



20 Annual report

17 FACTS AND FIGURES



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Foreword



Dr Karsten Wurr, Professor Antje Boetius, Professor Karin Lochte

As an internationally recognised competence centre for polar and marine research, the Alfred Wegener Institute Helmholtz Center for Polar and Marine Research (AWI) is one of the few scientific institutions in the world that is equally active in both the Arctic and the Antarctic. It coordinates German polar research, but also researches the North Sea and its German coastal regions. With its innovative research, excellent scientific infrastructure and many years of expertise, the Alfred Wegener Institute investigates all areas of the Earth's system - from the atmosphere to glaciers, permafrost regions and the bottom of the oceans.

This annual report summarizes the most important facts and figures in connection with research and development, third-party funding, promotion of young talent and networking from 2017.

The April 2017 'Open Ship' event on FS Polarstern, which attracted to Bremerhaven around 14,000 citizens from all over Germany, was a great success. The interested public was informed about the research of the AWI and witnessed firsthand the great commitment and immense team spirit of the AWI employees. The success of numerous activities within the framework of the Year of Science 2016*17 Seas and Oceans (including the Germany-wide road show with a mobile polar camp) can also be attributed to the quality of dialogue with society. These participation and encounter format events demonstrated the value of engagement with the general public in building an appreciation for our mission and our work.

In May 2017 we celebrated the anniversary event „125 Years of Marine Research Helgoland“. 25 years of united science and the extension building A45.2 were also celebrated at the Potsdam location. A completely new location for AWI operations is Oldenburg, where the Helmholtz Institute for Functional Marine Biodiversity, founded jointly with the University of Oldenburg, has already taken shape since its foundation in 2016.

In July, the A68 iceberg separated from the Larsen C Ice Shelf and headed north. Its separation attracted a great deal of attention both nationally and internationally, as a visible indicator of rapid man-made change in the climate. The AWI plays an important role in explaining the underlying processes and possible interactions associated with such events.

The major flagship project MOSAiC (Multidisciplinary drifting Observatory for the Study of Arctic Climate), which will be carried out in 2019-2020, is also increasingly taking shape. Numerous coordination and preparation activities are already underway in administration, logistics and science, as well as at international workshops, so that this international wintering expedition can be optimally carried out in the central Arctic. For the AWI and its international partners, MOSAiC offers an outstanding opportunity to close important observation gaps, to improve climate models and to inspire a global public for the entire spectrum of polar research.

In November 2017, the former scientific director Professor Karin Lochte retired and her successor, the deep-sea researcher Professor Antje Boetius, was welcomed at a festive symposium.

Please enjoy reading this report!

Professor Antje Boetius
Director

Dr Karsten Wurr
Administrative Director

The male form used in the report for groups of persons naturally includes the female form. The use of both sex forms is only waived in order to improve the legibility of the text.

Board of Governors

The Board of Governors, consisting of representatives of the government and the Federal States, scientists and personages from public life, supported by the Scientific Advisory Board, decides on general and financial matters of the institute.

Chair
Ministerial Director
Dr Karl Eugen Huthmacher (AL 7)
Federal Ministry for Education and Research, Bonn

Deputy Chair
Professor Eva Quante-Brandt
The Senator for Science, Health and Consumer Protection, Bremen (since July 2015)

Ministerial Council Gerd Conrad *)
Federal Ministry of Food, Agriculture and Consumer Protection, Bonn

Ministerialdirigent Dr Peer Hoth *)
Federal Ministry of Economics and Technology, Berlin

Legation Councillor 1st class
Dr Rainer Lassig
Federal Foreign Office, Berlin

State Councillor Dietmar Strehl
Office of the Senator for Financial Affairs, Bremen

Ministerialdirigent Carsten Feller
Ministry of Science, Research and Culture, Potsdam (Brandenburg)

Ministerialrat Sigrid Hemming
Ministry of Education, Science and Culture of the State of Schleswig-Holstein

Professor Gerald Haug
(Chairman of the Scientific Advisory Board)
Max Planck Institute for Chemistry, Mainz

Silvia Schön
Bremen

Christa Fuchs
OHB AG, Bremen

Professor Ulrike Feudel
Institute of Chemistry and Biology of the Sea (ICBM), University of Oldenburg

Professor Jürgen Kurths
Potsdam Institute for Climate Impact Research, Potsdam

Professor Eva-Maria Pfeiffer
Institute of Soil Science, University of Hamburg

*) The representatives of these Federal Ministries participate in alternating 2-year cycles (Federal Ministry of Food, Agriculture and Consumer Protection represented since January 2015) take part in a 2-year rotation (BMEL represented since January 2015)

As of: December 2017

Scientific Advisory Board

The Scientific Advisory Board advises the Board of Governors and the Directorate on the field of research in the fields of research, logistics and coordination.

The President of the Max Planck Society

Professor Martin Stratmann, Munich
(since June 2014)

Permanent representative

Professor Rudolf Amann
Max Planck Institute for Marine Microbiology, Bremen
(since March 2011)

The President of the German Research Foundation

Professor Peter Strohschneider
German Research Foundation, Bonn
(since January 2013)

Permanent representative

Professor Silke Voigt
Johann Wolfgang Goethe University, Institute of Geosciences, Frankfurt
(since June 2016)

The President of the Federal Institute for Geosciences and Natural Resources

Professor Ralph Watzel
Federal Institute for Geosciences and Natural Resources, Hannover
(since April 2016)

Permanent Representative

Dr Volker Steinbach
Federal Institute for Geosciences and Natural Resources, Hannover
(since April 2016)

The President of the Johann Heinrich von Thünen Institute

Professor Folkhard Isermeyer
Federal Research Institute for Rural Areas, Forestry and Fisheries, Braunschweig
(since April 2016)

Permanent representative

Dr Gerd Kraus
Thünen Institute for Sea Fisheries, Hamburg
(since April 2016)

The Rector of the University of Bremen

Professor Bernd Scholz-Reiter
(since October 2012)

