

Annual Report

2023



GREETINGS FROM THE EXECUTIVE BOARD

Ladies and gentlemen,
Dear friends of coastal, marine and polar research,,

The past year has been challenging in many ways: in addition to global political crises, extreme climate events continued to dominate the headlines. 2023 was the hottest year to date since climate records began, and the highest water temperatures on record were also measured in the seas and oceans around the globe.

Even if the causes of the high water temperatures are not (yet) fully understood, one thing is clear: coasts, seas and oceans are the basis of human life. However, the man-made climate crisis, loss of biodiversity, increases exploitation and pollution are increasingly threatening the marine environment, biodiversity and ecosystems. In order to preserve the important functions of the oceans as the basis of life on earth and to be able to use the ecosystem services sustainably, we must protect them.

The German Marine Research Alliance (DAM) brings together 24 leading (research) institutions that deal with the interaction between humans and the marine environment, the role of the oceans in climate change and the responsible use of the ocean. The aim of this alliance is to develop and provide solution-oriented practical knowledge – as a basis for decisions in politics, business and civil society.

The transdisciplinary DAM research missions, which address socially relevant issues in marine research, are important building blocks for this. The two DAM research missions “Marine Carbon Sinks in Decarbonisation Pathways” (CDRMare) and “Protection and Sustainable Use of Marine Areas” (sustainMare) progressed according to plan in the reporting year and prepared for a possible Phase II after their first three-year term. The third DAM research mission on the topic of “Ways to improve risk management in the area of marine extreme events and natural hazards” (mareXtreme) has gone through all the important steps in order to start on schedule at the beginning of 2024.

We have used various formats and channels to communicate the knowledge we have gained to policy-makers and society. The DAM has made progress in establishing a joint data management system for marine

research, as well as in implementing educational and transfer formats – in particular the “Oceans Online” information portal and the “Interactive World Ocean”. Overall, the DAM is well on its way to promoting the sustainable management of coasts, seas and oceans. Thank you very much for joining us on this journey!

With best regards


Joachim Harms
Chairman of the DAM Executive Board


Michael Schulz
Deputy Chairman of the DAM Executive Board


Katja Matthes
Member of the DAM Executive Board


Ulrich Bathmann
Member of the DAM Executive Board

Dr. Joachim Harms
Chairman of the
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Prof. Dr. Michael Schulz
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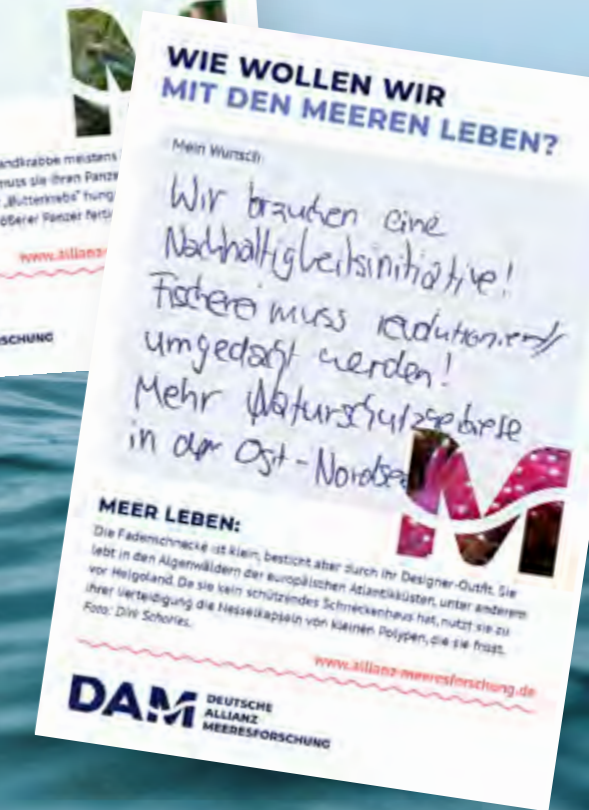
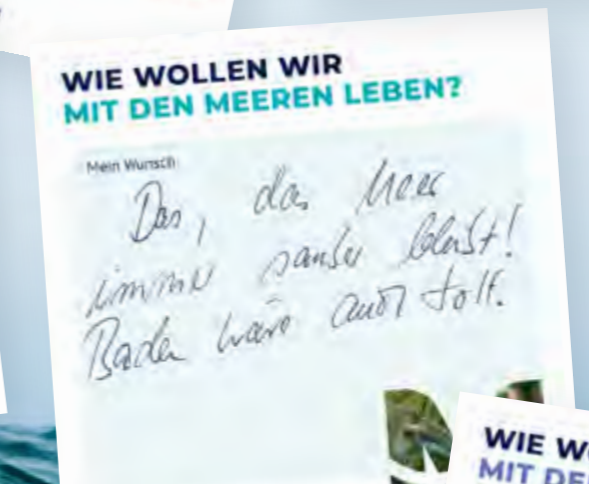
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HOW DO WE WANT TO LIVE WITH THE OCEANS?

The sea is vital to our survival: it plays an important role in global climate processes, provides us with food and energy, serves as a transport route and is also a place of recreation and relaxation for many people. In 2023, the DAM captured wishes and ideas for our future life with the sea at various events – some examples can be seen here. Most participants wanted less waste and more protection for the sea – in line with the DAM's mission statement 'We promote the sustainable use of coasts, seas and oceans'. The following report shows the contribution that German marine research can make. We are delighted if you accompany us on this journey!



**MEER
LEBEN**



WIE WOLLEN WIR MIT DEN MEEREN LEBEN?

Mein Wunsch:
Ich möchte einen Sauberen, müll- und Atomfreien Ozean, der vielfältiges Leben ermöglicht. Wir sollten die wunderbare Schöpfung achten, bewahren und falls nötig selbst mit uns nicht selbst unsere Lebensgrundlage zerstören!

MEER LEBEN:
Die Fadenschmücke ist klein, besteht aber durch ihr Designer-Outfit. Sie lebt in den Algenwäldern der europäischen Atlantikküsten, unter anderem vor Helgoland. Da sie kein schützendes Schneckenhaus hat, nutzt sie zu ihrer Verteidigung die Hesselkapseln von kleinen Polypen, die sie frisst.

Foto: Divi Schories.

www.allianz-meeresforschung.de

DAM DEUTSCHE ALLIANZ MEERESFORSCHUNG

WIE WOLLEN WIR MIT DEN MEEREN LEBEN?

Mein Wunsch:
Bis He alle Munition vom 2. Weltkrieg aus Nord- und Ostsee bergen!

MEER LEBEN:
Als „Ritter des Meeres“ kommt die Strandkrabbe meistens äußerst wehrhaft daher. Doch um wachsen zu können, muss sie ihren Panzer samt Scheren abstreifen und ist dann als wehloser „Mutterkreb“ hungriegen Molken solange ausgeleert, bis ihr neuer, größerer Panzer fertig ausgehärtet ist.

Foto: Divi Schories.

www.allianz-meeresforschung.de

DAM DEUTSCHE ALLIANZ MEERESFORSCHUNG

WIE WOLLEN WIR MIT DEN MEEREN LEBEN?

Mein Wunsch:
Ich wünsche mir dass die Meere noch sauber bleiben und dass ich noch viele Jahre im Meer Schwimmen kann und dass ich ein Aquarium habe.

MEER LEBEN:
Der Seehase ist nicht nur ein felscher Hase, sondern produziert auch noch falsche Eier. Schwarz oder rot gefärbt kommt Seehasenrogen als Kaviar-Ersatz in den Handel und ist unglaublich günstiger als das Original vom russischen Stör. So leuchtend orange sind übrigens nur Männchen auf Brautschau. Foto: Divi Schories.

www.allianz-meeresforschung.de

DAM DEUTSCHE ALLIANZ MEERESFORSCHUNG

WIE WOLLEN WIR MIT DEN MEEREN LEBEN?

Mein Wunsch:
Gutts Gorgonakrolle Abbau wirklich sein? Leisere Schiffe Öleutorgung der Schiffe

MEER LEBEN:
Das Gorgonenhaut ist eine worte Jugend mit den Seesternen verwandt. Ein „Haupt“ nicht, es ist sesshaft und frisst Plankton, das auffängt und zur Mundöffnung an der Unterseite seiner Körperschale bugsiert. Foto: Divi Schories.

www.allianz-meeresforschung.de

DAM DEUTSCHE ALLIANZ MEERESFORSCHUNG

WIE WOLLEN WIR MIT DEN MEEREN LEBEN?

Mein Wunsch:
• dass die Verschmutzung aufhört
• dass der Temperaturanstieg gestoppt wird
• dass der Mensch die Konsequenzen seines Handelns bedenkt

MEER LEBEN:
Das Gorgonenhaut ist eine worte Jugendstilähnlichkeit unter Wasser und mit den Seesternen verwandt. Ein „Haupt“ hat das Gorgonenhaut allerdings nicht, es ist sesshaft und frisst Plankton, das es mit seinen verstellten Arm auffängt und zur Mundöffnung an der Unterseite seiner Körperschale bugsiert. Foto: Divi Schories.

www.allianz-meeresforschung.de

DAM DEUTSCHE ALLIANZ MEERESFORSCHUNG

WIE WOLLEN WIR MIT DEN MEEREN LEBEN?

Mein Wunsch:
Bewusster Die vielen tollen und innovativen Projekte zum Meer (Wahrschutz, Ökosystempflege, moderne Nutzung) sollten in der Breite positiv verankert werden.

MEER LEBEN:
Der Seehase ist nicht nur ein felscher Hase, sondern produziert auch noch falsche Eier. Schwarz oder rot gefärbt kommt Seehasenrogen als Kaviar-Ersatz in den Handel und ist unglaublich günstiger als das Original vom russischen Stör. So leuchtend orange sind übrigens nur Männchen auf Brautschau. Foto: Divi Schories.

www.allianz-meeresforschung.de

DAM DEUTSCHE ALLIANZ MEERESFORSCHUNG



WIE WOLLEN WIR MIT DEN MEEREN LEBEN?

Mein Wunsch:
In Entlang von allen Beteiligten (Menschen, Tier, Umwelt) leben. Weniger Plastik oder Schwermetalle dort zu sorgen. Danke

MEER LEBEN:
Die Fadenschmücke ist klein, besteht aber durch ihr Designer-Outfit. Sie lebt in den Algenwäldern der europäischen Atlantikküsten, unter anderem vor Helgoland. Da sie kein schützendes Schneckenhaus hat, nutzt sie zu ihrer Verteidigung die Hesselkapseln von kleinen Polypen, die sie frisst.

Foto: Divi Schories.

www.allianz-meeresforschung.de

DAM DEUTSCHE ALLIANZ MEERESFORSCHUNG

WIE WOLLEN WIR MIT DEN MEEREN LEBEN?

Mein Wunsch:
Verhinderung der internationalen Ausbeutung der Tiefsee. Forschen in der Industrie: nur global abgestimmt

MEER LEBEN:
Als „Ritter des Meeres“ kommt die Strandkrabbe meistens äußerst wehrhaft daher. Doch um wachsen zu können, muss sie ihren Panzer samt Scheren abstreifen und ist dann als wehloser „Mutterkreb“ hungriegen Molken solange ausgeleert, bis ihr neuer, größerer Panzer fertig ausgehärtet ist.

Foto: Divi Schories.

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DAM DEUTSCHE ALLIANZ MEERESFORSCHUNG



DAM

**24 MARINE RESEARCH INSTITUTIONS, ONE
GOAL: WE STRENGTHEN THE SUSTAINABLE
USE OF THE COASTS, SEAS AND OCEANS.**

Funded by the federal government and the northern German states.
Networked with politics, business and civil society.

German Marine Research Alliance:

KNOWLEDGE FROM RESEARCH – FOR A MORE SUSTAINABLE APPROACH TO COASTS, SEAS AND OCEANS

Around 70 percent of the Earth's surface is covered by water. Connected by currents, seas and oceans form the largest interconnected ecosystem in the world. By storing heat and carbon dioxide and producing oxygen, seas and oceans also have a significant influence on the Earth's climate. They are a habitat for millions of species and the basis of human life – but they are under serious threat from overexploitation, pollution and man-made climate change.

