to support Ukraine's scientific sector, making use of the support mechanisms developed by the Polish Academy of Sciences.
- **Supporting Poland's government administration by leveraging the PAS's expertise** in identifying priority areas for Polish-Ukrainian scientific collaboration and in devising aid systems that help better integrate Ukraine into European structures.
- **Bolstering international collaboration** between Poland and international partners to continue supporting science in Ukraine.
- **Providing expert support for programs to encourage the return of Ukrainian scientists and scholars** to their homeland and initiatives that promote Ukrainian scientific institutions.

CONTENTS

Introduction

This report outlines the active engagement of the Polish Academy of Sciences (PAS) in supporting the Ukrainian scientific community following Russia's invasion of Ukraine. In the early stages of the war, relief efforts focused on providing essential humanitarian aid to Ukrainian refugees via the Academy's Chancellery, via the PAS research institutes, and through other scientific units. The primary recipients of this assistance were Ukrainian scientists and scholars forced to flee their country. They were in need of not just basic necessities like housing, clothing, food, and other daily essentials, but also opportunities to continue their work. The challenge for the Polish Academy of Sciences was to find ways to harness their potential and provide employment opportunities in line with their qualifications.

In response, the Academy leadership initiated long-term measures **to help enable Ukrainian scientists and scholars to continue their research, whether they had left Ukraine or remained in the country, and to support the rebuilding of Ukraine's scientific infrastructure after the war ends**. However, the resources available to the Polish Academy of Sciences itself proved insufficient to meet even the initially identified needs and to carry out the planned programs.

Building on the PAS's strong position and established reputation among global scientific organizations as a trustworthy institution known for its scientific excellence, independence from political influence, and transparent financial management, the Academy leadership reached out to allied academies and international scientific associations for financial support. This appeal met with an overwhelmingly positive response, enabling the PAS to secure over 40 million PLN to fund its programs.

In June 2022, the PAS hosted a meeting in Warsaw bringing together representatives from leading foreign academies of sciences, at which a plan was worked out for supporting science in Ukraine; this plan was later published in journals including *Science*. Conceptual work on developing programs to flesh

out this 10-point plan for the reconstruction of science in Ukraine is continually underway at various PAS units, including by the staff of the PAS Bureau for International Cooperation in Warsaw, the PAS Representative Office in Kyiv, and by an interdisciplinary advisory team established in 2024 to focus on scientific cooperation with Ukraine – as well as other, scientific units. As a result, the support mechanisms for Ukraine's scientific system, developed and coordinated by the PAS in collaboration with international partners, have become a well-structured and unprecedented aid program with both short- and long-term perspectives.

The institutional experience gained from implementing these aid mechanisms now enables us to identify those actions that have effectively (though insufficiently) supported both Ukrainian scientific institutions and researchers. A notable example is the dual affiliation of Ukrainian scientists conducting research at PAS scientific units as part of the Long-Term Support Program (LTP) and the implementation of European standards within Ukraine's scientific system, which significantly strengthens the country's ties with the European Union. This is undoubtedly a historic necessity and a crucial condition for ensuring Ukraine's lasting sovereignty, identity, and prosperity. The Polish Academy of Sciences is skillfully leveraging its potential to support this process, and based on its experience, it is well-prepared to undertake further initiatives for Ukraine in collaboration with both domestic and international partners.

PAS Initiatives for Ukraine

The Polish Academy of Sciences responded quickly and effectively to the crisis caused by Russia's invasion of Ukraine, actively supporting Ukraine's scientific community from the very first days of the war. This assistance extends to both scientists forced to leave Ukraine and those who remain in the country. The primary goal of this support has been to ensure the continuity of scientific research, providing a foundation for Ukraine's post-war reconstruction.

Key aspects

- coordination with the National Academy of Sciences of Ukraine (NASU)
- rapid response, operational flexibility
- collaboration with the PAS research institutions and with international partners
- strong relationships with leading international scientific institutions
- dual affiliation (both Ukrainian and Polish) for funded research

Figures and Timeline

The table below sums up the overall numbers of Ukrainian scholars who received financial support from the Polish Academy of Sciences for each year between 2022 and 2024, along with the amounts of funding allocated for this purpose. The amounts are also categorized by funding source (institutional grants vs. non-budgetary funds).