Permanent representative

Professor Wilhelm Hagen
University of Bremen
(since February 2008)

Chair

Professor Gerald Haug
Max Planck Institute for Chemistry, Mainz
(since September 2017)

Deputy Chair

Professor Michael P. Meredith
British Antarctic Survey (BAS) Leader, Polar Oceans Research Programme
Great Britain
(since January 2013)

Professor Shubha Sathyendranath
Plymouth Marine Laboratory (PML)
Great Britain
(since July 2015)

Dr Ljuba Woppowa
Engineering and Science
VDI- The Association of Process Engineering and Chemical Engineering, Executive Director Association of German Engineers, Düsseldorf
(since July 2015)

Professor Marta Torres
Oregon State University, College Earth Ocean and Atmospheric Sciences
USA
(since September 2017)

Professor Toby Tyrrell
University of Southampton, Ocean and Earth Sciences
National Oceanography Centre
Great Britain
(since July 2015)

Professor Dorthe Dahl-Jensen
Niels Bohr Institute
Denmark
(since July 2012)

Professor Henk Brinkhuis
Royal Netherlands Institute for Sea Research (NIOZ), General Director
Netherlands
(since July 2015)

Professor Vladimir E. Romanovsky
University of Alaska Fairbanks
Geophysical Institute UAF
Alaska USA
(since January 2013)

Scientific Council

The Scientific Council advises the Board of Directors on important scientific matters of the foundation, such as the development of the Research Programme.

Chair

Professor Anya Waite
Professor Sabine Kasten (Deputy)

Members

Professor Thomas Brey
Professor Maarten Boersma
Professor Alan Cembella
Professor Bernhard Diekmann
Professor Stephan Frickenhaus
Professor Guido Grosse
Professor Christian Haas
Dr Claudia Hanfland
Dr Christian Hass
Dr Christoph Held
Professor Ulrike Herzs Schuh
Professor Helmut Hillebrand
Professor Angelika Humbert
Professor Wilfried Jokat
Professor Thomas Jung
Professor Torsten Kanzow
Professor Sabine Kasten
Dr Alexandra Kraberg
Professor Gerrit Lohmann
Dr Martin Losch
Dr Christian Lüpkes
Dr Hans Pfeiffenberger
Professor Hans-Otto Pörtner
Professor Markus Rex
Professor Claudio Richter
Dr Christoph Ritter
Dr Thomas Soltwedel
Professor Ralf Tiedemann
Professor Anya Waite
Professor Karen Wiltshire
Professor Dieter Wolf-Gladrow

Permanent Guests

Professor Antje Boetius
Dr Angelika Dummermuth
AWI-Equal Opportunity Offices
Dr Stefan Hain
Dr Uwe Nixdorf
AWI Staff Council
Ralf Röchert
Dr Eberhard Sauter
Dr Almut Schmengler
Dr Karsten Wurr

Organization Chart

Board of Governors MinDir Dr K. E. Huthmacher	Board of Directors Professor A. Boettner Dr K. Wurr Dr U. Nixdorf Professor K. H. Wiltshire			Internal Boards Scientific Council Ombudsman Equal Opportunities Officer Staff Council
Scientific Advisory Board Professor G. H. Haug	Directorates Office Dr A. Dummermuth	Staff Units		International Offices National Offices
	Locations Potsdam (Professor B. Diekmann) Sylt (Dr K. Mölter) Heligoland (Dr A. Schmidt)			User Boards for Large Equipment
Scientific Divisions, Technologies and Services				
Geosciences Professor R. Tiedemann	Biosciences Professor T. Brey	Climate Sciences Professor T. Kanzow	Infrastructure / Administration	
Geophysics Professor W. Jokat	Polar Biological Oceanography Professor A. Waite	Atmospheric Physics Professor M. Rex	Logistics and Research Platforms Dr U. Nixdorf	
Glaciology Professor A. Humbert	Marine Biogeosciences Professor D. Wolf-Gladrow	Polar Meteorology Dr. C. Lüpkes (komm.)	Computing and Data Centre Professor S. Frickenhaus (temp.) Professor H. Pfeiffenberger (temp.)	
Periglacial Research Professor G. Grosse	Functional Ecology Professor T. Brey	Physical Oceanography of Polar Seas Professor T. Kanzow	Library K. Brannemann	
Marine Geology and Palaeontology Professor R. Tiedemann	Benthopelagic Processes Professor C. Richter	Climate Dynamics Professor T. Jung	Scientific Workshop E. Dunker	
Marine Geochemistry Professor S. Kasten	Integrative Ecophysiology Professor H.-O. Pörtner	Sea Ice Physics Professor C. Haas	Human Resources C. Ruhoff	
Research group Polar Terrestrial Environmental Systems Professor U. Herzschuh	Ecological Chemistry Professor B. Koch	Palaeoclimate Dynamics Professor G. Lohmann	Corporate Finances C. Ungermann	
	Shelf Sea System Ecology Professor M. Boersma		Purchasing Department J. Eilers	
	Coastal Ecology Professor K. H. Wiltshire		Administration and Organization M. Bong	
	Deep Sea Ecology and Technology Dr T. Soltwedel		Construction and Facility Management M. Krüger	
Junior Research Groups				
Dr J. Müller Professor H. Lantuit Dr M. Langer	Professor I. Weikusat Professor G. Grosse	Dr H. Flores Professor S. Trimborn	Dr M. Iversen Dr C. Meunier	Dr T. Laepple Dr H. Goessling
Knowledge and Technology Transfer				
Bionics Light Construction Dr C. Hamm	Aquaculture Dr M. J. Slater Professor B. Buck	Earth System Knowledge Platform Dr G. Krause	KTT Projects NN	Technology Transfer Centre Professor E. Sauter

New Senior Members of Staff



Professor Antje Boetius
has been scientific director
of the AWI since November
2017.



Dr Christof Lüpkes
took over the provisional
management of the
Meteorology of the Polar
Regions Section in the
Department of Climate
Sciences in July 2017.