In order to protect the coasts, seas and oceans and use them sustainably, it is crucial to understand them better. German marine research, which occupies a leading international position, can make a decisive contribution to this. In 2019, the federal government, represented by the Federal Ministry of Education and Research (BMBWF), and the northern German states of Bremen, Hamburg, Mecklenburg-Western Pomerania, Lower Saxony and Schleswig-Holstein, together with marine research institutions, founded the German Marine Research Alliance (DAM), one of the largest marine research alliances in the world.

Its aim is to use the combined strength and expertise of the leading marine research institutions to develop and provide knowledge

for orientation and action – as a basis for political and social decisions that promote the sustainable use of coasts, the sea and the environment.

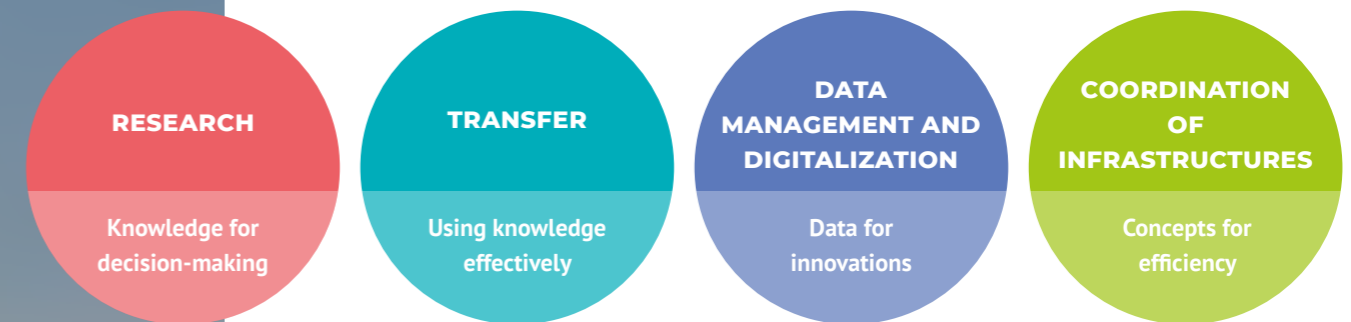
As a platform for the coordination and strategic development of German marine research, the DAM complements existing structures in the scientific system. It networks universities, non-university research and departmental research institutions as well as research museums and promotes exchange with politics, business and civil society – at national and international level. The DAM works in close coordination with the German Marine Research Consortium (KDM) and participates as a network partner in the UN Decade of Ocean Science for Sustainable Development (2021 – 2030): a global campaign with the aim of jointly protecting and shaping the ocean in order to preserve it for future generations. Research findings play a central role in this.

NETWORK PARTNER

Network partner of the
**German Committee of the
UN-Ocean Decade (ODK)
2021–2030**

ACTIVITIES OF THE DAM 2023

To achieve its goals, the DAM is active in four core areas:



The DAM made significant progress in its core areas during the reporting year. With 24 members at the end of the reporting year, the alliance has brought together the leading institutions in German marine research under one roof, continued to network and established regular exchange formats. The two DAM research missions CDRmare and sustainMare have presented results at the mid-point of their first research phase and prepared for a possible Phase II. Preparations for the third mission, mareXtreme, were completed in the reporting year, enabling it to start its research work as planned at the start of 2024. In the area of data management and digitalization, progress was made in particular through the continuation and expansion of the "Unterwegs" research data project, which aims to improve access to and use of research data on German research vessels. With the activities for the strategic optimization of the German marine research infrastructure, the DAM has come considerably closer to its goal of promoting a more efficient use of research equipment and an increase in interdisciplinary cooperation and knowledge exchange. Transfer and communication played a decisive role in the dissemination of scientific background information in politics, business, organized civil society and, in some cases, to the general public.

The details of the DAM's activities in 2023 are summarized on the following pages.

CORE AREA RESEARCH

Addressing issues relevant to society –
for science that benefits everyone.

Seas and oceans are crucial for life on our planet: they regulate a large part of the global carbon cycle and make an important contribution to climate stabilization. Coasts, seas and oceans also play a vital role in the economy as they provide numerous resources, including food, energy and trade routes. And they are important places of recreation and cultural heritage for many people around the world.

In order to ensure the long-term health of the seas and oceans and to effectively combat the loss of marine biodiversity, a comprehensive understanding of their complex ecosystems is essential. The members of the DAM conduct research in order to close knowledge gaps in this field and create a basis for the development of courses of action for politics, business and civil society. A prerequisite for this is a regular dialog with the various stakeholders in order to jointly develop effective solutions for dealing with the consequences of human-made climate change, marine protection and the sustainable management of coasts, seas and oceans.

In order to meet the challenges of protecting the seas and oceans, the DAM has initiated three research missions: "Marine Carbon Sinks in Decarbonisation Pathways", CDRmare for short, "Protection and Sustainable Use of Marine Areas", sustainMare for short, both of which were launched in 2021. The third research mission, "Pathways to improved risk management in the field of marine extreme events and natural hazards", mareXtreme for short, was prepared in the reporting year. The three DAM research missions are funded by the Federal Ministry of Education and Research (BMBF) and the science ministries of the northern German Federal states (Phase I of CDRmare and sustainMare by the BMBF).

The missions focus on current challenges relevant to society with the aim of developing solutions for sustainable human interaction with the oceans and coastal

areas. Their special feature lies in their inter- and transdisciplinary orientation, i.e. the cooperation between different specialist disciplines and the involvement of stakeholders from business, politics, administration and organized civil society. This approach pools the resources and expertise of various institutions and interest groups and dovetails existing activities in order to make an effective contribution to the development of strategies and measures for the protection and sustainable use of the oceans. The federal government's → *MARE:N* research program serves as a guideline.

A key element of the research missions is transfer: the exchange of knowledge with politics, business and civil society. The numerous transfer activities within the missions are complemented by various overarching communication formats and (parliamentary) events organized by the DAM. In 2023, representatives of the DAM research missions also took part in meetings of the General Assembly, the Stakeholder Forum and the International Advisory Board of the DAM to communicate and discuss the initial results of their research from Phase I and the prospects for a possible Phase II within the DAM bodies and committees.

ACTIVITIES IN THE CORE AREA RESEARCH 2023

FIRST DAM RESEARCH MISSION:

CDRMARE – MARINE CARBON SINKS IN DECARBONISATION PATHWAYS



In order to mitigate the increasingly drastic consequences of human-made climate change and to achieve the climate targets adopted in the Paris Agreement, it will be necessary not only to massively reduce CO₂ emissions but also to remove CO₂ from the atmosphere. The DAM research mission → CDRmare is investigating whether and to what extent the ocean can play a role in the removal and storage of CO₂ from the atmosphere. The interactions with and the effects on the marine environment, the Earth system and society will be examined and approaches for monitoring, attribution and accounting of marine carbon storage in a changing environment will be considered.

At the DAM research mission CDRmare more than 200 scientists are researching the role of the ocean in absorbing and storing carbon dioxide from the atmosphere in regular exchanges with representatives from politics, business and civil society in six consortia. A total of 22 project partners are involved in the mission. The DAM research mission CDRmare has reached its third year in 2023: The first funding phase runs from August 2021 to July 2024.

At the end of January, around 160 scientists and stakeholders in the research mission met for their annual conference at the Ozeaneum in Stralsund, with around 50 participants taking part online. In addition to an in-depth discussion of the mission's results to date, the meeting served to begin research planning for a possible second funding period from summer 2024.

The decision to continue the mission with Phase II was made in August 2023, preceded by an intensive review process of the research mission involving all DAM bodies and committees (General Assembly on March 13 (see graphic page 19), Stakeholder Forum on April 17

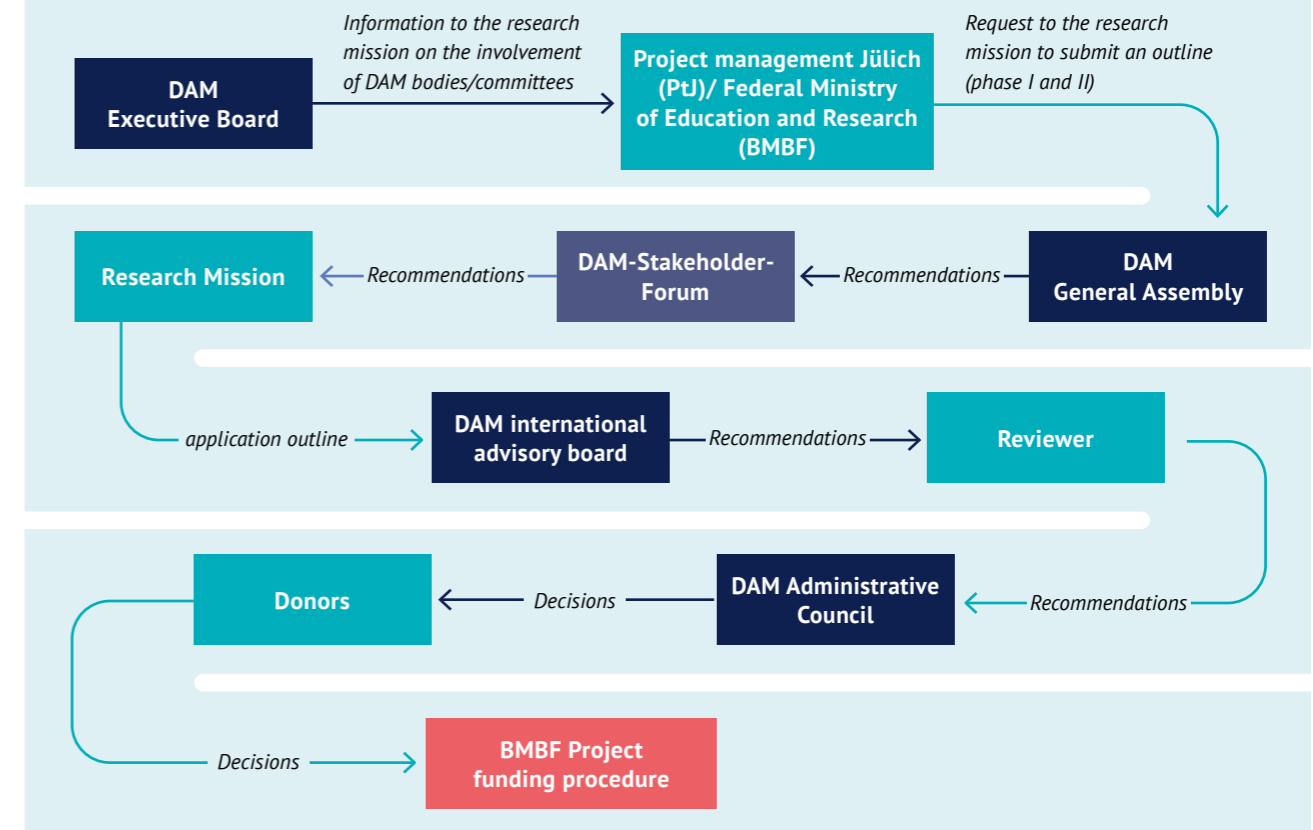
(see page 49), International Advisory Board on June 20/21 (see page 48) and Administrative Council on August 23, 2024 (see page 47). Both the International Advisory Board of the DAM and the external review panel of the BMBF emphasized the excellent work of the mission and recommended the continuation of the mission in Phase II. The Administrative Council of the DAM and the funders followed these recommendations. With the positive decision of the funders, the BMBF project funding procedure was initiated.

In order to communicate the results of CDRmare and engage with politicians and other stakeholders, a parliamentary breakfast for science and politics took place in March 2023 at the initiative of Mario Brandenburg, Parliamentary State Secretary at the Federal Ministry of Education and Research (BMBF), followed by a press conference. Moderated by DAM Managing Director Annekatriin Lehmann, representatives of the mission presented the opportunities and hurdles of marine geological CO₂ storage to over 50 participants (see page 38). The CDRmare team has summarized the background to the state of research in the field of marine carbon capture and storage and the resulting recommendations for political decision-makers in a → Policy Brief.

Current findings from the research mission were also included in the eighth edition of the World Ocean Review (WOR) entitled → "The Ocean – A Climate Champion? How to Boost Marine Carbon Dioxide Uptake" which was published in mid-November. Most of the more than 20 scientists involved in the report conduct research at DAM member institutions and in the CDRmare mission.