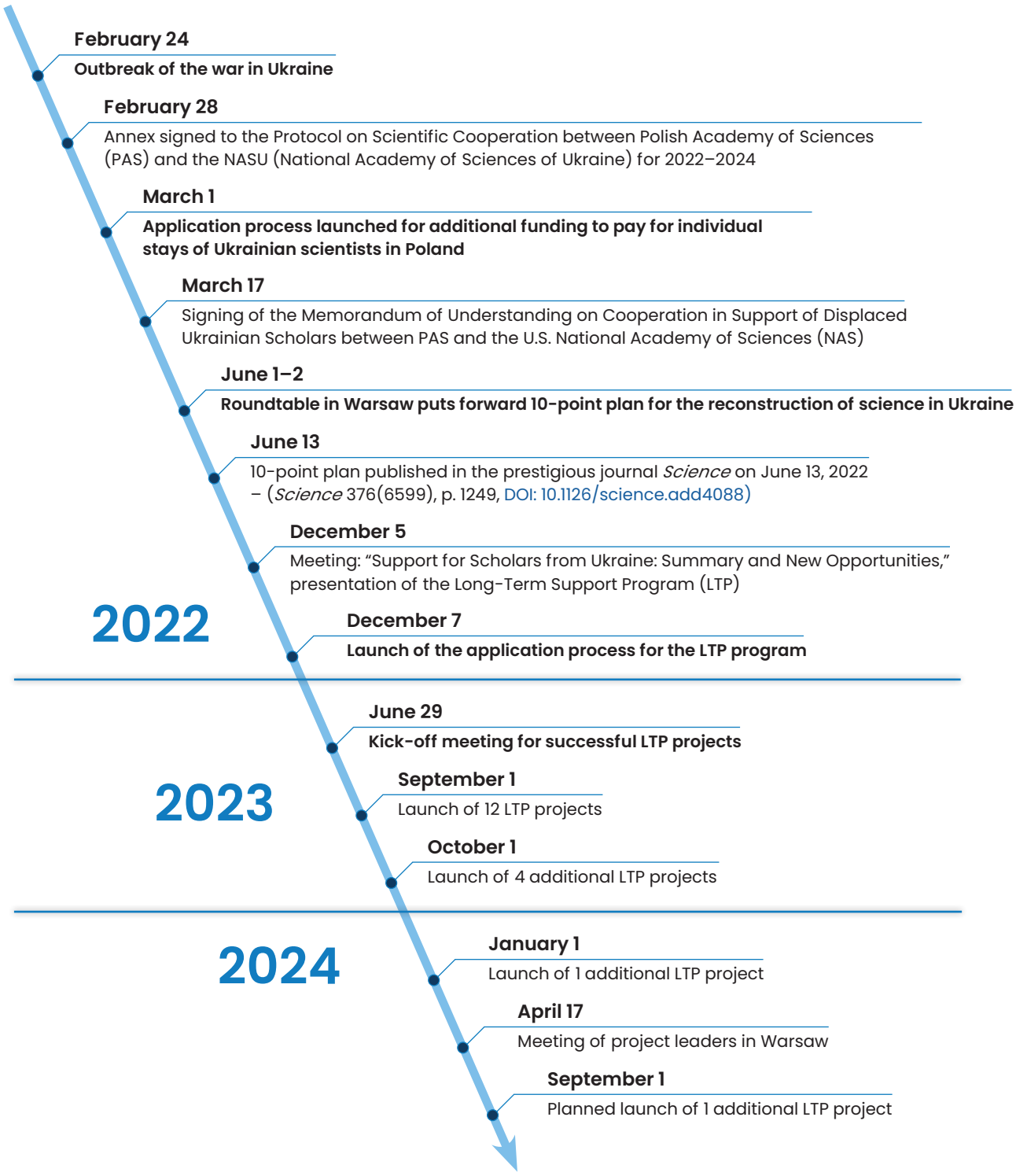
Support for Scientists from Ukraine – in Figures

		2022		2023		2024[1]	
funding source	**support program**	**number of scientists**	**amount in PLN**	**number of scientists**	**amount in PLN**	**number of scientists**	**amount in PLN**
institutional grant	Individual Fellowships for Ukrainian Scientists at PAS Research Units	110	3,415,069	83	898,492	42	708,745
non-budgetary funds	Individual Fellowships for Ukrainian Scientists at PAS Research Units	115	2,743,497	4	118,820	1	18,280
	Long-Term Support Program (LTP)	–	–	83	10,492,925	88	10,881,662
	total	**225**	**6,158,566**	**170**	**11,510,237**	**131**	**11,608,687**

[1] 2024 figures as earmarked for completion

The diagram below outlines the initiatives taken by the Polish Academy of Sciences since the outbreak of the war in Ukraine. More detailed descriptions of these activities are provided in the following sections of the report.

Timeline of Activities



PAS Programs Supporting Scientists from Ukraine

Initiatives such as the Individual Fellowship Program and the Long-Term Support Program (LTP) have been playing a crucial role in maintaining the continuity of scientific research and supporting human capital within Ukraine's scientific community. Given the ongoing conflict, the continuation and expansion of these programs are essential for reinforcing human capital in the region.

INDIVIDUAL FELLOWSHIP PROGRAM

The Polish Academy of Sciences was the scientific institution in Poland that responded most quickly to the need to provide assistance to Ukrainian citizens forced to flee due to Russia's military invasion. **Already on 28 February 2022**, Jerzy Duszyński, then President of the Polish Academy of Sciences (PAS) and Anatoly Zagorodny, President of the National Academy of Sciences of Ukraine (NASU) signed an annex to the *Protocol on Scientific Cooperation between the PAS and NASU for 2022–2024*. This agreement facilitated the immediate provision of aid to Ukrainian scientists who had fled their country after 24 February 2022. On **1 March 2022**, the first call for applications was launched to fund research stays for Ukrainian scientists at PAS research units in Poland. The program offered up to 10-month research stays in Poland, allowing scientists to continue their work. During their stays at PAS units, Ukrainian scientists have retained their Ukrainian affiliations and received financial support for living expenses, accommodation, and travel costs to Poland.

The initial funds for this program were provided by an institutional grant from the PAS's Bureau for International Cooperation. However, these funds were exhausted quickly, within a few days of the application process opening. Due to the scale of support needed, the PAS Bureau for International Cooperation sought additional funds to continue supporting Ukrainian scientists. As a result, on 17 March 2022, then PAS President Jerzy Duszyński and Marcia McNutt, President of the U.S. National Academy of Sciences (NAS), signed a *Memorandum of Understanding on Cooperation in Support of Displaced Ukrainian Scholars*. The funding from the U.S. NAS was used to continue the support program, providing three-month research stays at PAS units, with the possibility of extending them to a maximum of six months. The program covered the costs of food, accommodation, and essential needs related to the unexpected change of residence, such as groceries, clothing, and basic household items.

In July 2022, the Academy secured additional funds for the Individual Fellowship Program from the Polish Ministry of Education and Science. Financial support for Ukrainian

scientists and scholars was also provided by numerous international organizations to which the PAS belongs as a member. The list of donors at the of this report lists the scientific institutions and the amounts contributed to the PAS for supporting Ukraine in 2022.