Professor Boris Koch
took over as head of the
Ecological Chemistry
Section in January 2017.



**M.A. Kathrin
Brannemann**
has been head of the
library since July 2017.



Dr Thomas Soltwedel
has headed the Deep Sea
Ecology and Technology
Section of the Department
of Biosciences since
November 2017.



Professor Helmut Hillebrand
has been Director of the
newly founded Helmholtz
Institute for Functional
Marine Biodiversity at the
University of Oldenburg
(HIFMB) since October 2017.



Ruth Krause
took over the scientific
coordination of the HIFMB in
August 2017.

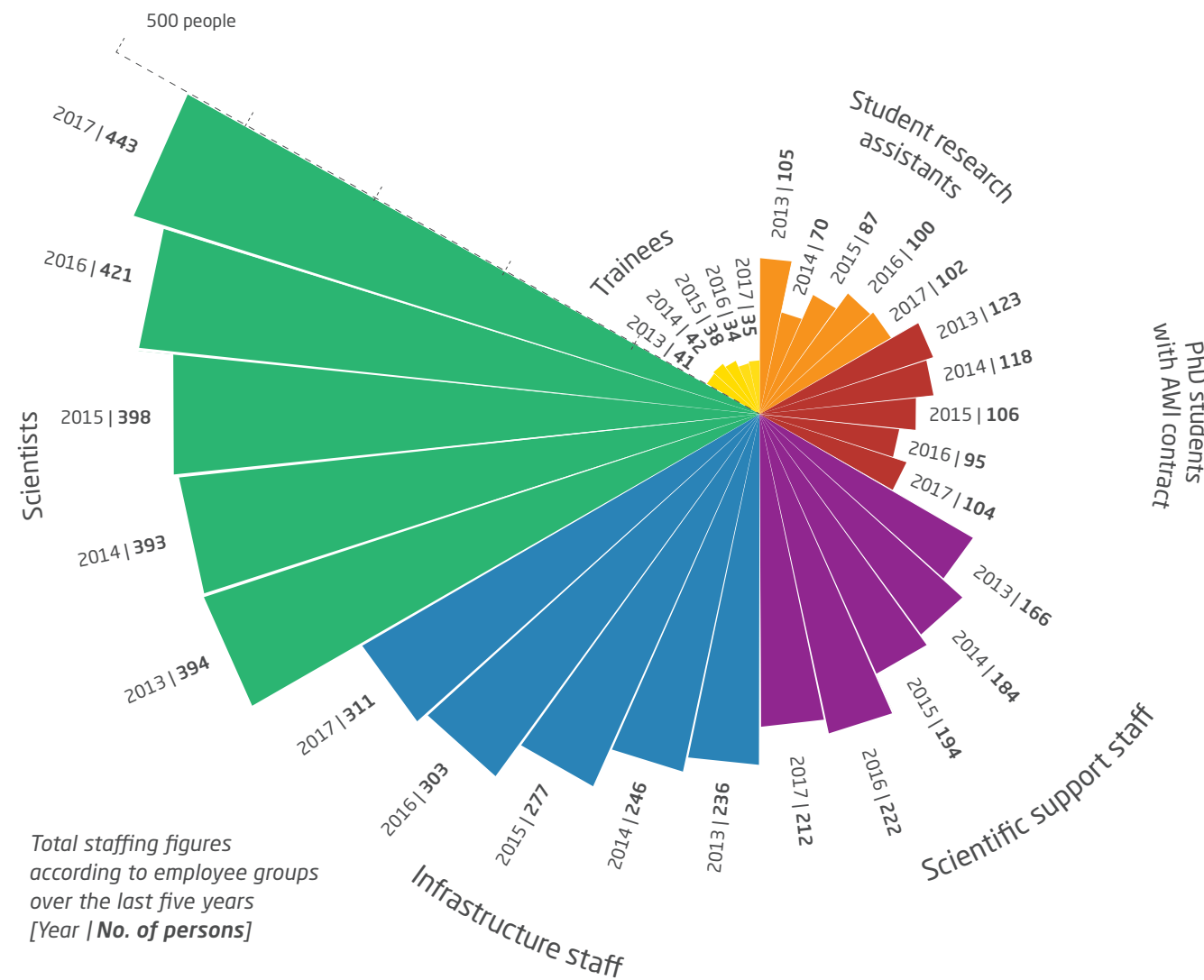


Rainer Pigge
has been the administrative
coordinator of the HIFMB
since August 2017.

Professor Ulrike Herzschuh
has headed the Polar Terrestrial Environmental Systems
Research Group in the Department of Geosciences since
October 2017.

Hans-Christian Heinke
took over the management of internal audit in June 2017.

Staff



Human Resources Development Activities

Based on and embedded in the human resources development concept for postdocs, a concept for the career counselling and development of postdocs and temporary research assistants was developed. Based on these concepts, an application was submitted for the proportional financing of a Helmholtz Career Development Centre for Researchers (HCDCR) by the President's Initiative and Networking Fund. Implementation is planned for 2018.

Within the framework of the U Bremen Research Alliance (UBRA), there is also an exchange on the promotion of young scientists and on possibilities for cooperation between university and non-university partners in the state of Bremen in this area. Among other things, the

development of common standards for competence profiles is being considered. UBRA is also pressing ahead with intensifying cooperation in the field of dual careers in the state of Bremen.

In 2017, 111 employees attended AWI's internal training courses in soft skills, languages and IT. This was connected with an exemption expenditure of approximately 3,200 hours and costs at a value of approximately 38,500 €. In addition, employees were individually advised - building on the needs-related agreements with their managers in the appraisal interviews - also with a view to possible external further development measures.

Balancing Responsibilities for Work and Family

The compatibility of work and family life is a central strategic goal at AWI. It is an ongoing task of the Family Office to implement this goal and offer the greatest possible support. The measures are always tailored to the individual requirements of the various organisational units. The work is therefore characterised by a high degree of adaptability and professional competence in order to meet the various requirements.