REVIEW PROCESS FOR A POSSIBLE PHASE II OF THE DAM RESEARCH MISSIONS



SECOND DAM RESEARCH MISSION:

SUSTAINMARE – PROTECTION AND SUSTAINABLE USE OF MARINE AREAS



→ sustainMare is the second research mission of the German Marine Research Alliance. It focuses on the protection and sustainable use of marine areas. Pressure on the oceans is increasing. More and more people want to live by the sea or spend their holidays there. Shipping is the number one mode of transport. Natural resources such as fish and shrimp, as well as sand, oil and gas, are becoming increasingly scarce. In addition, the energy transition will require vast areas for offshore wind farms. All of these uses cause marine and coastal pollution, including underwater noise, environmental contamination, damage to the seabed and changes to natural currents. Added to this is the human-induced climate change with rising temperatures and increasingly extreme weather

conditions. How will these pressures develop and interact with each other? And how will the ocean respond?

The DAM research mission sustainMare aims to find answers to these questions and identify options for action. For the first time, more than 250 scientists from 28 institutions are conducting joint research in seven projects on future topics relating to the sustainable management of coasts, seas and oceans, with a focus on the North Sea and Baltic Sea. The mission will run from December 2021 to November 2024, funded by the Federal Ministry of Education and Research (BMBF).

From August 30 to September 1, the mission's status conference took place at Kiel University, an important platform for researchers to exchange ideas. More than

170 participants discussed the many ecological, economic and social impacts of the use of the North Sea and Baltic Sea. First results of the mission were compiled, discussed in workshops and the course was set for the upcoming scientific agenda. One of the main conclusions of the conference was that new protection measures are urgently needed given the increasing pressure on the unique diversity of the North and Baltic Seas due to climate change and the planned expansion of offshore energy production. The welcoming speeches by high-ranking political representatives and the large media response reflected the high level of interest and social relevance of the topics addresses by sustainMare and the activities of the DAM.

As with the DAM research mission CDRmare, in addition to the research activities themselves, sustainMare also focused on the preparation of a possible Phase II in 2023. The review process was similar to CDRmare (see page 19), but with a time delay due to the later start of the mission.

The DAM General Assembly unanimously recommended applying for follow-up funding for sustainMare in September 2023. In November and December 2023, the International Advisory Board of the DAM (see page 48) and the BMBF review panel met with experts, in which members of the Advisory Board also took part online, for discussion with sustainMare. Following a further consultation (online) on December 19, the International Advisory Board updated its recommendations for sustainMare to the Administrative Board. By the end of the reporting year, the review process had not yet been completed, meaning that there was still no result regarding the continuation of the mission in a Phase II. (A positive decision in favour of funding the second phase was made in February 2024).

In order to make current research knowledge on the sustainable use of the oceans accessible to a broader target group, sustainMare, in cooperation with the University of Hamburg, has launched a public online lecture series on the topic of "Protecting and sustainably using the oceans", i at the end of March 2023. In a total of 16 episodes, scientists from the mission gave insights into their research during the summer semester. Topics ranged from the consequences of the energy transition, climate change, fisheries and increasing shipping traffic to new methods for determining biodiversity and dealing with increasing pollution and the dangers of munitions in the sea. The → *recordings* of the individual contributions are available online.

On September 28, the DAM, together with the DAM research mission sustainMare and the German Federal Ministry of Education and Research (BMBF), hosted → *parliamentary breakfast*. for a targeted exchange with members of parliament and other stakeholders. Under the motto "Between offshore wind, biodiversity and fisheries: mega- or multi-use of the oceans?", the scientists presented current developments and interrelationships in the fields of energy, marine environment and fisheries policy to around 40 participants and highlighted the associated economic and ecological challenges (see page 38).



THIRD DAM RESEARCH MISSION:

MAREXTREME – PATHWAYS TO IMPROVED RISK MANAGEMENT IN THE FIELD OF MARINE EXTREME EVENTS AND NATURAL HAZARDS



Following the intensive, participatory process to identify the topic for a third DAM research mission, involving all DAM bodies and committees and with active participation from the scientific community (see → *2022 Annual Report*), 2023 was dominated by preparations for this mission entitled "Pathways to improved risk management in the area of marine extreme events and natural hazards", or → *"mareXtreme"*. for short. The mission will address the interactions between short-term multiple and cascading extreme events and natural hazards as well as their long-term effects on marine ecosystems and coastal communities. These include, for example, floods and storm surges, tsunamis triggered by earthquakes and the increased growth of microorganisms that are harmful to humans and animals. The aim of mareXtreme is to significantly improve the predictability of extreme marine events and natural hazards, support the sustainable development of coastal communities and strengthen the resilience of coastal societies.

The mission comprises four transdisciplinary consortia in the areas of "Marine Georisks", "Marine Biological Risks" and "Physical Oceanographic Risks". The mission start date has been set for January 1, 2024.



INTERNAL NETWORKING: INFORMATION FOR THE SCIENTIFIC COMMUNITY

In order to promote continuous exchange and networking within the DAM, the DAM organized information events in February and July 2023 for scientists from DAM member institutions, participants in research missions from non-DAM member institutions and other stakeholders involved in DAM activities. In addition to current developments from the core areas and information on (parliamentary) events, the events focused in particular on the upcoming evaluation and the perspective of the DAM (see page 42). With up to 100 participants, both events met with great interest.

CORE AREA OF DATA MANAGEMENT AND DIGITALIZATION 2023

Collecting, pooling and sharing data – for research that benefits everyone.



In marine research, huge amounts of data are collected every year using complex methods and equipment: Devices for long-term observation collect a wealth of information on and below the surface of the water. Underwater robots, observatories and research vessels measure and store various parameters – from water temperature to indicators for the use and pollution of coasts and oceans. As access to the research data collected is often difficult and not clearly regulated, the potential of this valuable treasure trove of data is currently not being fully exploited.

The DAM aims to contribute to making research data accessible to science and society in the long term. In order to promote transparent science and innovation, the DAM is developing standards and processes in the area of data management and digitalization in its research data management concept that improve open and uniform access to decentralized data sets of German marine research. The FAIR principles form the basis for this:

Research data, using common search tools, should be

- ~ **findable** (F = findable),
- ~ **accessible** (A = accessible),
- ~ **interoperable** so that comparable data can be analyzed and integrated using a common vocabulary and common formats (I = interoperable).

Other researchers and the public should also be able to

- ~ **reusable** them (R = reusable).

Existing data collections of the DAM member institutions and shared services are to be integrated and consolidated into shared datasets. In addition, a better connection of the data and data products to national and international platforms will be ensured.

An important building block in achieving these goals, is the BMBF-funded project “Underway” research data, which is coordinated by the DAM office. The data collected in the project is collated in the central data portal → marine-data.de which was significantly expanded in the reporting year.

The coordination of the “Data Management and Digitalization” working group, in which all DAM members are represented by at least one data management officer, is also one of the tasks of the core area. With 34 members in the reporting year, the working group develops ideas and concepts for pooling and exchanging research data and serves as a “sounding board” for ongoing activities.

ACTIVITIES IN THE CORE AREA OF DATA MANAGEMENT AND DIGITALIZATION 2023

RESEARCH DATA MANAGEMENT: ON THE WAY TO STANDARDIZED DATA

In order to make research data more usable for science, the DAM is committed to the coordinated management of research data generated in the field of marine research. In order to enable complete and comprehensible documentation of the diverse research data in the future, scientists must be specifically supported by data management experts. So far, this has been done in the DAM member institutions in different ways and with heterogeneous personnel and technical possibilities. The aim of the activities in the DAM's core area of data management and digitalization is to level out this heterogeneity as far as possible. In order to pave the way for a uniform handling of research data in German marine research, the Data Management and Digitalization working group has developed a concept for a collaborative data ecosystem for German marine research in recent years: a shared, distributed, high-performance and continuously operated infrastructure for research data in order to secure information and knowledge and to make the data freely accessible to interested parties from science, authorities, industry and the public. The concept standardizes processes and minimum standards while at the same time preserving the sovereignty of the participating institutions in dealing with data. The aim is to optimize conditions for the publication of data sets that are based on the FAIR principles and are in line with the objectives of the → *National Research Data Infrastructure* (NFDI) stehen – i.e. to systematically open up and network data sets from science and research for the entire German scientific community and to make them usable in a sustainable and qualitative manner.

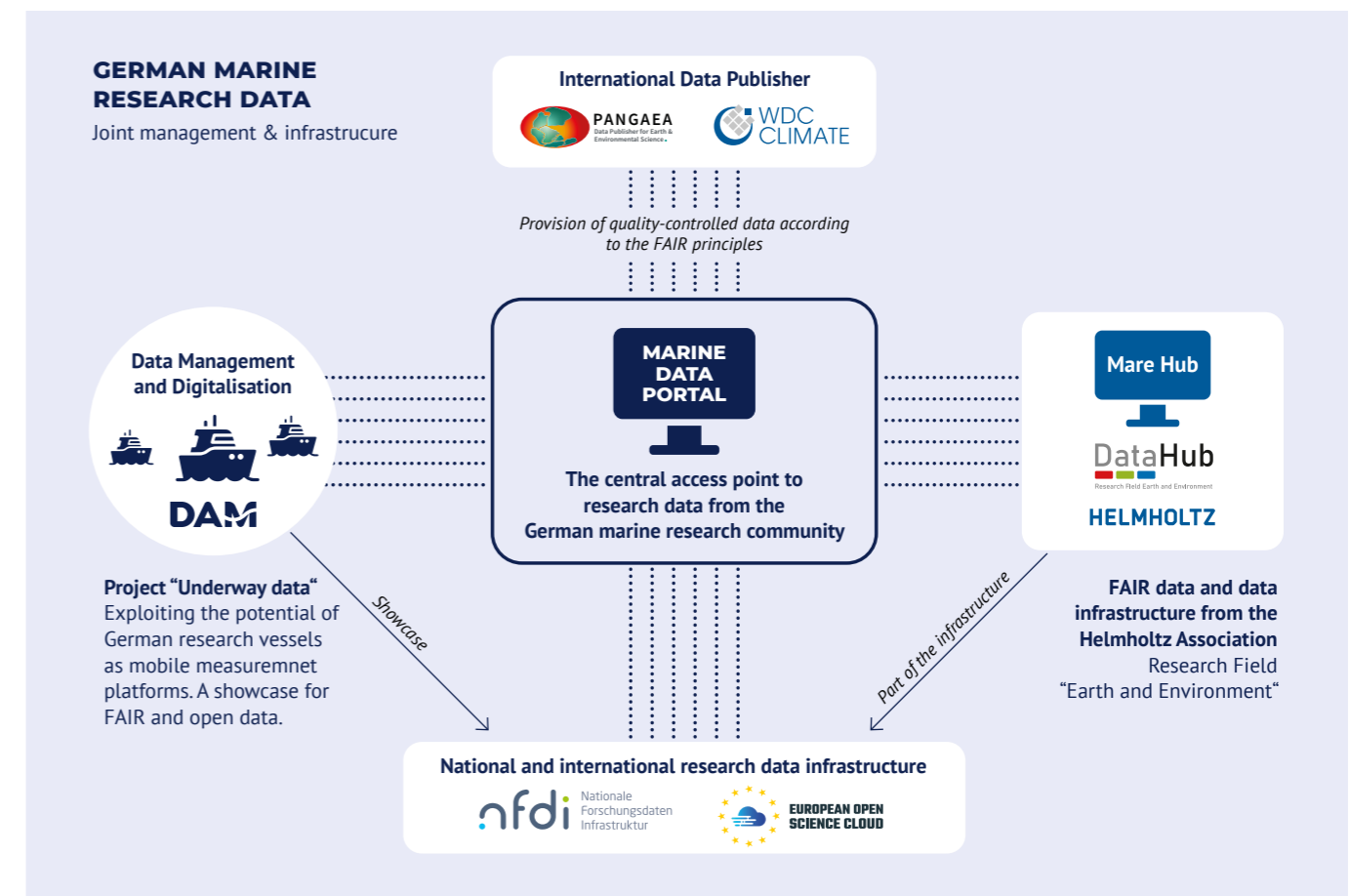
The research data management concept for German marine research developed by the Data Management and Digitalization Working Group in 2022 was published in September. Initial measures include the use of data infrastructures such as GEOMAR's Ocean Science Information System (OSIS) for the central provision of expedition metadata and the Alfred Wegener Institute's (AWI) registry – a central digital repository for organizing platform-, device- and sensor-related information – for the complete description of research data with sensor-related metadata.