Additionally, from April 2022 to June 2023, one of the units of the Polish Academy of Sciences – the Polish Institute of Advanced Studies (PIASt) – signed three agreements with the Institute for Human Sciences (*Institut für die Wissenschaften vom Menschen* – IWM), covering grants for five scientists totaling 65,000 EUR, and one agreement with the Israel Institute for Advanced Studies (IIAS) for 10,000 USD. This funding was allocated to finance three-month research grants in the humanities and social sciences.

In July 2023, coordination of IWM grants was taken over by the PAS Bureau for International Cooperation, which secured an additional agreement for 15,000 EUR.

In total, in 2022, the Academy funded **225 research stays, including 108 with funding provided by the U.S. NAS**. In 2023 and 2024, the PAS Bureau for International Cooperation has continued to support Ukrainian citizens conducting research at PAS scientific units, albeit on a smaller scale than in the first year of the full scale armed conflict.

LONG-TERM SUPPORT PROGRAM (LTP)

In 2022, work began on launching a new support program for Ukraine, in response to the plan for rebuilding science in Ukraine agreed upon in June of that year. On 5 December, a meeting titled "Support for Scholars from Ukraine: Summary and New Opportunities" was held in Warsaw, bringing together representatives of the U.S. National Academy of Sciences and the directors of various PAS units hosting Ukrainian researchers as part of the support programs initiated shortly after the outbreak of the war in Ukraine. The principles of the new long-term financial support program for Ukrainian research teams were presented at this meeting, with a call for applications beginning on 7 December 2022.

Partners for this project include the U.S. National Academy of Sciences (NAS), the Royal Society in London, Elsevier, the German National Academy of Sciences Leopoldina, National Cheng Kung University in Taiwan, and the Royal Swedish Academy of Letters, History and Antiquities.

The program provides funding for two- or three-year research projects pursued by teams of up to five scientists, the members of which (except for the Project Leaders) may remain in Ukraine. All members of the Ukrainian research teams maintain dual affiliations.

The funding for the project encompasses:

- salaries for the research team members,
- additional accommodation costs for those relocating to Poland for the duration of the project,
- possible expenses related to participation in conferences, access to specialized research equipment, or the purchase of necessary small research tools.

A total of 174 Ukrainian research teams applied to the program. After a two-stage substantive evaluation coordinated by the U.S. NAS, 18 two- or three-year research projects were selected for implementation. The program's budget amounts to 8,391,638 USD. Annex 3 to this report provides a list of the selected projects.

On 29 June 2023, an inaugural, "kick-off" meeting for the selected LTP projects was held in Warsaw. The event was attended by Marcia McNutt, President of the U.S. National Academy of Sciences, Anatoly Zagorodny, President of the National Academy of Sciences of Ukraine, Marek Konarzewski, the current President of the PAS, Ian Wiggins representing the Royal Society, David Neal representing Elsevier, and Meifen Chen representing NCKU. Mark Brzezinski, U.S. Ambassador to Poland, was a special guest at the event.

The project leaders and representatives of LTP partners gathered for the inaugural meeting, held in Warsaw on 29 June 2023

Mark Brzezinski, U.S. Ambassador to Poland, was a special guest at the event

PAS President Marek Konarzewski and Marcia McNutt, President of the U.S. National Academy of Sciences (NAS), signing an agreement to fund the LTP

In September and October 2023, Ukrainian research projects that received funding through the LTP competition began their implementation. The average cost of a three-year project is approximately 470,000 USD.

The research teams are hosted by the following institutions:

- Nicolaus Copernicus Astronomical Center, PAS
- Space Research Centre, PAS (2 projects)
- Institute of Agrophysics, PAS
- Institute of Biochemistry and Biophysics, PAS
- Institute of Bioorganic Chemistry, PAS
- Institute of Physical Chemistry, PAS
- Institute of Organic Chemistry, PAS
- Institute of Pharmacology, PAS
- Institute of Physics, PAS
- Institute of Geophysics, PAS
- Institute of Mathematics, PAS
- Institute of Metallurgy and Materials Science, PAS
- Institute of Low Temperature and Structure Research, PAS
- Institute of Psychology, PAS
- Institute of Rural and Agricultural Development, PAS
- Institute of High Pressure Physics, PAS (2 projects)

On 17 April 2024, a meeting of the leaders of Ukrainian research projects funded through the Long-Term Support Program (LTP) was held at the Palace of Culture and Science in Warsaw. During the meeting, project leaders presented the progress of their research so far, including the first papers published in top international journals. One such paper, authored by the team of A.A. Marchenko, O.L. Kapitanchuk, Y.Yu. Lopatina, K.G. Nazarenko, A.I. Senenko, N. Katsonis, V.G. Nazarenko, and O.D. Lavrentovich, entitled "Polar Self-Organization of Ferroelectric Nematic-Liquid-Crystal Molecules on Atomically Flat Au (111) Surface" was published in *Phys. Rev. Lett.* (2024, 132, 098101, DOI: 10.1103/PhysRevLett.132.098101).

The LTP program has received widespread acclaim, with strong calls appealing for its continuation coming from the Ukrainian side. The PAS is now actively working to secure funding for a second edition of the LTP program. This time, the call for applications is planned to focus on the medical sciences, with a particular emphasis on research related to Post-Traumatic Stress Disorder (PTSD). With the assistance of the National Academy of Medical Sciences of Ukraine, a number of centers in Ukraine and Poland have already been identified as potential partners for this initiative.