The AWI maintains an in-house crèche with 20 places for children up to the age of three, in which children of different nationalities are looked after. For children aged between six and twelve years, the Family Office offers its own holiday programme, which is very well used. This program was offered during the Easter holidays, 17 days in the summer holidays, and in the autumn holidays. A total of 506 applications were received in the year under review.

cooperation with other companies in Bremerhaven was further expanded. At the end of 2017, the „Long Night of Adventures“ was held for the tenth time for the children of the staff of the participating institutions. Preparations for a first joint children's holiday week for all Helmholtz Centres for summer 2018 have already been made in 2017. Furthermore, since October 2017, the reimbursement of unavoidable and additional care costs for children and persons in need of care has been possible for the duration of participation in business trips under application of § 10 (2) of the Federal Equality Act. The entitlement to such reimbursement will be examined by the Family Office in consultation with the travel expenses unit after the employees have submitted their application. The AWI has also developed various measures in the field of work and care. A nursing breakfast was organized at the Potsdam location and three seminars at the Bremerhaven location. A joint exhibition on the compatibility of work and career is also in preparation.

Gender Equality

In 2017, a total of 1207 people were employed at the AWI, 47% of whom were women, as in the previous year. This rate has fluctuated between 46 and 48% since 2012. Women represent between 46% and 57% in all areas (trainees, student assistants, doctoral students, science-supporting personnel and infrastructure personnel). The proportion of women in the infrastructure sector has slowly fallen from 59% to 52% since 2012. Only in the field of science do women continue to make up well under 50% of the workforce, remaining at around 39%

since 2012. In 2017 it was only 39%, but due to the increase in total staff 172 women were employed as scientists in 2017, compared to 161 women in 2016 (38%). The proportion of women in management positions was 22%. The AWI had 13 W3 and 16 W2 professorships in 2017. Of these, four (W3) and five (W2) professorships were held by women. Three of the 11 Young Investigator Groups at the AWI were headed by women; seven female AWI employees received a contract of employment that was terminated in 2017.

Staff	2013	2014	2015	2016	2017
Trainees	41 39	42 36	38 42	34 47	35 57
Student research assistants	105 48	70 43	87 41	100 48	102 46
PhD students with AWI contract	123 57	118 52	106 53	95 51	104 51
Total assisted PhD students	195 60	200 54	234 54	214 56	218 55
Scientific support staff (technicians, engineers)	166 54	184 49	194 54	222 52	212 53
Infrastructure staff (administration, logistics)	236 57	246 58	277 53	303 55	311 52
Scientists	394 39	393 40	398 39	421 38	443 39
Total	1.065 48	1.053 47	1.100 47	1.175 47	1.207 47

No. of persons | Proportion of women [%]

Staff at the various AWI locations



Staff in No. of persons | Full-time equivalents

AWI in total	as of 31 December 2017
Permanent staff	563 530
Limited-term contract staff	644 564
Total	1207 1094
of these, third-party financed	263 223
of these, international	151 k. A.

Bremerhaven	80%
Permanent staff	465 436
Limited-term contract staff	496 439
Total	961 874
of these, third-party financed	191 164
of these, international	122 k. A.

Potsdam	11%
Permanent staff	44 43
Limited-term contract staff	92 80
Total	136 123
of these, third-party financed	49 41
of these, international	15 k. A.

Helgoland	5%
Permanent staff	35 34
Limited-term contract staff	30 25
Total	65 59
of these, third-party financed	7 6
of these, international	6 k. A.

Sylt	3%
Permanent staff	18 1
Limited-term contract staff	20 15
Total	38 32
of these, third-party financed	9 7
of these, international	7 k. A.

Oldenburg	1%
Permanent staff	1 1
Limited-term contract staff	6 5
Total	7 6
of these, third-party financed	7 6
of these, international	1 k. A.

Knowledge and Technology Transfer

Knowledge transfer (KT) is an integral part of the PACES II research programme and has gained particular visibility in recent years through its strategic positioning in Topic IV. The various KT activities (e.g. ESKP projects), temporary initiatives (e.g. REKLIM, IPCC, IP-BES) and supporting institutions (Climate Office, North Sea Office and Arctic Office) have been bundled in an integrative strategy process. This development process strengthens the culture of broad participation in the tasks of the WT at the centre and ensures the overall visibility and perception of KT as an important component of science. Like its stakeholders, the KT activities of AWI are broadly diversified and primarily serve the areas of information and consulting with the help of brochures, magazines and fact sheets as well as web portals for the provision of information and data. The interactive exchange with social actors in direct dialogue processes and further training programmes was also significantly increased. In 2017, scientists worked on a total of 62 projects at the interface of science and policy/agency consulting. Below is a small selection of activities in 2017:

- Within the framework of ESKP (Earth System Knowledge Platform), five project proposals were selected for funding in a competitive procedure, which mainly focus on the effects of climate change in coastal and shelf seas and in the field of biodiversity.
- In cooperation with colleagues of the MPI-HGF Bridge Group Deep-Sea Ecology and Technology, employees of the AWI North Sea Office have created the online portal LITTERBASE. LITTERBASE provides aggregated knowledge on the current environmental problems of waste in the oceans.
- The information and data portal meereisportal.de has developed with an average of more than 500 visitors daily to a much visited and widely accepted source of information about sea ice.
- One year after its foundation on 1 January 2017, the Arctic Office has firmly established itself as a single point of contact for federal ministries, authorities etc. interested in Arctic issues and as a contact point for the German economy (www.arctic-office.de). The joint workshops „Arctic Dialogue“ lead to an inter-ministerial comparison of information.

- Together with the World Wide Fund For Nature (WWF) and regional educational institutions, the REKLIM research association and the Climate Office for Polar Regions and Sea Level Rise have developed an innovative learning programme for adults on the topic of climate change in the sense of „education for participation“ (transformation education), which will initially be carried out prototypically in Southern Germany and later nationwide at adult education centres. This project called „Klimafit“ is supported by the Robert Bosch Foundation and Klaus Tschira Foundation.