In order to balance out the heterogeneous personnel requirements of the individual DAM member institutions in the area of research data, the core area also prepared the establishment of an information and support system – the so-called data management helpdesk – to support science along the “data life cycle” in the reporting year. The focus here was on coordinating the DAM with NFDI4Earth in order to implement part of the DAM data management helpdesk as an example for other Earth system research communities in the NFDI4Earth “User Support Network”. NFDI4Earth is part of the National Research Data Infrastructure NFDI.

PROJECT “UNDERWAY” RESEARCH DATA

Since 2019, the DAM has been networking the data management activities of its seagoing member institutions with the project “Underway” research data. Permanently installed sensors on board the research vessels collect valuable data en route to the research area, which for a long time has not been systematically checked for quality and made available in a sustainable way. In the project “Underway” research data, workflows were developed and established in the community to ensure the provision of quality-controlled research data from the ships. The aim of the project is to exploit the full potential of German research vessels as mobile measurement platforms and to make the data accessible in accordance with the FAIR principles.

The second phase of the project “Underway” research data, funded by the BMBF and coordinated by the DAM, started in early 2023. The consortium's work plan for the next three years has two main focuses: Firstly, the continuation and expansion of the ongoing activities on large ships - including sounding-based measurements as part of the “Underway” research data – and secondly, the expansion of activities to include the medium-sized vessels ALKOR, ATAIR, ELISABETH MANN BORGESE, HEINCKE.



WEB-BASED PLATFORM AS A DATA COLLECTION FOR GERMAN MARINE RESEARCH

In order to optimize systematic data collection and analysis for ship expeditions and observatories, the DAM is coordinating the development and expansion of the German Marine Data Portal in cooperation with the marine science institutions of the Helmholtz Association. At → *marine-data.de*, the web-based portal bundles a large number of different data sets and data products from German marine research: users can visualize, search and retrieve scientific data from interdisciplinary research collaborations and individual research initiatives. In addition to individual datasets, the portal also provides topic-related information visible with the help of “thematic viewers”, e.g. on the topic of “ammunition in the sea”, which were continuously developed further in the reporting year.

NFDI4EARTH ACADEMY

In order to train and support young scientists in the field of data management and data science, the DAM has launched the → *NFDI4Earth-Academy* with Geo.X – The Research Network for Geosciences in Berlin and Potsdam as the lead partner and the Geoverbund Aachen Bonn Köln/Jülich (ABC/J). The two-year training program in the field of data management and data science offers young scientists from the earth system and data sciences tailored training courses such as workshops, seminars and summer schools, which are defined and designed together with the fellows. The fellows also benefit from networking opportunities and events to promote interdisciplinary research and projects as well as support from the NFDI4Earth community. In fall 2023, the first 39 participants successfully completed their fellowship. At the same time, the call for applications for the second round of the NFDI4Earth Academy was launched. It builds on the established structures of three research networks: the DAM, GEO.X – The Research Network for Geosciences in Berlin and Potsdam, and the ABC/J Geoverbund.

CORE AREA COORDINATION OF INFRASTRUCTURES 2023

Coordinating research equipment and technology for science – for efficient, interdisciplinary research.

With its research stations, ships, underwater vehicles, observatories and aircraft, German marine research has unique and cost-intensive research infrastructures at its disposal. This valuable infrastructure is essential for conducting advanced scientific marine research and contributes significantly to our global understanding of the oceans. It is therefore all the more important that these infrastructures are used and operated optimally. The focus of the DAM's core area of infrastructure coordination is on the development and implementation of a utilization and operating concept for large-scale seagoing facilities in order to achieve efficient utilization and optimal benefits for all DAM member institutions. These measures are intended to ensure that the research institutions are able to achieve their scientific goals efficiently while keeping costs within reasonable limits.

The optimized use of these infrastructures not only enables an increase in research efficiency, but also promotes interdisciplinary cooperation and the exchange of knowledge between the various institutions. This strengthens the position of German marine research both nationally and internationally and contributes to solving global challenges in the field of marine sciences.

ACTIVITIES IN THE CORE AREA OF INFRASTRUCTURE COORDINATION IN 2023

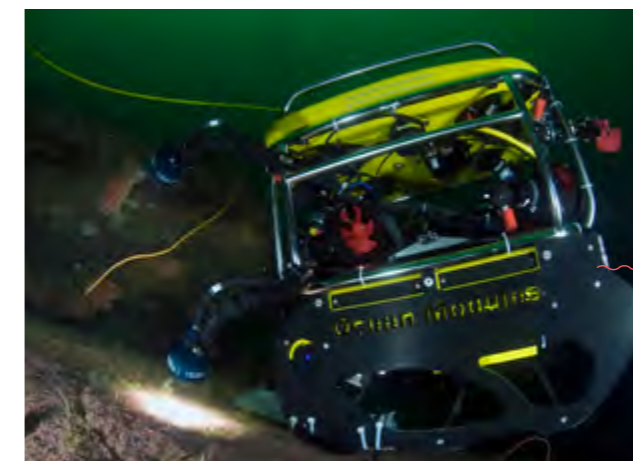


The METEOR is one of the three large research vessels available to German marine research.

The key event in 2023 was the publication of the → *Science Council's updated recommendations* on the further development of the German marine research fleet and other marine research infrastructures on October 20. In it, the Science Council emphasized the need to maintain at least the existing ship capacities for research, training, technology development and monitoring. The existing regional research vessels are recommended to be gradually replaced by new constructions based on a standardized design. Among other things, the Science Council also addressed the utilization and operation concept developed by the DAM in 2022 for large-scale seagoing equipment. The reimbursement of costs for the use and operation of large-scale marine equipment should be reorganized in order to ensure equal access for all researchers regardless of their home institution and to improve the efficiency and transparency of the system. The German marine research community welcomed the Science Council's updated recommendations on the further development of the research fleet and other marine research infrastructures.



Research vessels and large-scale equipment are also used in difficult conditions – here, for example, in the perpetual ice of the Arctic.



The ROV KIEL 6000 is a mobile system designed for scientific missions in the deep sea and remote-controlled via a deep-sea fibre-optic cable. With a diving depth of up to 6000 metres, it can reach more than 90 percent of the seabed

WIE WOLLEN WIR MIT DEN MEEREN LEBEN?

CORE AREA TRANSFER 2023

Making research knowledge effective –
as a basis for decision-making in politics,
business and society.

The transfer of scientific findings from marine research to politics, business and society is a central element for the DAM in promoting the sustainable use of coasts, seas and oceans: It pools the expertise of German marine research and ensures a target- and demand-oriented exchange of knowledge with decision-makers in politics and society – as a basis for viable decisions and concepts for the protection and sustainable use of marine systems. In addition to providing information from science, dialog with decision-makers from various areas of society is particularly important here in order to clarify their need for scientific knowledge and suitable formats for knowledge exchange.

In addition to the concrete exchange of knowledge with actors from politics, business and civil society, the DAM promotes dialogue with citizens and initiates educational projects to inform society, raise awareness of the importance of the seas and oceans and encourage participation in sustainable processes. To this end, the DAM cooperates with exhibition centers such as the Futurium in Berlin as well as various educational and network partners, participates in public events and develops its own educational and participatory formats such as the “Ocean Future Lab”, the “Interactive World Ocean” and the information portal “Oceans Online”.

Concepts and measures for overarching transfer are developed in the DAM office together and in coordination with the DAM member institutions. The key interface here is the Knowledge Transfer Working Group, in which the transfer managers of the DAM member organisations regularly exchange information and work together. A key strategic point is the added value that the products offer in synergy with and in addition to the transfer activities of the DAM member institutions and the DAM research missions. Two meetings of this working group took place in the reporting year, one of which was held in Hamburg. An informal exchange also took place on specific occasions.

The DAM also works closely with the German Committee for the UN Decade of the Ocean and participates in the ODK working groups on politics, education, culture and society, among others.

ACTIVITIES IN THE CORE AREA TRANSFER 2023

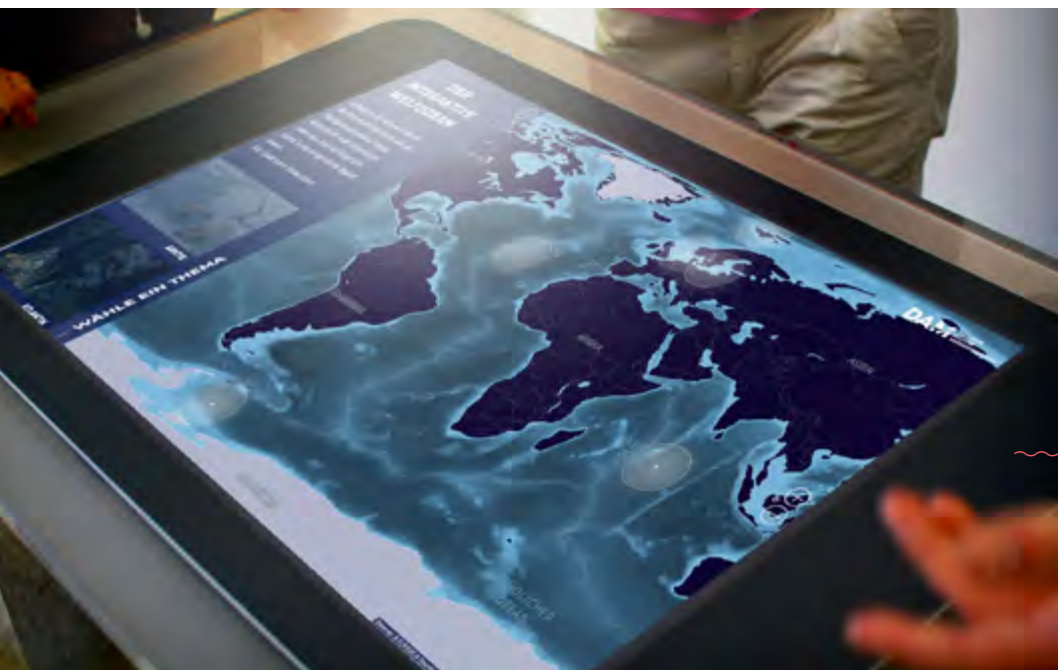
TRANSFER PROJECTS 'INTERACTIVE WORLD OCEAN' AND 'OCEANS ONLINE'

One focus of the DAM's Transfer core area in 2023 was on the further development of the overarching transfer projects → *Interactive World Ocean* – a digital and interactive ocean map that invites users to explore various marine regions – and → *Oceans Online*, a digital web portal that bundles science-based information on socially relevant marine topics. The two formats, which were launched in 2022, complement each other in terms of their objectives:

- ~ **Arouse interest** in the oceans and highlight their importance as the basis of life
- ~ Bundle **specialist knowledge** from German marine research and make it accessible in line with demand ("Knowledge for transformation")
- ~ Create an **information and decision-making basis** for politics and stakeholders
- ~ **Strengthen education and participation** for socially relevant issues of the future (marine and climate protection, sustainable use of natural resources).

This digital knowledge transfer combines the transfer of practical knowledge with science communication. As an added value, the social relevance of German marine research is strengthened and made visible.

In the reporting year, the DAM completed prototypes for both projects and developed them further to meet the needs of the target groups in consultation with representatives. Key milestones for exchange and feedback on the transfer projects were the event → *Meer Zukunft Transfer Activities of Marine Research for the Future of Coasts, Seas and Oceans* organized by the DAM at the suggestion of the North German Conference of Science Ministers (NWMK) on October 9 (see page 39), the presentation at the DAM Stakeholder Forum on November 6 and at the Parliamentary Evening of the DAM in Hamburg on November 22. In addition, the projects were presented on December 14 at the dialogue forum of the North and Baltic Sea Federal / State working group (BLANO) and discussed with experts from the Futurium Berlin, the German Oceanographic Museum and the German Maritime Museum. These three institutions are planning to use the interactive world ocean in their exhibition program in the future.



Bringing the sea into people's minds: On the map of the 'Interactive World Ocean' transfer project, interaction points open up a variety of insights into the oceans.