Plan for Rebuilding Science in Ukraine

On 1–2 June 2022, a set of meetings were held in Warsaw with presidents and representatives of leading foreign academies of sciences. The President of the National Academy of Sciences of Ukraine, Anatoly Zagorodny, was the guest of honor. The discussions focused on the current needs of scientific institutions in war-affected Ukraine and the possibilities for further assistance. President Zagorodny provided an overview of the damage to Ukraine's scientific infrastructure and highlighted the most urgent needs of Ukrainian researchers. Those participating in the discussions included:

- **Marcia McNutt** – President of the U.S. National Academy of Sciences
- **Antonio Loprieno** – President of ALLEA
- **Gerald Haug** – President of the German National Academy of Sciences Leopoldina
- **Marie Louise Nosch** – President of the Royal Danish Academy of Sciences and Letters
- **Robin Grimes** – Vice-President and Foreign Secretary of the Royal Society, London
- **Andy Hopper** – Treasurer of the Royal Society, London
- **Thomas Sinkjær** – Secretary General of the Royal Danish Academy of Sciences and Letters

- **Vaughan Turekian** – Director of Policy and International Affairs at the U.S. National Academy of Sciences
- **Jerzy Duszyński** – President of the Polish Academy of Sciences (2015–2022)
- **Roman Słowiński** – Vice-President of the Polish Academy of Sciences (2019–2022)
- **Paweł Rowiński** – Vice-President of the Polish Academy of Sciences (2015–2022)
- **Anna Plater-Zyberk** – Director of the Bureau for International Cooperation, Polish Academy of Sciences

The participants reached a consensus and developed the following 10-point plan for the reconstruction of science in Ukraine (Annex 1):

1. Maintain institutional affiliations in Ukraine for Ukrainian researchers receiving temporary appointments abroad, in order to encourage repatriation once hostilities cease and the overall situation improves.
2. Develop specific funding programs directed to early-career researchers from Ukraine and their teams, including such using remote working agreements.
3. Establish funding programs for joint research by international teams with researchers working in Ukraine and provide for joint appointments.
4. Provide access to specialized research facilities abroad, especially those that duplicate Ukrainian facilities damaged or destroyed during the hostilities.

The President of the Polish Academy of Sciences welcoming the representatives of international scientific institutions to discuss rebuilding science in Ukraine

Representatives of international scientific institutions participating in the meeting on rebuilding science in Ukraine

5. Provide remote, free access to scholarly journals to Ukrainian research institutions.
6. Grant waivers for Article Processing Charges (APC), membership dues in scientific organizations, and conference participation fees for researchers and research organizations in Ukraine.
7. Establish brain circulation measures for Ukrainian researchers for networking and mutual learning with colleagues and organizations in the international scientific community.
8. Donate much needed and still useable laboratory and research equipment to Ukrainian institutions to replace capabilities destroyed during the war.
9. Plan for post-war science recovery of Ukraine with the future needs of the nation in mind, including the modernization of Ukraine's research, early-stage innovation and education.
10. Establish a coordination council to maximize impacts, minimize redundancy, and make meaningful use of synergies, accounting for issues related to junior- and senior-level researchers.

On June 13, 2022, an editorial titled "A Future for Ukrainian Science," jointly authored by J. Duszyński, M. McNutt, and A. Zagorodny, was published in the prestigious journal *Science* (Vol. 376, Issue 6599, p. 1249, DOI: 10.1126/science.add4088). This editorial is included below, as Annex 2 to this report.

PAS Institutions Supporting Cooperation with Ukraine

On behalf of the Polish Academy of Sciences, the plan for rebuilding science in Ukraine is being implemented by the PAS Bureau for International Cooperation in Warsaw, the PAS Representative Office in Kyiv, and the Academy's Interdisciplinary Advisory Team for Scientific Cooperation with Ukraine, as well as various scientific units of the Academy.

BUREAU FOR INTERNATIONAL COOPERATION, POLISH ACADEMY OF SCIENCES

The Bureau for International Cooperation oversees ongoing programs supporting scientists and scholars from Ukraine, such as the Individual Fellowship Program and the Long-Term Support Program (LTP), and organizes meetings and training sessions for Ukrainian researchers.

PAS REPRESENTATIVE OFFICE IN KYIV

This unit is responsible for establishing, maintaining, and developing scientific and research cooperation. Despite the ongoing conflict, the Representative Office organizes conferences and working visits in Ukraine. Its facilitates continuous engagement with key local partners, including the National Academy of Sciences of Ukraine and its institutes, the Ukrainian National Research Foundation, the Ministry of Education and Science of Ukraine, and local universities.

INTERDISCIPLINARY ADVISORY TEAM TO THE PRESIDENT OF THE POLISH ACADEMY OF SCIENCES ON SCIENTIFIC COOPERATION WITH UKRAINE

The team was established by Decision No. 16/2024 of the President of the Polish Academy of Sciences on 13 March 2024. The team's tasks include:

1) continuously monitoring the situation in Ukraine and analyzing possible scenarios for participating in the reconstruction of the country's science and research sector,
2) preparing analyses on the condition of the science and research sector in Ukraine for the Polish scientific community, public administration offices, and others,
3) reviewing programs and initiatives aimed at supporting scientific institutions and higher education in Ukraine,
4) establishing and maintaining contacts with similar entities operating in Poland and abroad.