The technology transfer (TT) at the AWI, which is closely networked with the KT, also gained considerable visibility in 2017. An important measure is the new AWI Internal Innovation Fund (IF), which enables the internal financing of technological innovation and transfer projects. Within the scope of these projects, innovation potentials can then be further developed with a view to commercial application, e.g. as a product, process or service.

In total, six innovation projects were counted for the year under review, including one internally funded project, one project funded by the Helmholtz Association and four publicly funded exploitation projects. In 2017, twelve invention reports in the fields of marine and environmental technology and sensor technology were received by the TT staff unit and four new patents were applied for. Following Helmholtz Enterprise support, the company Reefauna was spun off, which deals with the restocking of lobster stocks, environmental monitoring and compensatory measures in the North Sea.

Budget

CURRENT at 12/31/2017 (unit: thousands of EUR)				
	Bremerhaven	Heligoland Sylt	Potsdam	total
Operation				
Staff	43.004	5.669	3.903	52.576
Materials and Equipment	68.598	7.994	2.386	78.978
Investments				
Current investments	5.140	953	684	6.777
Investments > EUR 2,5 Mio	2.653	1	4.719	7.373
Investments > EUR 15 Mio	5.032	0	0	5.032
Income				
Revenues and profits	-4.406	-911	-80	-5.397
Reserves				330
Total	120.021	13.706	11.612	145.339
Third-party funding	24.302	1.774	8.442	34.518

Source of third-party funding (unit: thousands of EUR)					
	Helmholtz	BMBF	DFG	EU	others
	6.271	7.058	2.125	12.194	6.870

Buildup of the Helmholtz Institute for Functional Marine Biodiversity at the new location in Oldenburg through grants from MWK Niedersachsen amounting to € 326,544.33 for the year 2017 (included in the line "Source of third-party funding, others").

PLANNED 2018 (unit: thousands of EUR)				
	Bremerhaven	Heligoland Sylt	Potsdam	total
Operation				
Staff	43.300	5.600	4.100	53.000
Materials and Equipment	65.005	7.500	2.000	74.505
Investments				
Current investments	9.250	1.500	750	11.500
Investments > EUR 2,5 Mio	2.788	1.300	452	4.540
Investments > EUR 15 Mio	4.788	0	0	4.788
Income				
Revenues and profits	-1.900	-600		-2.500
Reserves				
Total	123.231	15.300	7.302	145.833
Third-party funding	23.000	3.000	1.800	27.800

Major projects launched in 2017 under AWI management

Nunataryuk

Permafrost thaw and the changing arctic coast: science for socio-economic adaptation, EU collaborative project, HORIZON 2020

Project Management:	Professor Hugues Lantuit
Duration:	2017-2022
Funding amount:	2,257,437 EUR

SPACE

Space-time structure of climate change, ERC Starting Grant, HORIZON 2020

Project Management:	Dr Thomas Laepple
Duration:	2017-2022
Funding amount:	1,499,082 EUR

ESM

Advanced Earth System Modelling Capacity, HGF project

Project Management:	Professor Thomas Jung
Duration:	2017-2020
Funding amount:	5.339.500 EUR

PLAWES

Microplastic contamination in the Weser model system - Wadden Sea National Park - an ecosystem-wide approach; project: Microplastic investigations in the Lower and Outer Weser and interaction of microplastic with pathogens, joint project PTJ/FZ Jülich

Project Management:	Dr Gunnar Gerdt together with University of Bayreuth (Professor Christian Laforsch)
Duration:	2017-2020
Funding amount:	753,238 EUR

QUARCCS

WTZ-Russia: Quantification of rapid climate change in the Arctic: Regional feedback and large-scale influences, joint project PTJ/FZ Jülich

Project Management:	Dr Annette Rinke
Duration:	2017-2020
Funding amount:	739.220 EUR

Scientific Publications

In 2017, AWI scientists published a total of 620 peer-reviewed publications (source: Science Citation Index, Web of Science, 29.05.2018). 199 of these publications are AWI first authorships. 36 publications have been published in high-ranking scientific journals such as Nature or Science. Nearly a quarter (23%) of all publications from 2017 were co-authored by the USA, making them currently the most important international cooperation partner of the AWI. Other important partners from a total of 87 countries with which AWI scientists jointly publish are Great Britain (21% of the publications), France (11%) and Norway (11%).

A similar picture emerges when looking at a longer period (cf. also World Map, pages 22/23 „International Cooperation“ - dark red). Of the 3253 joint publications with a total of 91 countries, most have been produced in the last six years with the following international partners: USA (733), Great Britain (692), France (375), Norway (361), Canada (288), Russia (273) and the Netherlands (258) (as of 16.05.2018). Free access to scientific publications (Open Access) is a very important and forward-looking concern for both the AWI and the Helmholtz Association. The share of Open Access journals in 2017 was 44%, a significant increase on last year (26% in 2016).

Scientific prizes, awards, honours

Professor Karin Lochte was awarded the 1st Class Cross of Merit of the Order of Merit of the Federal Republic of Germany. With this award, the Federal Republic of Germany honours the outstanding professional and private work of Karin Lochte. The award was also presented to her privately initiated foundation for the support of disadvantaged young people.

Professor Antje Boetius was awarded the Copernicus Medal 2017 in Vienna. With this annual prize, the Copernicus Gesellschaft e.V. honours groundbreaking research in the geosciences or astronomy. She was also awarded the 2017 Carl Friedrich Gauss Medal by the Braunschweig Scientific Society.

Dr Ricarda Nielsen (née Pietsch) has been awarded the Annette Barthelt Prize for excellent doctorates in marine research.

Dr Morten Iversen won the Mary B. Ansari Best Geoscience Research Resource Work Award of the Geoscientific Information Society.