OCEAN FUTURE LAB AND FUTURE BOX OCEANS

In its role as initiator and coordinator, the DAM was once again actively involved in the BMBF-funded → *Ocean Future Lab* (OFL) project in the reporting year. Since 2022, the project has been bringing together experts and interested parties to discuss questions and ideas for a sustainable future for the oceans and to jointly develop innovative approaches for the sustainable use of the oceans. In 2022, various workshops were held to develop, summarize and visualize ideas for the future of life with the sea. These ideas were published on the OFL website at the end of May 2023.

There was great demand in the reporting year for the → *Future Box Oceans* developed by the DAM in collaboration with Futurium: a collection of card sets including methodical instructions that can be used to playfully develop various future scenarios in a workshop format on the question "What will our oceans look like tomorrow?". The Future Box Oceans 2023 was sent to interested schools in printed form on request and was also available to download digitally. After the first edition of 200 boxes was sold out, a second printed edition of 200 boxes was produced at the end of 2023. The feedback from teachers shows that the Future Box Oceans can be used very well in lessons and on school project days. A systematic survey of feedback is planned for 2024. The Future Box was also registered as an official UN Ocean Decade activity. The Futurium offered workshops with the Future Box Oceans as part of its "Open Lab" evenings.

PROMOTION OF YOUNG SCIENTISTS

As another important pillar of the transfer area, the DAM continued to promote young researchers in 2023, including at the → *International Conference for Young Marine Researchers* (ICYMARE) in Oldenburg in September. ICYMARE offers young marine researchers from all over the world a forum for exchange and networking. The DAM has supported this event for several years. In 2023, it sponsored the poster session at which young scientists presented their projects. The NFDI4EarthAcademy, in which the DAM is involved (see page 25), presented its data science funding program here.

The DAM was also involved in the Federal Artificial Intelligence Competition to promote young talent. The competition promotes projects by students that use artificial intelligence (AI) to solve social and ecological problems. At the final on November 10 in Tübingen, Ute Wilhelmssen, Head of the DAM's Transfer core area, presented the award in the "Environment and Sustainability" category as a member of the jury. The national AI competition was initiated and carried out by the Tübingen AI Center, the University of Tübingen and the Max Planck Institute for Intelligent Systems.

"HOW DO WE WANT TO LIVE WITH THE OCEANS?" SURVEY

In order to enter into a direct dialog with citizens, the DAM participated in an information stand at the "German Unity Day" festival in Hamburg on October 3 and 4 as part of the UN Ocean Decade. Interested visitors to the booth had the opportunity to formulate their answer to the question "How do we want to live with the oceans?" on postcards. (Some results are shown on page 6 and 9 of this report). 207 people took part in the survey. By far the most common issue identified by participants was marine pollution – and above all they called for less plastic waste. This was followed by the topic of marine conservation, with the protection and preservation of biodiversity, habitats and ecosystems frequently cited as a wish. The third most common wish was to stop overfishing. This was followed by value-based wishes for a respectful approach to marine nature, greater appreciation and a sustainable approach to the oceans in order to preserve our own livelihoods.

COMMUNICATION AND DIALOG

Promoting internal and external exchange and networking – as a basis for a more sustainable approach to coasts, seas and oceans.



Communication supports all of the DAM's work and core areas, and the interfaces with the Transfer core area are fluid. The aim is to inform decision-makers and interested parties from politics, organized civil society, business and general public about activities, developments, topics and results of German marine research and the association itself, in a target group-oriented manner and to encourage networking and exchange. The topics, needs and knowledge gaps that emerge from the dialog with the target groups are in turn incorporated into the research work. In this way, knowledge tailored to societal needs is created as an answer to socially relevant questions for which there is (still) no answer.

The DAM uses a wide range of communication and exchange formats to communicate research topics and content to its target groups. These include online formats such as the website, an electronic newsletter and printed publications such as information flyers and this annual report. New additions in the reporting year include social media presences in selected channels that promote networking and exchange with target groups and stakeholders. Events in the science policy environment also help to establish and deepen contacts and generate discussions.

Within the DAM member institutions, communication supports networking and cooperation with and among the DAM member institutions and committees in order to create synergies, open up perspectives and encourage cooperation – and thus bundle the expertise and strengths of the individual institutions in the best possible way in the interest of a more sustainable approach to coasts, seas and oceans.

ACTIVITIES IN THE AREA OF COMMUNICATION AND DIALOG 2023

PRESS AND PUBLIC RELATIONS WORK

As in previous years, the DAM website www.allianz-meeresforschung.de was a central element of the DAM's public relations work in 2023. Decision-makers from politics, business and civil society, journalists and anyone with a general interest in DAM topics can find a collection of information and documents on the DAM's objectives, topics, activities and structure of the DAM here. In addition, the portal bundles and links current news on research projects and activities of the DAM member institutions. In this way, visitors are provided with a low-threshold overview of the contribution of German marine research to the sustainable management and use of coasts, seas and oceans. From January to December 2023, the DAM bundled 178 reports from its member institutions in its news portal. In addition, it published 24 news items of its own, for example on new members, (re)appointments to committees, events, activities and products in the core areas as well as the Executive Board's statement "Protecting the ocean and using it sustainably in the fight against the climate crisis" on the occasion of the start of the global climate negotiations and the amendment of the Federal Climate Protection Act. Some of these statements were also published as press releases.

In March, the German Marine Research Alliance (DAM) expanded its to date limited social media presence due to resource constraints to include profiles on → *LinkedIn*, → *Mastodon* and → *Twitter/X*. → *Bluesky* was added at the end of the year in order to expand the target group for communication and to promote networking and exchange with politicians and stakeholders as well as within the scientific community. LinkedIn was particularly well received: By the end of December 2023, more than 1,400 people had connected with the DAM here.

Public relations work in 2023 was supplemented by two issues of the digital newsletter "MeerNews", which can be subscribed to via the homepage → www.allianz-meeresforschung.de and delivered the latest developments and activities of the DAM directly to the email inboxes of around 800 subscribers. The DAM member institutions also received two issues of the internal newsletter, which provided more detailed information on the activities of the Executive Board, committees and office. As a review and summary of the previous year's activities, the DAM also produced the Annual Report 2022, which was published in September 2023.



For more dialogue and interaction with target groups: Since 2023, DAM's communication measures have been complemented by a presence on selected social media channels.

PUBLIC RELATIONS WORKING GROUP

The public relations working group has established itself as a productive networking and exchange format at working level, in which the communications managers of the member institutions of the DAM and KDM (German Marine Research Consortium, see page 42) regularly coordinate topics and activities relating to communications work and plan networked measures. In 2023, the working group met three times: in March online, in July and November in person in Hamburg. Key topics included joint events and cooperation with the German Ocean Decade Committee (ODK) and the integration of activities into the UN Ocean Decade of Ocean Research for Sustainable Development (2021 – 2030) in Germany.

As in the previous year, the DAM provided staff resources for administrative tasks and public relations activities to support the UN Ocean Decade Committee in 2023



Presenting findings from (marine) research in an understandable way: Science communication 'translates' research topics and content and brings them to society.

PARLIAMENTARY EVENTS

In accordance with its mandate from the administrative agreement and its statutes, the DAM brings topics of German marine research to the federal and state level in a targeted manner. The aim is to provide decision-makers in the legislative and executive branches of the federal government and the northern German states with expert background knowledge on relevant topics and to create opportunities for dialog – as a basis for well-founded, science-based decisions. In addition to individual meetings with members of the federal and state parliaments, the DAM's political events in particular provide a suitable framework for topic-related exchange and networking, enabling the DAM to bring the results of its work into the parliamentary arena. The Stakeholder Forum (see page 49) also plays an important role in the dialogue and exchange of knowledge between politics, business and civic organizations.

In the reporting year, the DAM hosted a total of five political events:

Two parliamentary evenings were held in the reporting year under the motto "Meer Zukunft" (Sea Future): one on → *March 23 in Hanover*, the second on → *March 22 in Hamburg*, with which the DAM concluded its round of political presentations in the northern German (coastal) states. Representatives from state politics and science as well as other stakeholders from business and civil society participated in both events with their own contributions. In addition to an information section with keynote speeches and panel discussions, both events offered space for exchange and networking during the subsequent "get together", which was well received by the approximately 80 participants.



First-hand research findings: The DAM's parliamentary events convey the latest scientific findings to members of the German federal and state parliaments interested in the topic of the sea – and at the same time provide researchers with impetus and insights into which sea-related topics are of interest to politics and society.

The parliamentary state evenings were supplemented by topic-specific parliamentary breakfasts, in which scientists from DAM member institutions gave members of parliament and their representatives insights into their research:

On March 31, under the patronage of Mario Brandenburg, Parliamentary State Secretary to the Federal Minister of Education and Research (BMBF), a → *science policy breakfast* was held on the opportunities and obstacles of marine geological CO₂ storage – jointly organized by the DAM research mission CDRmare, the BMBF and DAM (see also page 18). With more than 50 participants, the event was very well received. Key messages from the participating scientists: In some industrial sectors, it will not be possible to completely avoid carbon dioxide emissions. To compensate for unavoidable residual emissions, a combination of carbon dioxide removal (CDR) and carbon capture and storage (CCS) is required. A corresponding research and legal framework needs to be put in place. This is the only way to achieve the national net-zero target by 2045.

A second parliamentary breakfast on September 28, 2023, organized by the DAM Office, the DAM research mission sustainMare and the Federal Ministry of Education and Research (BMBF), focused on the topic → *"Between offshore wind, biodiversity and fisheries: mega- or multi-use of the oceans?"* (see page 19). In the presence of some 40 members of parliament and other stakeholders, the scientists discussed current developments in the fields of energy, marine environment and fisheries policy and their inter-relationships and highlighted the associated economic and ecological challenges they pose. Their conclusion: the sea and coast are natural spaces with unique biodiversity, spaces for food production and the extraction of natural resources, recreational, transportation and energy spaces – and precisely for this reason, spaces of social conflict. Conflicts of interest can therefore only be resolved through cooperation between all stakeholders.

At the beginning of October, the DAM presented prototypes of the two overarching DAM transfer projects "Oceans online" and "Interactive World Ocean" in the political arena for the first time: Under the motto "Sea Future – Transfer Activities of Marine Research for the Future of Coasts, Seas and Oceans", the DAM invited to a dialog at the Bremen State Representation in Berlin at the suggestion of the North German Conference of Science Ministers (NWMK). In addition to presenting the transfer projects, the event focused on discussing how the transfer of scientific findings into politics and society can be optimally organized (see also page 32). The conclusion of the conference participants: Scientific findings are an important basis for decisions in politics, business and society – and the DAM is the right institution to bundle them.

SCIENTIFIC EVENTS AND DIALOG FORMATS

On an international level, the DAM participated in the European Commission's kick-off event for the EU Mission for the North and Baltic Sea region on April 25 and 26: "Restore our Ocean and Waters by 2030: The Baltic and North Sea Lighthouse in Action". The event focused on approaches to make the blue economy carbon neutral and circular. The DAM research missions (see page 18 f.) were presented in this context as an example of national activities.

During the reporting period, the DAM used the Falling Walls Science Summit, held in Berlin from November 7 to 9, to strengthen the dialog between science, civil society, business and the media. At the panel discussion "Ocean Solutions for the Climate Crisis" on November 8 – a cooperation with the GEOMAR Helmholtz Center for Ocean Research Kiel, Extantia Capital and MARUM – Katja Matthes, member of the DAM Executive Board, highlighted ocean-based solutions for mitigating and adapting to climate change from various perspectives.

The DAM addressed interested members of the public with its presence at the Hamburg Citizens' Festival on the Day of German Unity on October 3. At an exhibition stand jointly organized by the German Committee of the UN Ocean Decade (ODK), Sea & Sun Technology GmbH, HanseStiftung and DAM, interested visitors were able to formulate their own perspectives on marine protection and their wishes for the sustainable use of coasts, seas and oceans under the motto "How do we want to live with the seas?" (see pages 6 to 9).

At EU level, the → *"Mission Ocean – Vision Ocean"* event took place in Brussels at the end of October, in which the DAM participated together with the German Marine Research Consortium KDM, the German Permanent Representation, the Hanseatic Office (Hamburg and Schleswig-Holstein) and the state representations of Bremen, Mecklenburg-Western Pomerania and Lower Saxony. The event was organised by the EU mission 'Restore our Ocean and Waters by 2030'.