Team Composition:

- **Chair: Jerzy Duszyński**, Polish Academy of Sciences
- **Secretary: Mateusz Białas**, Polish Academy of Sciences

Members:

- **Paweł Kaczmarczyk**, University of Warsaw
- **Grzegorz Motyka**, Polish Academy of Sciences
- **Anna Plater-Zyberk**, Polish Academy of Sciences
- **Andrzej Rychard**, Polish Academy of Sciences
- **Błażej Skoczeń**, Kraków University of Technology
- **Monika Stanny**, Polish Academy of Sciences
- **Jan Osiński**, National Centre for Research and Development (representative appointed by the Polish Minister of Science and Higher Education)

RESEARCH UNITS OF THE POLISH ACADEMY OF SCIENCES

From the first days of Russia's military invasion of Ukraine, the scientific units of the Polish Academy of Sciences have been involved in organizing all possible assistance for Ukrainian citizens forced to flee their country. In addition to the support provided by the PAS Chancellery, these efforts have included:

- immediate emergency assistance, with PAS unit employees organizing collections of clothing, food, and other daily essentials,
- providing office space as accommodation for scientists arriving from Ukraine, often at the unit's own expense,
- assistance provided by PAS unit employees with document translation and processing,
- employing Ukrainian scientists in PAS units using funds obtained from various sources, including the Polish National Science Centre (NCN), the Polish National Agency for Academic Exchange (NAWA), the Polish National Program for the Development of the Humanities (NPRH), the Kosciuszko Foundation, the Scholar Rescue Fund of the Institute of International Education, the German Historical Institute in Warsaw, the TRIPLE project (Targeting Researchers through Innovative Practices and Multilingual Exploration), the Directory of Open Access Journals (DOAJ), and MSCA4Ukraine,
- joint Polish-Ukrainian work on scientific publications,
- supporting Ukrainian scientists in obtaining funding to continue their research, either directly or through training and webinars,
- suspending cooperation with Russian scientists,
- changing the color-scheme of the logos of Polish scientific units by adding the symbolic colors of Ukraine.

A total of 28 PAS scientific units have shown support for Ukrainian scientists, including the following (in alphabetical order):

1. Center for Theoretical Physics, PAS
2. Hirszfeld Institute of Immunology and Experimental Therapy, PAS
3. Institute of Art, PAS
4. Institute of Bioorganic Chemistry, PAS
5. Institute of Chemical Engineering, PAS
6. Institute of Dendrology, PAS
7. Institute of Economics, PAS
8. Institute of Geological Sciences, PAS
9. Institute of High-Pressure Physics, PAS
10. Institute of Law Studies, PAS
11. Institute of Literary Research, PAS
12. Institute of Low Temperature and Structure Research, PAS
13. Institute of Mathematics, PAS
14. Institute of Mediterranean and Oriental Cultures, PAS
15. Institute of Metallurgy and Materials Science, PAS
16. Institute of Nature Conservation, PAS
17. Institute of Paleobiology, PAS
18. Institute of Pharmacology, PAS
19. Institute of Plant Genetics, PAS
20. Institute of Plant Physiology, PAS
21. Institute of Political Studies, PAS
22. Institute of Slavic Studies, PAS
23. Institute of the Polish Language, PAS
24. Manteuffel Institute of History, PAS
25. Mossakowski Medical Research Institute, PAS
26. Museum and Institute of Zoology, PAS
27. Niewodniczański Institute of Nuclear Physics, PAS
28. Szafer Institute of Botany, PAS

All the actions taken by PAS scientific units, whether officially taken or arising out of the goodwill of their employees, have been and continue to be extremely important and necessary. Below are examples of efforts that go beyond the previously outlined framework:

- Scholars from the Research Group on Literature and Language Teaching at **the Institute of Literary Research, PAS**, conducted a webinar entitled “Students from

Ukraine at Polish Schools," aimed at teachers. Experienced instructors with years of experience working foreigners shared their insights on textbooks and materials for teaching Polish as a foreign language, language skills, and the legal status of foreign students. The webinar took place on 19 March 2022.

- **The Institute of Literary Research, PAS**, implemented a project entitled "The Top Ten Children's Poems in Polish as a Foreign/Second Language Lessons," as part of the NAWA Polish Language Promotion Program. The project primarily improved competence among students and lecturers and enriched the training and educational materials available in Polish studies and language education. The project will produce an educational package and conduct online training, including demonstration lessons based on the developed materials. The textbook is available for download here. Methodological training on techniques for working with children was also organized as part of the project.

- **The Institute of History, PAS,** allocated approximately 51,000 PLN from its own funds to provide accommodation for Ukrainian scientists who fled to Poland due to the conflict. Since 2022, the IH PAS Foundation has organized fundraising campaigns for scholarships for scholars from Ukraine. In 2022–2024, the Institute organized two medical equipment donation drives.

- The **Institute of Slavic Studies, PAS**, organized free Polish language courses for Ukrainian citizens and free Ukrainian language courses for Polish volunteers involved in providing assistance. Additionally, the Institute holds a regular scientific seminar titled "Ukrainian Tuesdays." During these monthly online meetings, researchers from various academic centers in Ukraine, Poland, and abroad (including Austria and Germany) present their research on Ukrainian language, literature, and culture.

- Staff from the **Poznań Supercomputing and Networking Center**, affiliated with the **Institute of Bioorganic Chemistry, PAS**, volunteered as paramedics with the Polish Red Cross Rescue Group in Poznań, providing round-the-clock medical and humanitarian assistance to refugees at medical points in Przemyśl. They also participated in the preparation and distribution of humanitarian aid by the Polish Red Cross in Poznań.

- **The Institute of Dendrology, PAS**, prepared, published, and regularly updated informational brochures on current programs available to Ukrainian scientists that could provide funding to continue their research.

- **The Museum and Institute of Zoology, PAS**, delivered two shipments of unused furniture and laboratory glassware to Ukrainian institutions to replace equipment lost during the war and support their scientific research.

- On 1 March 2022, the Scientific Council of the **Niewodniczański Institute of Nuclear Physics, PAS**, in Kraków, adopted Resolution No. 19/2022 condemning the Russian Federation's military invasion of Ukraine and calling on the scientific community to express solidarity with the Ukrainian people and provide all necessary assistance to help them survive the war (the Polish text of the resolution is available here).