Dr Helge Göbbling won the international model analysis competition „Verification Challenge“ of the World Meteorological Organisation's weather research programme in 2017.

Dr Sze Ling Ho received the Brandenburg State Postdoc Award 2017 for outstanding research achievements as a young scientific talent.

Nils Hutter was awarded the Science Prize of the OLB Foundation for his dissertation.

Professor Hugues Lantuit is the winner of the International Mentorship Award 2017 of the Association of Polar Early Career Scientist (APECS). With this award, APECS honours Professor Lantuit's commitment as a mentor for young scientists.

Ralf Röchert received the „Research Spokesman of the Year 2017“ award in the category „Research Institutes and Universities“, which is selected by science journalists from Germany, Austria and Switzerland.

Dr Thorben Wulff was awarded the „Giovanni (NASA Geospatial Interactive Online Visualization and Analysis Infrastructure) Image Hall of Fame“ (Class of 2017).

The AWI science prize of 2,000 EUR for the best scientific publication went to **Sören Häfker**, PhD student at the Polar Time Virtual Institute in the group of Professor Bettina Meyer, for his publication in the journal Current Biology¹.

Dr Juliane Wolter received the annual AWI doctoral award (2,000 EUR) for her dissertation „Mid- to Late Holocene environmental dynamics on the Yukon Coastal Plain and Herschel Island (Canada) - evidence from polygonal peatlands and lake sediment“.

Andrea Bleyer and Klaus Woriescheck were awarded the Silent-Hero-Award (2,000 EUR). Ms Bleyer for creating a welcome culture at the AWI for foreign employees and Mr Woriescheck for his commitment in overcoming immensely increased customs issues and challenges for the AWI.

This year, the AWI Transfer Prize (2,000 EUR) was awarded for the first time. **Dr Monica Ionita-Scholz** was awarded for her outstanding activities in the field of knowledge and technology transfer.

¹ Häfker, N.S., Meyer, B., Last, K.S., Pond, D.W., Hüppe, L. & Teschle, M. (2017): Circadian Clock Involvement in Zooplankton Diel Vertical Migration, Current Biology doi: 10.1016/j.cub.2017.06.025.

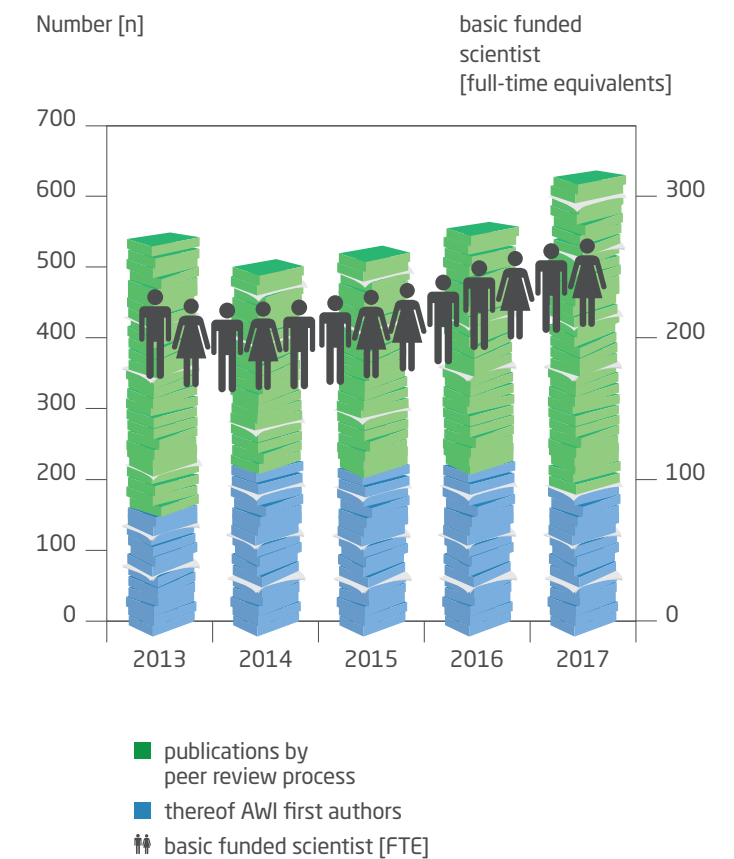


Figure AWI scientific publications over the last 5 years

Archive for German Polar Research (AdP)

The AdP further expanded the scientific-historical tradition of German polar research in 2017 and now has 361 linear metres of files, 49,500 photos, 240 GB of digital documents, 775 maps, technical drawings and plans, 155 films and 69 small exhibits.

Particularly worth mentioning is the cataloguing of the holdings of the Heligoland Biological Institute and the transcription of the files from the collection for the 1st German South Polar Expedition (1901-1903).

Together with the City Archive Bremerhaven, the AdP 2017 organized the workshop „Solution strategies for cultural emergency groups“ with the aim of supporting each other in emergency situations (fires, floods) in rescuing and securing cultural assets.

The archive was used by 96 users for 102 days in 2017. The AdP fulfilled its research mandate in 2017 with a scenic reading entitled „Bitten by the ice - buried in the ice“ as part of the „From the files to the stage“ project.

Cooperation Partners

International Cooperation

AWI is a permanent member of the following international boards and committees:

- Scientific Committee on Antarctic Research (SCAR)
- International Arctic Science Committee (IASC)
- European Polar Board (EPB)
- Partnership for Observation of the Global Oceans (POGO)
- Council of Managers of National Antarctic Program (COMNAP)
- European Climate Research Alliance (ECRA)

In the period under review, AWI concluded new cooperation agreements with Jilin University (JLU), China and the Federal University of Rio Grande (FURG), Brazil. The Memorandum of Understanding (MoU) with IFREMER and MARUM was extended. A MoU with the University of Alaska, Fairbanks is prepared.