STRUCTURE, BODIES AND COMMITTEES



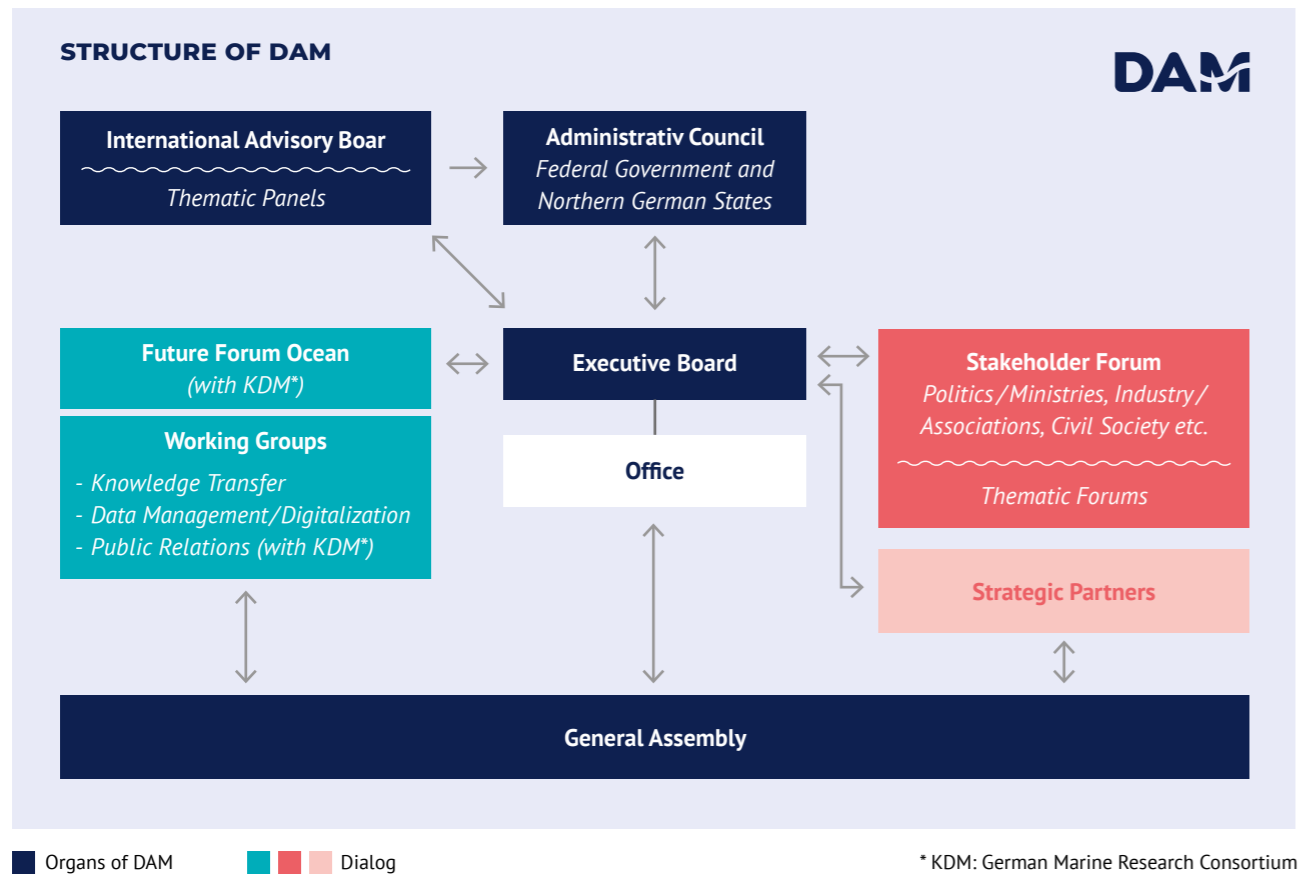
The tasks and objectives as well as the organization and structure of the German Marine Research Alliance are defined in the Administrative Agreement, which entered into force on July 18, 2019. The association's statutes were adopted on July 4, 2019 and define the purpose, tasks and structure of the non-profit association.

According to its statutes, the purpose of the German Marine Research Alliance is to promote science and research by strengthening German marine research. The term marine research encompasses the relevant disciplines of coastal, marine and polar research. The alliance strives to address the major issues of the future of marine research through joint action and to provide knowledge for a sustainable management to the sea for policy-makers, business and civil society. In order to achieve these goals, the DAM promotes networking and cooperation between leading German marine research institutions and relevant stakeholders from politics, business and civil society. To this end, the German Marine Research Alliance has the following bodies in accordance with its statutes:

- ~ **General Assembly**, which determines the principles for the work of the DAM,
- ~ **Executive Board**, which manages the association and is responsible for the strategic and conceptual orientation of the DAM,
- ~ **Administrative Council**, the supervisory and decision-making body of the DAM, in which the federal government (BMBF) and the participating federal states are represented, and
- ~ **International Advisory Board**, the independent scientific advisory body of the German Marine Research Alliance.

The following forums and committees also existed in 2023

- ~ **Stakeholder Forum** for cooperation and exchange with politics, civil society, business and other interest groups.
- ~ **Working groups for Data Management and Digitalization, Public Relations and Knowledge Transfer**, in which the member institutions of the DAM exchange their expertise and develop joint activities in their specialist areas.
- ~ **Future Ocean Forum**, which is part of the German Marine Research Consortium (KDM). It serves as a joint forum/committee of KDM and DAM and aims to discuss and develop overarching scientific and strategic research topics in marine research.



ACTIVITIES 2023

The DAM's bodies and committees work in close coordination. In 2023, the DAM continued to develop and expand its work with bodies and committees with regard to targeted and productive cooperation. In the reporting year, the DAM's activities focused in particular on the further development and networking of the association – both internally with regard to cooperation between the DAM's member institutions and externally through the involvement of stakeholders from politics, business and civil society in various DAM committees.

With the addition of the University of Veterinary Medicine Hannover (TiHo) Foundation, the DAM gained a new member and had 24 members at the end of the reporting year. This means that (almost) all German research institutions involved in marine research are now members of the DAM. The International Advisory Board (see page 48) and the Stakeholder Forum (see page 49) also gained new members and representatives. Thanks to the re-election of Michael Schulz, who started his second term of office as Deputy Chairman in May, the DAM Board continued its work with its

proven composition. Details of the composition and work of the respective bodies and committees are listed in the following section.

In addition to the further development and internal and external networking of the DAM, the bodies and committees of the DAM prepared the evaluation of the association in 2024 in the reporting year. Its pilot phase will run from 2019 to 2025. In order to review the effectiveness of its activities, an external strategic and structural evaluation of the DAM's previous activities in the core areas will be carried out in 2024 in accordance with the administrative agreement. On the basis of this evaluation, the federal and state governments will make a decision on the continuation, further organisation and, if necessary, perpetuation of the DAM.

At the same time, as in the previous year, the bodies and committees dealt with future cooperation and the planned merger of the associations German Marine Research Alliance and the German Marine Research Consortium (KDM). KDM was founded in 2004 as an association for German marine research and focuses on the "bottom-up" strategic capability of the marine research community as well as networking in the broader international community. Both associations were founded with complementary tasks and goals from the

German marine research community with almost identical members. At the end of the pilot phase of the DAM (by the end of 2024 at the latest), both organizations see very good conditions for combining their strengths.

In 2023, the executive boards of both associations initiated the necessary process in accordance with the concept paper developed in 2022. With a view to a joint perspective of DAM and KDM after the evaluation, the boards of DAM and KDM met regularly to discuss and define how the strengths of both organizations can be combined so that German marine research can speak with one voice nationally and internationally in the future.

GENERAL ASSEMBLY

The General Assembly (GA) is the highest decision-making body of the German Marine Research Alliance and determines the principles of its work. It elects the Executive Board and the International Advisory Board, receives the annual report submitted by the Executive Board and the annual financial statements after approval by the Administrative Council and discharges the Executive Board on the recommendation of the Administrative Council. In accordance with § 30 BGB, the GM may also appoint special representatives and assign them specific areas of responsibility. In addition, it decides on all other tasks assigned to it by law or elsewhere in the Statutes.

The member institutions of the DAM conduct research into the changes to ecosystems caused by anthropogenic influences, the role of the ocean in climate change, its social and cultural impacts and modern forms of ocean use. Their common goal is to conduct solution-oriented research in order to develop options for a sustainable management of coasts, seas and oceans.

As of December 31, 2023, 24 leading German university and non-university marine research institutions have joined forces in the DAM to strengthen the sustainable management of coasts, seas and oceans: 18 of them as full members and six as associate members. Two strategic partners have also joined, expanding the spectrum of marine research to include sustainability research. Since May 2023, the University of Veterinary Medicine Hannover (TiHo) has been a full member of the DAM, adding a veterinary medicine and infection biology perspective to the thematic

range of DAM member institutions – with a focus on the impact of human activities on marine mammal populations. In addition, two strategic partners were involved, expanding the spectrum of marine research to include the topic of sustainability research.

MEETINGS OF THE MEMBERS IN 2023

As in previous years, two general meetings were held in 2023. The focus of the meeting in Hamburg in March was the admission of the University of Veterinary Medicine Hannover (TiHo) as the 24th member of the DAM, which was already involved in projects of the DAM research mission "Protection and Sustainable Use of Marine Areas" (sustainMare, see page 19). Another focus was the DAM research mission CDRmare: representatives of the mission gave an overview of the status (Phase I) and perspective (Phase II) of the mission. Following the subsequent exchange with the mission, the General Assembly unanimously recommended that the continuation of Phase II should be applied for (see page 18).

The DAM research mission sustainMare was the focus of the General Assembly in Hamburg in September: as in March for CDRmare, representatives of sustainMare gave an overview of the status (Phase I) and prospects (Phase II). Again, the DAM General Assembly unanimously recommended applying for a continuation in Phase II. Further topics were the evaluation of the DAM and the planned merger of the DAM and KDM into a joint association. In order to explore both topics in more depth, the members agreed to a joint strategy day, to be held in early 2024. Other topics discussed at the meeting included the 2023 business plan and planning for the following year.

These two events were supplemented by an Extraordinary General Meeting on April 24 for the election of the Deputy Chairman (see page 46) and the appointment of a new member to the "Marine Resources" section of the DAM International Advisory Board (see page 48).

DAM-MEMBERS 2023

- ~ **AWI** – Alfred Wegener Institute Helmholtz Centre for Polar and Marine Research
- ~ **CEN** – Center for Earth System Research and Sustainability, Universität Hamburg
- ~ **Fraunhofer** – Fraunhofer Society for the Advancement of Applied Research
- ~ **FZK** – Coastal Research Center of Leibniz University Hannover and Technische Universität Braunschweig
- ~ **GEOMAR** Helmholtz Centre for Ocean Research Kiel
- ~ **HEREON** – Helmholtz-Zentrum Hereon
- ~ **ICBM** – Institute for Chemistry and Biology of the Marine Environment, Carl von Ossietzky Universität Oldenburg
- ~ **IOW** – Leibniz Institute for Baltic Sea Research Warnemünde
- ~ **KMS** – Kiel Marine Science, Kiel University
- ~ **MARUM** – Center for Marine Environmental Sciences at the University of Bremen
- ~ **MPI-M** – Max Planck Institute for Meteorology
- ~ **MPI-MM** – Max Planck Institute for Marine Microbiology

- ~ **MTS** – Department Maritime Systems, Universität Rostock
- ~ **SAM** – Senckenberg am Meer, Senckenberg Society for Nature Research
- ~ **THÜNEN** – Johann Heinrich von Thünen Institute, Federal Research Institute for Rural Areas, Forestry and Fisheries
- ~ **TiHo** – University of Veterinary Medicine Hannover
- ~ **UG** – University of Greifswald
- ~ **ZMT** – Leibniz Centre for Tropical Marine Research