Outreach Activities and Associated Events

TRAINING FOR UKRAINIAN SCIENTISTS ON USING BIBLIOMETRIC DATABASES

Between October and December 2022, the PAS Bureau for International Cooperation, in collaboration with Elsevier, organized a total of six training sessions on the use of bibliometric databases. These sessions covered topics such as the functionality of the ScienceDirect database, bibliometric analysis using Scopus and the SciVal tool, the capabilities of the Scopus abstract database, including author profiles, and tips for young scientists on publishing scientific articles. All of these sessions were open both to employees of the Polish Academy of Sciences and to scientists and scholars from Ukraine. The PAS also organized three additional sessions held in Ukrainian.

TRAINING FOR EDITORS OF UKRAINIAN SCIENTIFIC JOURNALS

On 4–6 October 2022, a set of workshops was held at the Staszic Palace in Warsaw, organized by the PAS in cooperation with Elsevier. These workshops were designed for female editors of scientific journals and publishers from Ukraine. The sessions covered such topics as international practices in managing scientific journal publications, practical use of databases, building business models, and utilizing social media for communication.

The participants also met with representatives of the editorial team of *Academia*, a bilingual popular-science magazine published by the PAS. Practical workshops were led by Jolanta Iwańczuk, editor-in-chief and editor of the Earth Sciences section, and Daniel Sax, editor and translator of the magazine's English version. The editors provided insights

Anna Plater-Zyberk, Director of the PAS Bureau for International Cooperation, opens up the training workshops for Ukrainian editors

Ukrainian editors holding certificates attesting to their successful completion of the training

and advice on various aspects of the publishing process, including identifying topics with strong outreach potential, adapting the language of publications to modern standards, and techniques for making content more engaging.

The meeting also addressed the future directions for the development of Ukrainian scientific journals, both in the current context and the post-war period, along with the potential for collaboration between Ukrainian editorial teams and *Academia*.

POLISH-UKRAINIAN AWARDS FOR JOINT SCIENTIFIC RESEARCH

On 10 June 2024, the President of the Polish Academy of Sciences, Marek Konarzewski, and the President of the National Academy of Sciences of Ukraine, Anatoly Zagorodny, announced a competition for three joint awards from the two Academies for the best results achieved by PAS and NASU scholars during joint research. The competition is based on the *Agreement on the Awards of the Polish Academy of Sciences and the National Academy of Sciences of Ukraine for Outstanding Scientific Achievements Resulting from Joint Scientific Research Conducted by Scholars of Both Countries*, signed in Kyiv on 2 April 2013 and in Warsaw on 8 April 2013. The awards, each worth 5,000 USD (to be shared between the winning Polish and Ukrainian research teams), are fully funded by the Polish Academy of Sciences.

VISIT OF STUDENTS FROM THE WARSAW UKRAINIAN SCHOOL TO THE NICOLAUS COPERNICUS ASTRONOMICAL CENTER AND THE SPACE RESEARCH CENTRE

On 17 June 2024, students from the Warsaw Ukrainian School "SzkoUA" visited the Nicolaus Copernicus Astronomical Center of the Polish Academy of Sciences (NCAC PAS) and the Space Research Centre of the Polish Academy of Sciences (SRC PAS).

The students met with Project Leaders working under the Long-Term Support Program for Ukraine (LTP). Andriy Zalizovskiy, Peter Bertsyki, and Oleksiy Dudnyk shared

Students from the Warsaw Ukrainian School visiting the Nicolaus Copernicus Astronomical Center, PAS

Students from the Warsaw Ukrainian School visiting the Space Research Centre, PAS

the objectives of their projects. During the visit to the Astronomical Center, the students had the opportunity to observe and photograph the Sun. They were also invited to tour the Space Research Centre, where they could observe the scientists' daily work.

The "Space Academy VR zone" proved to be particularly popular, where students had the chance to experience astronomical phenomena together with explanations of their nature. The demonstration, gave the students the chance to observe the inside of a black hole and to explore a space station.

Students from the Warsaw Ukrainian School observing the Sun at the Nicolaus Copernicus Astronomical Center, PAS

Acknowledgements

The Polish Academy of Sciences sincerely thanks the donors for their financial support, which has made possible the implementation of programs aimed at rebuilding science in Ukraine. The donors are listed in alphabetical order:

Long–Term Program DONORS (alphabetical order)	**amount**	**currency**
Elsevier	250,000	USD
German National Academy of Sciences Leopoldina	100,000	EUR
National Cheng Kung University	211,000	USD
Royal Society	500,000	GBP
Royal Swedish Academy of Letters, History and Antiquities	44,433	EUR
United States National Academy of Sciences (US NAS)	7,100,000	USD

Individual Fellowship Program DONORS (alphabetical order)	**amount**	**currency**
Alloy Phase Diagram International Commission (APDIC)	400	USD
European Federation of Biotechnology (EFB)	500	EUR
European Polar Board (EPB)	5500	EUR
Forum of Arctic Research Operators (FARO)	1500	EUR
Institute for Human Sciences in Vienna (IWM)	80,000	EUR
International Association of Byzantine Studies (AIEB)	200	EUR
International Astronautical Federation (IAF)	440	EUR
International Astronomical Union (IAU)	19,710	EUR
International Center for Mechanical Sciences (CISM)	16,000	EUR
International Commission for Optics (ICO)	855	EUR
International Committee of Historical Sciences (CISH)	800	CHF
International Federation for Research in Women's History (IFRWH)	60	GBP
International Federation for the Promotion of Mechanism and Machine Science (IFToMM)	600	EUR