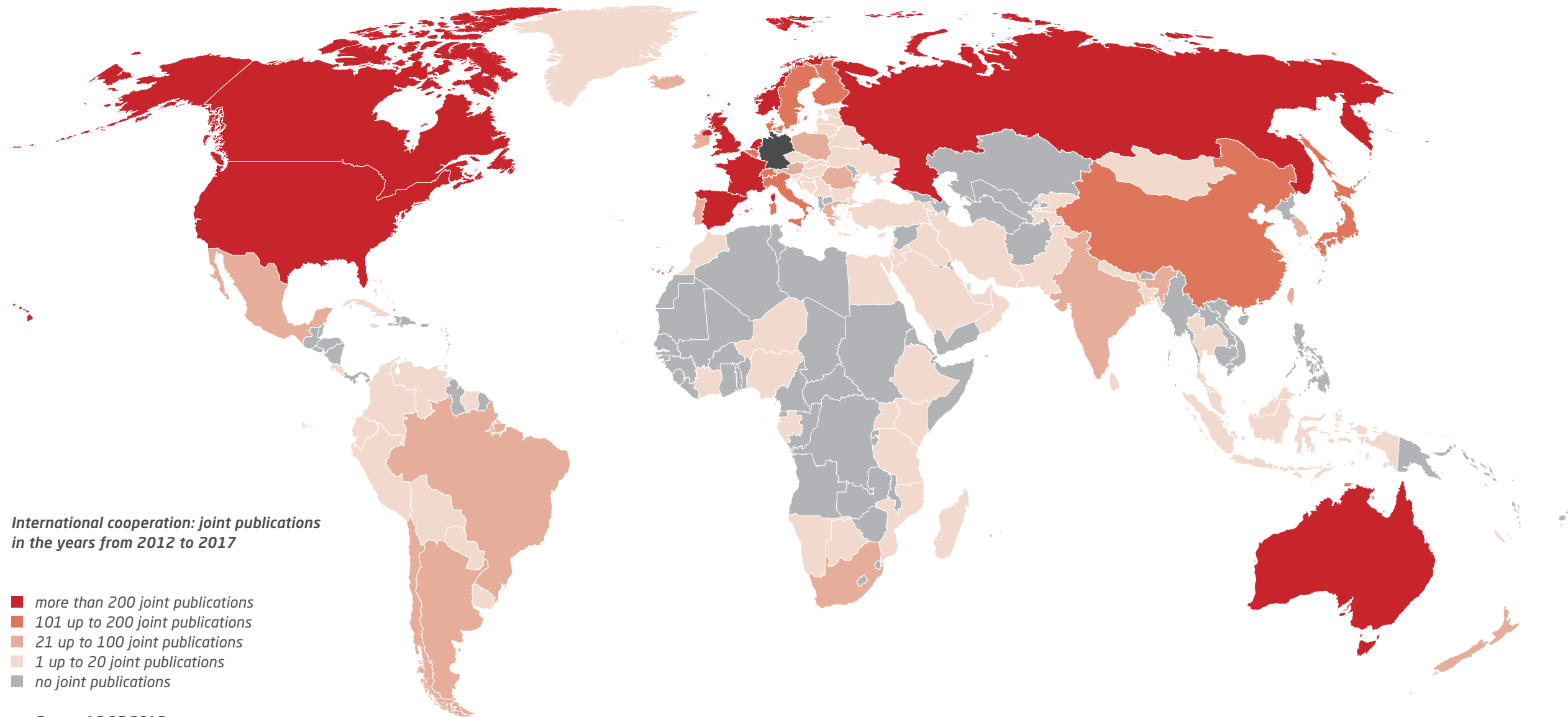
The AWI currently has 989 active cooperations with 49 nations. AWI's most important cooperation partners include the USA, Great Britain, Norway, Russia and France.

Cooperation with Canada

On the initiative of the Canadian partners, the AWI is now involved in the Arctic Science Partnership (ASP). In the ASP, various Canadian and Danish institutes and other international partners have joined forces to form a consortium to investigate in a joint and better coordinated manner, the Arctic climate, the cryosphere, the ecosystem and the effects of Arctic change on humankind.

Cooperation with Norway

Norwegian institutes and in particular the University of Tromsø (UiT) are AWI's most important European partners in Arctic research. On the basis of the joint MoU, a meeting between scientists from Tromsø University (UiT) and AWI will take place annually to discuss the current status of the cooper-



ation and to plan new joint initiatives. Within the framework of this MoU, five AWI scientists participated in the 4th Pan-Arctic Symposium „Towards a unifying pan-Arctic perspective of the contemporary and future Arctic Ocean“, which was organized by the UiT.

Cooperation with Russia

In August 2017, a delegation of senior AWI scientists and the Consulate General of the Federal Republic of Germa-

ny in Novosibirsk visited the Samoylov research station in the Siberian Lena Delta and the partner institutions in Tiksi and Jakutsk. The aim of the trip was to further strengthen the more than 20 years of cooperation with the Russian partners, among other things by renewing contracts and coordinating joint scientific strategy development and logistics, including the establishment of a joint laboratory with Siberian partner institutions.

The AWI participated in a national workshop and a bilateral working meeting to develop a Russian-German roadmap, which was initiated by the German Federal Ministry of Education and Research (BMBF) and the Russian Ministry of Education and Science (MON). The roadmap should serve the medium to long-term strategic orientation of German-Russian cooperation in education, research and innovation and cover the thematic priorities for the next ten years.

Unfortunately, however, jointly planned voyages of the CATS and NABOS programmes in the Siberian shelf seas had to be cancelled because no research permit was granted by the Russian authorities.

Cooperation with France

AWI, IFREMER and MARUM have launched a partnership programme which enables the scientists of the

participating institutes to intensify their cooperation. The first call for proposals ended on 2 October 2017 with ten joint applications received. Two applications with AWI participation were selected for funding (CoCktAIL: „Climate Change effects on Fish Larvae“ and „Tele-Presence“). The programme will be continued in 2018.