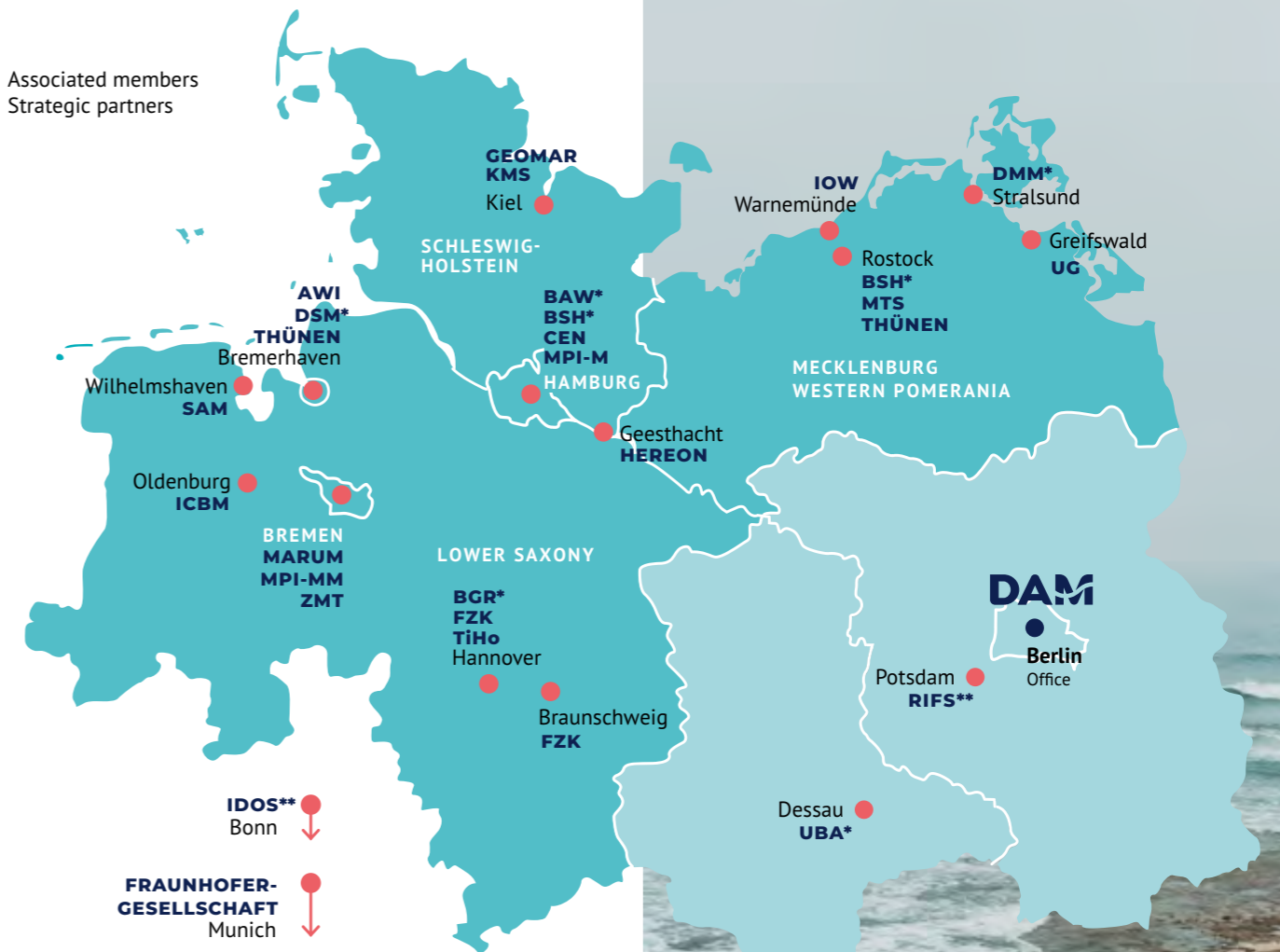
*ASSOCIATED MEMBERS

- ~ **BAW** – Federal Waterways and Engineering Research Institute
- ~ **BGR** – Federal Institute for Geosciences and Natural Resources
- ~ **BSH** – Federal Maritime and Hydrographic Agency
- ~ **DMM** – German Oceanographic Museum, Stralsund
- ~ **DSM** – German Maritime Museum – Leibniz Institute for Maritime History
- ~ **UBA** – Federal Environment Agency

**STRATEGIC PARTNERS

- ~ **IDOS** – German Institute of Development and Sustainability
- ~ **RIFS** (until January 2023 IASS) Research Institute for Sustainability

* Associated members
** Strategic partners



EXECUTIVE BOARD

The Executive Board of the German Marine Research Alliance is responsible for the management of the association and implements the common goals of the DAM on behalf of the General Assembly. It also develops the strategic-conceptual orientation of the German Marine Research Alliance, which must be approved by the General Assembly of Members and the Administrative Council. The members of the Executive Board are elected by the General Assembly for a term of office of four years.

As at December 31, 2023, the DAM Executive Board consisted of four members:

- ~ **Joachim Harms**, full-time Chairman of the Executive Board.
- ~ **Michael Schulz**, Deputy Chairman and Director of MARUM – Center for Marine Environmental Sciences at the University of Bremen.
- ~ **Katja Matthes**, Director of the GEOMAR Helmholtz Center for Ocean Research Kiel.
- ~ **Ulrich Bathmann**, Director of the Leibniz Institute for Baltic Sea Research Warnemünde (IOW).

Michael Schulz, whose term of office expired after four years in accordance with the Statutes, was unanimously re-elected by the General Assembly in April 2023 by 15 out of 17 attendees (see *page 43*). His second term of office was confirmed by the Administrative Council on May 5 (see *page 47*).

EXECUTIVE BOARD MEETINGS IN 2023

In the reporting year, the Executive Board met weekly with a few exceptions, supplemented by monthly meetings with the Executive Board of the German Marine Research Consortium (KDM). In an additional "open Board meeting", the DAM offered the heads of the DAM member institutions, the KDM management, strategic partners, the DAM representatives and the speakers of the DAM research missions the opportunity to discuss and prepare important strategic topics and decisions.



The DAM Executive Board in 2023
(from left to right): Joachim Harms,
Katja Matthes, Ulrich Bathmann,
Michael Schulz

ADMINISTRATIVE COUNCIL

The Administrative Council monitors the activities of the German Marine Research Alliance (DAM) and the Executive Board and decides on the implementation of projects in the core areas. It is composed of six members appointed by each of the northern German federal states – Free Hanseatic City of Bremen, Free and Hanseatic City of Hamburg, Mecklenburg-Western Pomerania, Lower Saxony, Schleswig-Holstein – and the Federal Republic of Germany, represented by the Ministry of Education and Research (BMBF).

MEMBERS OF THE ADMINISTRATIVE COUNCIL

At the end of the reporting year, the following representatives of the funding bodies were members of the Administrative Council:

For the Federal Government (Chair):

- ~ **Stefan Müller**, Head of the Department "Foresight – Research for Basic Principles and Sustainable Development", Federal Ministry of Education and Research (BMBF)

For the Federal States:

- ~ **Rüdiger Eichel**, Head of the "Research, Innovation, Europe" Department, Ministry of Science and Culture of Lower Saxony
- ~ **Dr. Rolf Greve**, Head of Office, Ministry of Science, Research and Equality, Free and Hanseatic City of Hamburg
- ~ **Friederike Kampschulte**, Head of the "Science" Department of the State of Schleswig-Holstein (MBWK)
- ~ **Woldemar Venohr**, Head of the "Science and Research, Universities" Department, Ministry of Science, Culture, Federal and European Affairs of Mecklenburg-Western Pomerania (State Coordinator)
- ~ **Kay Wenzel**, Head of the "Universities and Research" Department, Senator for the Environment, Climate and Science, Free Hanseatic City of Bremen

MEETINGS IN 2023

In 2023, two regular Board of Directors meetings were held in May and November and one extraordinary meeting in August. In addition to regularities and association matters as well as reports from bodies/committees and activities of the DAM core areas and research missions, the main topics of the May meeting were the admission of the University of Veterinary Medicine Hannover as the 24th member of the DAM (see *page 43*) as well as the confirmation of Allison Schaap as a new member of the DAM International Advisory Board (see *page 48*) and the second term of office of Deputy Chairman Michael Schulz (see *page 46*).

As the final step in the DAM process for assessing the DAM research mission CDRmare, an extraordinary meeting of the Administrative Council was held in August (see *page 47*). At this meeting, Peter Schlosser, Chairman of the DAM International Advisory Board, gave an overview of the recommendations of the Advisory Board. The Administrative Council and the funders met immediately afterwards and approved the follow-up funding for CDRmare. One of the associations was asked to revise its report. The revised report was again reviewed by the International Advisory Board and its recommendations were presented at the Administrative Council meeting in November.

Other key topics at the meeting in November were the upcoming evaluation in 2024 and the outlook for the DAM.

INTERNATIONAL ADVISORY BOARD

The International Advisory Board is the independent scientific advisory body of the German Marine Research Alliance. The committee of ten members reviews and evaluates proposals for projects and activities in the core areas as well as proposed topics and the implementation of DAM research missions.

There were two changes to the International Advisory Board in the reporting year: In May, Allison Schaap, Research Engineer and Deputy Head of the Ocean Technology and Engineering Group at the National Oceanography Center in Southampton, UK, took over the position from Paul Connolly, who regretfully resigned from the Board due to competing commitments. Thorsten Blenckner, Associate Professor at the Stockholm Resilience Center at Stockholm University, took over in December from Martin Quaas, who was unable to serve a second term of office due to other commitments.

MEMBERS OF THE INTERNATIONAL ADVISORY BOARD

At the end of 2023, the International Advisory Board consisted of the following members:

- ~ **Prof. Dr. Peter Schlosser**, Chairman (Arizona State University, USA)
- ~ **Prof. Dr. Thorsten Blenckner** (Stockholm University, Sweden) (from 12/2023, previously Prof. Dr. Martin Quaas (University of Leipzig, Germany) (until 12/2023))
- ~ **Dieter Janecek** (Federal Government Coordinator for Maritime Economy and Tourism, Federal Ministry for Economic Affairs and Climate Protection)
- ~ **Petra Mahnke** (Managing Director and Board Member, Society for Maritime Technology, Germany)
- ~ **Prof. Dr. Kate Moran** (University of Victoria and CEO of Ocean Networks, Canada)
- ~ **Prof. Dr. Nadia Pinardi** (University of Bologna, Italy)
- ~ **Prof. Dr. Katherine Richardson** (University of Copenhagen, Denmark)
- ~ **Sebastian Unger** (Marine Commissioner of the German Federal Government, Federal Ministry for the Environment, Nature Conservation and Nuclear Safety and Consumer Protection)



The members of the DAM's International Advisory Board are spread across various countries and continents. Online meetings, such as here at the meeting in November 2023, are therefore the means of choice for internal voting.

- ~ **Prof. Dr. Stefan Schouten** (NIOZ – Royal Netherlands Institute for Sea Research, Netherlands)
- ~ **Dr. Allison Schaap** (National Oceanography Center, United Kingdom) (from 05/2023, until 02/2023)
Dr. Paul Connolly (Marine Institute, Ireland)

MEETINGS IN 2023

The annual face-to-face meeting of the International Advisory Board took place in Berlin from June 20 to 21, 2023. The focus of this Advisory Board meeting was on the evaluation and assessment of the DAM research mission CDRmare (see page 18) and the formulation of recommendations regarding a possible Phase II of the mission. The committee also held three online meetings in the reporting year: on November 21 and December 12 and 19. At these meetings, the Advisory Board members reviewed the implementation and prospects of the DAM research mission CDRmare (on November 21, in addition to the June meeting) and sustainMare (see page 19). The recommendations of the Advisory Board were submitted to the Administrative Council (see page 47).

STAKEHOLDER FORUM

As an independent advisory body, the DAM Stakeholder Forum is an important "sounding board" and source of inspiration for the DAM. The approximately 30 representatives from politics, business and civil society play a particularly important role in identifying socially relevant topics for current and future DAM research missions.