Individual Fellowship Program DONORS (alphabetical order)	**amount**	**currency**
International Federation for Structural Concrete (fib)	7350	CHF
International Geographical Union (IGU)	1000	USD
International Institute of Noise Control Engineering (I-INCE)	300	EUR
International Numismatic Council (INC)	150	EUR
International Union for Quaternary Research (INQUA)	1,000	EUR
International Union of Academies (UAI)	943	EUR
International Union of Anthropological and Ethnological Sciences (IUAES)	35	GBP
International Union of Biochemistry and Molecular Biology (IUBMB)	1000	USD
International Union of Crystallography (IUCr)	3000	USD
International Union of Food Science and Technology (IUFoST)	700	USD
International Union of Forest Research Organizations (IUFRO)	662	EUR
International Union of Geodesy and Geophysics (IUGG)	5000	USD
International Union of Geological Sciences (IUGS)	1314	USD
International Union of History and Philosophy of Science and Technology/ Division of History of Science and Technology (IUHPST/DHST)	850	EUR
International Union of Laboratories and Experts in Construction Materials, Systems and Structures (RILEM)	699	EUR
International Union for Nutritional Sciences (IUNS)	500	USD
International Union of Pure and Applied Biophysics (IUPAB)	750	EUR
International Union of Radio Science (URSI)	2170	USD
International Union of Theoretical and Applied Mechanics (IUTAM)	810	USD
Israel Institute for Advanced Studies (IIAS)	10,000	USD
Kristof Coussement (private donor)	1,000	EUR
Nuclear Physics European Collaboration Committee (NuPECC)	5629.80	EUR
ON BOARD Public Relations Sp. z o. o. (L'Oréal)	20,000	PLN
Permanent International Committee of Linguists (CIPL)	200	USD
Scientific Committee on Oceanic Research (SCOR)	2750	USD

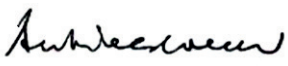
Annex no. 1

ACTION STEPS FOR REBUILDING UKRAINE'S SCIENCE, RESEARCH AND INNOVATION

We, the leadership of the Polish Academy of Sciences, the National Academy of Sciences of Ukraine, the U.S. Academy of Sciences, the German National Academy of Sciences Leopoldina, the Royal Danish Academy of Sciences and Letters, the ALLEA European Federation of Academies of Sciences and Humanities, and the Royal Society of the United Kingdom, met in Warsaw, Poland on June 2, 2022. The aim of the meeting was to discuss and agree on steps to build a strong science, innovation, research and training system in Ukraine. Our discussions recognized the challenges in making progress given the still ongoing invasion by Russian forces, but also were driven by an understanding that rebuilding science and research in Ukraine, are critical to ensure its long-term prosperity and sovereignty. As such, we strongly encourage that while global leaders develop programs and make funding commitments for Ukraine, there should be a focus on rebuilding a modern and globally integrated science and research system. The 10 actions articulated below are practical steps that can be taken by scientific communities of our countries, and also those around the world. While some of the actions can be achieved in the near-term, others will depend on the evolving military and security situation in Ukraine. The list is subject to expansion and readjustment, and takes into consideration past experiences in dealing with war-affected countries.

1. Maintain institutional affiliations in Ukraine for Ukrainian researchers receiving temporary appointments abroad, in order to encourage repatriation once hostilities cease and the overall situation improves.
2. Develop specific funding programs directed to early-career researchers from Ukraine and their teams, including such using remote working agreements.
3. Establish funding programs for joint research by international teams with researchers working in Ukraine and provide for joint appointments.
4. Provide access to specialized research facilities abroad, especially those that duplicate Ukrainian facilities damaged or destroyed during the hostilities.

5. Provide remote, free access to scholarly journals to Ukrainian research institutions.
6. Grant waivers for Article Processing Charges (APC), membership dues in scientific organizations, and conference participation fees for researchers and research organizations in Ukraine.
7. Establish brain circulation measures for Ukrainian researchers for networking and mutual learning with colleagues and organizations in the international scientific community.
8. Donate much needed and still useable laboratory and research equipment to Ukrainian institutions to replace capabilities destroyed during the war.
9. Plan for post-war science recovery of Ukraine with the future needs of the nation in mind, including the modernization of Ukraine's research, early-stage innovation and education.
10. Establish a coordination council to maximize impacts, minimize redundancy, and make meaningful use of synergies, accounting for issues related to junior and senior-level researchers.



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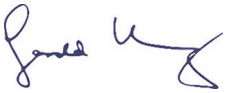

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Annex no. 2

A future for Ukrainian science

As the war in Ukraine enters its fourth month, Russian forces continue to destroy the nation's scientific institutions and infrastructure, signaling Russia's intent to obliterate the future for Ukraine. In Kharkiv, for instance, the renowned Institute of Physics and Technology and its newly built Neutron Source nuclear facility have been heavily damaged. Even the Plant Production Institute with its underground national seed bank—one of the world's largest—has been bombed. At the Chernobyl nuclear labs, Russian forces have looted or destroyed hundreds of computers, radiation dosimeters, and irreplaceable software and equipment. Although the response to each international science crisis is necessarily unique, the US National Academy of Sciences is once again joining with international and regional partners to support beleaguered colleagues, as it did last year in the successful extraction and resettlement of Afghanistan scientists at risk from the Taliban. To that end, the national science academies of Poland, Ukraine, and the United States recently convened a meeting of leaders from several national science academies (including the presidents of Germany's Leopoldina science academy, the Royal Danish Academy of Sciences and Letters, and the ALLEA European Federation of Academies of Sciences and Humanities, and leaders from the Royal Society of the United Kingdom) to explore how the global science community can best help Ukraine. The resulting 10-point action plan for the world's research community aims to help meet several immediate needs and also provide the building blocks for revitalizing Ukrainian science in the future.

> **"It is...vital that science be a cornerstone of any postwar reconstruction..."**

The plan seeks to support researchers working within Ukrainian institutions, as well as their teams—whether within Ukraine or in neighboring countries—both scientifically and financially so that these generations of researchers will not be lost to science or to Ukraine. Along with the traditional types of support provided by international cooperation and collaboration, funders are considering developing grant programs for joint research, particularly if conducted inside Ukraine. Some journal publishers have waived Ukraine's institutional subscription charges and author publication charges, and scientific societies are considering temporarily suspending membership dues. Such steps open the opportunity to immediately increase connections of Ukrainian researchers to thriving international research communities. It is also vital that science be a cornerstone of any postwar reconstruction of Ukraine.

There is also an urgent need for donated instruments, including various types of microscopes, spectrometers, and materials testing machines to keep these researchers productive. At the same time, many female scholars forced to flee, most with children, need temporary research positions and financial support for themselves and their research teams until they can return home. The Polish Academy of Sciences and the US National Academy of Sciences have partnered to place temporarily some 220 Ukrainian researchers in Polish science institutions and provide financial support so that they can continue to make valuable contributions to research. Programs like this will hopefully expand within Poland and into other European countries such as Germany, the United Kingdom, and Denmark while allowing these scientists to retain their Ukrainian science affiliations until they can return home.

Lessons learned during the COVID-19 pandemic can also be applied to help Ukrainian researchers form virtual networks with international colleagues, with intentional encouragement from institutions and researchers. These efforts cost little but would keep these scientists engaged and involved.

Once the war is over, it is hoped that Ukraine will swiftly begin the monumental task of rebuilding. National science academies around the world should advocate that international aid to Ukraine be directed to rebuilding science infrastructure alongside other critical needs such as transportation, energy, and health care. Rebuilding Ukrainian science should not concentrate on replicating what was lost, but on equipping the country's scientific enterprise to meet shared 21st-century challenges—such as preparing for future pandemics, fighting climate change, and sharing the benefits of science equally and equitably.

The stakes of the war in Ukraine are high—the future of democracy in Europe is at risk. The global science community should not only help guarantee that Ukrainian science remains a vital source of national advancement, but also ensure that it is part of international science so that its values of collaboration, cooperation, and mutual trust continue to contribute to a better world.

–Jerzy Duszyński, Marcia McNutt, Anatoly Zagorodny

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Annex no. 3

List of projects funded under the LTP program

no.	Project Leader	PAS Unit	Project title
1	Bertsyk Peter	Nicolaus Copernicus Astronomical Center	Formation and evolution of the Nuclear Star Cluster in the Milky Way and other spiral galaxies on the cosmological time scale
2	Bondar Kseniia	Institute of Geophysics	Quantifying magnetic properties of soils to evaluate sustainable hazards from heavy metal pollution due to military activities in Ukraine
3	Borodina Olena	Institute of Rural and Agricultural Development	Substantiation and measures for implementation of a human rights-based integrated approach to rural development, food security and land policy in post-war rebuilding of Ukraine
4	Cherkas Volodymyr	Institute of Bioorganic Chemistry	Nanoscale Hippocalcin Signaling in Long-Term Depression in Norm and Primary Dystonia
5	Dovbeshko Galyna	Institute of Low Temperature and Structure Research	War-derived air pollution nanohybrids composed of carbon containing smoke nanoparticles and metal compounds: FIR/Raman spectroscopic, fluoroscent and membrane-active properties, their potential neurotoxicity and its prevention
6	Dudko Artem	Institute of Mathematics	Ergodic group actions, characters on groups and unitary representations
7	Dudnyk Oleksii	Space Research Centre	The study of solar flares and their manifestation during the 25th cycle of solar activity using the Solar Orbiter and ground radio scientific database
8	Goncharuk Olena	Institute of Agrophysics	Biocompatible hybrid hydrogels with functional inorganic fillers for strenghtening of plant vegetation

no.	Project Leader	PAS Unit	Project title
9	Kochelap Viacheslav	Institute of High Pressure Physics	Device focused research on amplification, generation and control of terahertz radiation
10	Kyrychenko Anhelina	Institute of Biochemistry and Biophysics	Experimental evaluation of virus disease of cereals in Ukraine and liposomal bionanotechnology for crop stabilization
11	Naydonova Lyubov	Institute of Psychology	War mental health crisis coping: evidence-based media psychoeducation for family and community health promotion during economic recovery
12	Poliarus Olena	Institute of Metallurgy and Material Sciences	Develoment of new MMCs Coating based on NiAl, NiTi intermetallic matrix reinforced with high entropy nitrides (Cr, Zr, Nb, Al., Ti)N
13	Potopnyk Mykhailo	Institute of Organic Chemistry	Organoboron materials capable of harvesting triplet excitons for a new generation of optoelectronic devices
14	Sadovyi Bohdan	Institute of High Pressure Physics	Influence of high N2 gas pressure on crystallization mechanisms and physical properties of h-BN
15	Sashuk Volodymyr	Institute of Physical Chemistry	Ferroelectric nematic liquid crystal: a new paradigm for breakthrough electrooptical applications
16	Shayakhmetova Ganna	Institute of Pharmacology	Long-term effects of fluoxetine on reproductive function and behavioral phenotype in a rodent model of juvenile post traumatic stress disorder
17	Volobuiev Valentyn	Institute of Physics	Chalcogenide nanostructures as a versatile platform for quantum bits (ChalQ)
18	Zalizovskyy Andriy	Space Research Centre	Studying the geospace plasma irregularities for the needs of Space Weather operational services

REPORT

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POLSKA AKADEMIA NAUK