MEMBERS OF THE STAKEHOLDER FORUM 2023

The DAM was able to recruit the following individuals, institutions and organizations to join the Stakeholder Forum at the end of 2023:

Politics / Federal State

- ~ **Federal Ministry of Education and Research (BMBF)**, Ministerial Counsellor Dr. Zage Kaculevski
- ~ **Federal Ministry for Digital and Transport (BMDV)**, Achim Wehrmann
- ~ **Federal Ministry of Food and Agriculture (BMEL)**, Dr. Hermann Pott
- ~ **Federal Ministry for the Environment, Nature Conservation, Nuclear Safety and Consumer Protection (BMUV)**, Government Director Ilka Wagner
- ~ **Federal Ministry of Defence (BMVg)**, Chief Technical Director Dr. Uwe Kretschmer
- ~ **Federal Ministry for Economic Affairs and Climate Action (BMWK)**, Ministerial Counsellor Dr. Anja Stenger from 02/2023)
- ~ **Federal Ministry for Economic Cooperation and Development (BMZ)**, Jan Weinreich

Politics / Northern German States

- ~ **Public Authority for Science, Research, Equal Opportunities and Districts, City of Hamburg**, State Council Dr. Eva Gumbel
- ~ **The Senator for Science and Ports, Bremen**, State Council Tim Cordßen (until 08/2023) / **Die Senatorin für Umwelt Klima und Wissenschaft Bremen (SWH)**, State Council Irene Strebl (from 09/2023)
- ~ **Ministry of Education, Science and Culture in the state of Mecklenburg-West Pomerania**, State Secretary Susanne Bowen

- ~ **Ministry of Education, Science and Culture in the state of Schleswig-Holstein**, State Secretary Guido Wendt
- ~ **Ministry of Science and Culture, Lower Saxony**, State Secretary Prof. Dr. Joachim Schachtner (from 02/2023)

Business / Associations

- ~ **German Maritime Centre (DMZ)**, Claus Brandt
- ~ **German Association for Marine Technology (GMT)**, Petra Mahnke
- ~ **German Association for Mechanical and Plant Engineering (VDMA)**, Alexandra Dreyer

Government Agencies / Technical Sciences

- ~ **German Coastal Engineering Research Council (KFKI)**, Prof. Dr. Frank Thorenz

Civil Society / NGOs and Foundations

- ~ **Brot für die Welt**, Francisco Mari
- ~ **Friends of the Earth Germany (BUND)**, Nadja Ziebarth
- ~ **German Society for Marine Research (DGM)**, Prof. Dr. Hanelt
- ~ **German Ocean Foundation**, Frank Schweikert
- ~ **Fair Oceans**, Kai Kaschinski
- ~ **Greenpeace Germany**, Sandra Schöttner
- ~ **Nature and Biodiversity Conservation Union Germany (NABU)**, Dr. Kim Detloff
- ~ **World Wide Fund For Nature (WWF) Germany**, Heike Vesper

European Level

- ~ **Joint Programming Initiative Oceans (JPI Oceans)**, Dr. Thorsten Kiefer
- ~ **Mission Board for Healthy Oceans, Seas, Coastal and Inland Waters**, Former Member of the European Parliament (appointed in a personal capacity)

Other

- ~ **International Conference for YOUNG Marine Researchers (ICYMARE)**, Dr. Viola Liebich (until 4/2023), Dr. Lena Rölfer (from 04/2023)
- ~ **Wissenschaft im Dialog (WID)**, Dr. Benedict Fecher (until 04/2023)

MEETINGS IN 2023

Two meetings of the Stakeholder Forum took place in 2023. On April 17, the agenda included the presentation of the DAM research mission CDRmare and an intensive exchange with stakeholders from politics, business and civil society – in particular on the further development of the forum. The focus of the second meeting on November 6 in Berlin was the presentation of the sustainMare research mission. Other key topics included interdepartmental cooperation and opportunities

for greater stakeholder involvement in mission-oriented research. In addition, the prototypes of the “digital information portal” and the “interactive world ocean” were presented as examples of the DAM’s overarching transfer activities.



Finding common topics and processes and advancing them together: The meetings of the Stakeholder Forum focus on exchange and networking between the various players from politics, science, organized civil society and business.

OFFICE

According to the statutes, the members of the office support the Executive Board in fulfilling its tasks. In 2023, the DAM Office employed 11 people, five of whom worked part-time (PT). Plus the Chairman of the Executive Board.

~ **Chairman of the Executive Board**
Dr. Joachim Harms

~ **Managing Director and Head of Research Core Area**
Dr.-Ing. Annekatriin Lehmann

~ **Core area Data Management and Digitalization**
Dr. Gauvain Wiemer (Head)

~ **Core area Transfer**
Dr. Ute Wilhelmssen (Head)

~ **Third-party funded projects Transfer**
Julia Jung, Project Coordination World Ocean (PT)
Dr. Swantje Preuschmann,
Project Coordination Information Portal
Dr. Carolin Müller,
Editorial Office Information Portal (PT)

~ **Core area Research, support**
Dr. Esther Rickert (PT)

~ **Communication**
Marion Jüstel (PT)
Erik Zürn (PT, until 12/2023)

~ **Administration**
Sebastian Konitzer

~ **Team assistance**
Stephanie Uibel

The DAM Office received student support from Friedrich Rittner (until 08/2023), Rike Jähnichen (from 09/2023) and Emilia Kilbert (from 10/2023).

The DAM office team at the end of 2023: Swantje Preuschmann, Carolin Müller, Joachim Harms, Rike Jähnichen, Annekatriin Lehmann, Marion Jüstel, Ute Wilhelmssen, Julia Jung, Gauvain Wiemer, Stephanie Uibel, Esther Rickert, Sebastian Konitzer (from left to right)



FIGURES

The German Marine Research Alliance is a registered non-profit organisation. It is funded by the federal government, represented by the Federal Ministry of Education and Research (BMBF), and the five northern German states. In addition, membership fees are collected from the members

REVENUES & EXPENDITURE

In the 2023 financial year, the office and its work were mainly financed by grants from the northern German federal states. It also received income from membership fees collected from DAM members in accordance with the statutes.

REVENUES

Income from federal states	870.000 €
Income from membership fees	172.500 €
Offsetting previous year	194.656 €
Total income	1.237.156 €

EXPENDITURE

Personnel expenses	680.984 €
Expenditure on administration & operations	195.066 €
Operating expenses	303.833 €
Expenditure on investments	6.784 €
Total expenditure	1.186.667 €

In addition, earmarked third-party funds in the amount of € 690,000 were used for the realization of the two transfer projects (see *page 32*), which were then spent for this purpose.

The principle of annuality applies to the DAM budget, meaning that unused funds are returned to the donors or offset against the grants of the following financial year.

The annual financial statements are audited by an independent auditing company. An audit of the proper use of funds is carried out by the donors.

ANNUAL OVERVIEW

- Meetings and informative offers of the DAM bodies and committees
- DAM events and activities

01

JANUARY 01

The **second phase of the "Underway-Forschungsdaten" project**, which networks the data management activities of the DAM's shipping member institutions, starts at the beginning of 2023. The aim of the project is to exploit the full potential of German research vessels as mobile measurement platforms.



02

FEBRUARY 06 Information event for science

JANUARY 31 – FEBRUARY 2

At the second **annual meeting of the DAM research mission CDRmare** at the Ozeaneum in Stralsund, more than 200 participating scientists exchange information on the status and progress of their research results to date – among other things in preparation for the application for Phase II of the mission.



FEBRUARY 14

More exchange and networking: The DAM expands its social media presence with the channels LinkedIn, Mastodon and Twitter (later X). The Bluesky platform is added in the fall.



03

MARCH 13 General Meeting 1/2023

MARCH 23

Developing sustainable solutions through interaction between science, politics and society: At the **DAM Parliamentary Evening in Hanover**, participants discuss how marine conservation and use can be reconciled.



MARCH 29

Up-to-date knowledge on the topic of "Protecting and sustainably using the oceans": The University of Hamburg begins a **public lecture series** in which scientists from the **DAM research mission sustainMare** provide insights into their research every Wednesday evening of the summer semester.

MARCH 31

Representatives of the CDRmare mission present their findings on the potential and consequences of CDR measures at the **parliamentary breakfast "Opportunities and hurdles of marine geological CO₂ storage"**, hosted by the DAM and the DAM research mission CDRmare on the initiative of the BMBF.



APRIL 24 Extraordinary General Assembly

04

APRIL 17

At the first **Stakeholder Forum** in 2023, the DAM joins representatives from politics, business and organized civil society to discuss the form and framework conditions for cooperation that benefits everyone involved – and above all the coasts, seas and oceans.



APRIL 25 – 26

At the European Commission's kick-off event for the EU mission for the North and Baltic Sea region "**Restore our Ocean and Waters by 2030: The Baltic and North Sea lighthouse in action**", the DAM presents the DAM research missions as an example of national activities in an outline.

MAY 22 Open board meeting

05

MAY 05

The Administrative Council confirms **Michael Schulz's second term of office as Deputy Chairman of the DAM Board of Directors**. The director of the Marum was unanimously re-elected at the members' meeting on April 24.



MAY 05

The DAM has **24 members: The University of Veterinary Medicine Hannover (TiHo)** complements the range of topics covered by DAM member institutions with expertise in veterinary medicine and infection biology.

MAY 22

As part of the **Ocean Future Lab project**, artists visualize their thoughts on how we can and want to live with the sea in the future. As different as the ideas are: The focus is always on **marine protection and sustainability**.



06

JUNE 20 – 21

The **International Advisory Board** meets in Berlin, for the first time in person since the pandemic. The DAM research missions are on the agenda, with a particular focus on the assessment of the CDRmare mission.



2023

JULY 4
Information event for the scientific community

07

JULY 11
Keel laying of the Meteor IV in Rostock: The DAM welcomes the consistent renewal of the German research fleet by the Federal Ministry of Education and Research. From 2026, the ship will focus on collecting research data in the Atlantic, but also worldwide.



AUGUST 23
Extraordinary meeting of the Administrative Council

08

AUGUST 30
The second **annual conference of the DAM research mission sustainMare** begins at Kiel University. During the three-day conference, over 170 scientists and representatives of various interest groups summarize the initial results after one and a half years of research and **set the course for the mission's future scientific agenda.**



SEPTEMBER 18
General Meeting 2/2023

09

SEPTEMBER 18 - 22
ICYMARE in Oldenburg: The DAM is sponsoring the poster session of the 2023 forum for young marine researchers. The **NFDI4EarthAcademy**, in which the DAM is also involved, will present its data science funding program.



SEPTEMBER 28
Under the heading "Between offshore wind, biodiversity and fisheries: mega- or multi-use of the oceans?", DAM, the DAM research mission sustainMare and the BMBF invite to a **parliamentary breakfast** in Berlin.



10

OCTOBER 09
Generating and implementing practical knowledge: At the suggestion of the **North German Conference of Science Ministers (NWMK)**, the DAM presents its **transfer activities** at the Bremen State Representation in Berlin. The participants' summary: Scientific findings are an important basis for decisions in politics, business and society – and the DAM is the right institution to bundle them.



OCTOBER 16
The **NFDI4Earth Academy** is entering its **second round**: interested young scientists in earth system and data science can once again apply for the two-year → *training program* on the topic of "Data Science" until November 30.



OCTOBER 20
The German Council of Science and Humanities renews its **recommendations on the further development of the research fleet** and other marine research infrastructures – incorporating the knowledge and experience of DAM member institutions, among other things.

NOVEMBER 21
Meeting of the International Advisory Board

NOVEMBER 22
Meeting of the Board of Directors

11

NOVEMBER 10
Germany's young AI talents are honored at the **Federal Artificial Intelligence Competition**. DAM transfer manager Ute Wilhelmssen participates as a jury member in the "Environment and Sustainability" category.

NOVEMBER 15
The eighth edition of the **World Ocean Review "The Ocean: A Climate Champion?"** summarizes current research knowledge on marine CO₂ removal methods by more than 20 scientists. The majority of them conduct research at → *DAM member institutions* and in the → *DAM research mission CDRmare*.



NOVEMBER 22
"Meer Zukunft" in Hamburg: The DAM completes its political presentation round in the federal states with its fifth **parliamentary evening**. The thematic focus is on the conflict between the protection and use of marine areas with a focus on energy supply and coastal and nature conservation.



NOVEMBER 30
Protecting the ocean and using it sustainably in the fight against the climate crisis: The DAM Executive Board publishes a **statement on the start of the global climate negotiations and the amendment of the Federal Climate Protection Act.**

DECEMBER 12
Meeting of the International Advisory Board

DECEMBER 19
Meeting of the International Advisory Board

12

END OF DECEMBER
Preparations for the **third research mission "Pathways to Improved Risk Management in the Field of Marine Extreme Events and Natural Hazards" or mareXtreme**, have been completed. This sets the course for a punctual launch of the mission at the beginning of January 2024.



2023

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IMPRINT

F.i.S.d.P.: Joachim Harms, Chairman of the Executive Board of DAM

Marion Jüstel (in charge), Paulina Conrad, Emilia Kilbert, Sebastian Konitzer, Gauvain Wiemer, Ute Wilhelmsen.

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