National Cooperation

The AWI is a member of the Helmholtz Association of German Research Centers, the of German Marine Research Consortium (KDM) and the North West Community of Marine Research. In addition to these memberships, the universities, colleges and non-university research institutions in particular are part of the AWI research network.

Currently, 27 professors are appointed through cooperative professorships with universities and colleges, of which 19 are with the University of Bremen in the departments of physics, biology/chemistry, mathematics/computer science and geosciences. These are supplemented by 15 honorary professorships and extraordinary professorships.

The close cooperation with the University of Bremen takes place within the framework of the "U Bremen Research Alliance (UBRA)". Within the framework of the Excellence Strategy of the Federal Government and the States, the AWI participates in the Excellence Cluster MARUM „The Ocean Floor – Hidden Interface of the Earth“ – in particular with scientific expertise from the Department of Geosciences and the Deep Sea Group. The cluster focuses on the investigation of key processes on the seabed and is divided into three main research fields („The Ocean Floor as Receiver“, „The Ocean Floor as Recorder“, „The Ocean Floor as Reactor“). At the same time, the AWI received funding to strengthen its strategic partnership with MARUM within the framework of the HGF call for proposals „Networks of Excellence“. Further applications for clusters of excellence with the Universities of Potsdam and Bremen were not successful in the first round. An expansion of these activities with both AWI and state funds is currently being examined.

On 31 May 2017 the official founding event of the HIFMB took place. Furthermore, the State of Lower Saxony, the BMBF, the other institutional funding agencies of the AWI, the University of Oldenburg (UOL), the Helmholtz Association and the AWI have established a binding framework for the establishment of the HIFMB in a joint MoU. The HIFMB started its work with ten scientific positions, three positions for the management and Professor Helmut Hillebrand as HIFMB Director. A cooperation agreement regulates all aspects of the operation of the HIFMB, i.e. scientific and infrastructural cooperation, the institute structure, the exchange of services and joint appointment procedures.

The AWI intends to strengthen its cooperation with the University of Potsdam in the field of geo and climate sciences. To this end, a concept was developed with the sections at the Potsdam location, with further cooperation professorships to become even more involved in research and teaching at the University of Potsdam in the future.

Universität	W3/W2 Professuren	W1, apl und Honorarprofs
Bremen	20	5
Jacobs University Bremen		5
HS Bremerhaven	3	1
Potsdam	3	2
Kiel	1	1
Göttingen	1	
Oldenburg	1	
Tübingen		1

The cooperation between AWI and Humboldt-University Berlin (HU Berlin) is to be further intensified. A framework agreement regulates cooperation in research and teaching in general, as well as a supplementary agreement to intensify cooperation in the field of „Polar geography with a focus on global change in the Arctic human-environment system“.

In order to be able to meet the great future questions of marine and coastal research at the highest scientific level with a new approach and to provide knowledge for politics, business and civil society for the sustainable handling of the seas and oceans, the northern German states Free Hanseatic City of Bremen, Free and Hanseatic City of Hamburg, Mecklenburg-Western Pomerania, Lower Saxony and Schleswig-Holstein (in succession „northern German states“) and the Federation are striving to establish the German Alliance for Marine Research (DAM). The aim of the DAM is to make university and non-university marine research in Germany more internationally effective and thus even more visible, to improve cooperation between the various actors active in marine research and to offer added value in terms of content and organisation within an internationally outstanding network of expertise and scientific institutions and with new technologies and information systems. This should decisively promote cross-border and inter-institutional cooperation in areas of national and global importance, strengthen Germany's position as a science location in the long term and further significantly improve its international competitiveness and visibility in this field as a whole. Within the framework of the DAM, the strategic capacity for action of marine science institutions in Germany is to be increased through joint research programme objectives, financial planning security and improved framework conditions. The term 'marine research' refers to the relevant disciplines of marine, climate, coastal and polar research. The genesis of the DAM includes the structural analyses by the Science Council (2010) and the Scientific Commission of Lower Saxony (2013) as well as preparatory work within the framework of the Marine Research Forum and the German Marine Research Consortium (KDM). In connection with the establishment of the DAM, interfaces with other existing marine research bodies are to be clarified. The development of a national infrastructure for research data and digital sciences is a particularly urgent task.

Ships and Stations

The AWI provides ships, stations and aircraft for polar and marine research. The supported expeditions are summarized in the following graphs.

The Polarstern and Heincke expeditions were successfully completed without restriction in 2017. The transits between Antarctica and the Arctic were again used for student training, as in recent years, including the two training missions with FS Heincke (introduction to marine sampling methods) and with FS Polarstern (training on the echosounders Hydrosweep and Parasound). Both LKII vessels continue to contribute significantly to the support of long-term data series in the Arctic and North Sea.

In February 2017, the 37th wintering phase of the twelve-person team at Neumayer Station III began, with operations running smoothly from a technical and scientific point of view in 2017. All goals were achieved and the scientific data fed into national and international networks. In October 2017, the autonomous greenhouse module developed as part of the EDEN ISS project was shipped to Neumayer Station III. As a project partner, AWI offers a unique opportunity and the necessary infrastructure for testing cultivation techniques under extreme logistics and environmental conditions. The container-sized EDEN ISS greenhouse will provide the crew of the Neumayer III Station with fresh food all year round.

Research vessels	Expeditions	Participants Germany	Participants abroad	Days of deployment (harbour / docks)	Days Attended %
RV Polarstern	10	383	44	268 (97)	73
RV Heincke	27	447	9	306 (59)	84

Stationen	Projects	Participants Germany	Participants abroad	Days of deployment	Days Attended %
Arctic					
AWIPEV Research Base <i>permanently attended</i>	51	60	78	365	100
Samoylov Station <i>summer station</i>	4	32	43	87	24
Antarctic					
Neumayer Station III <i>permanently attended</i>	23	37	11	365	100
Kohnen Station <i>summer station</i>	2	5	5	37	10
Dallmann Laboratory at the Carlini Station (Argentina) <i>summer operation</i>	8	8	15	155	42

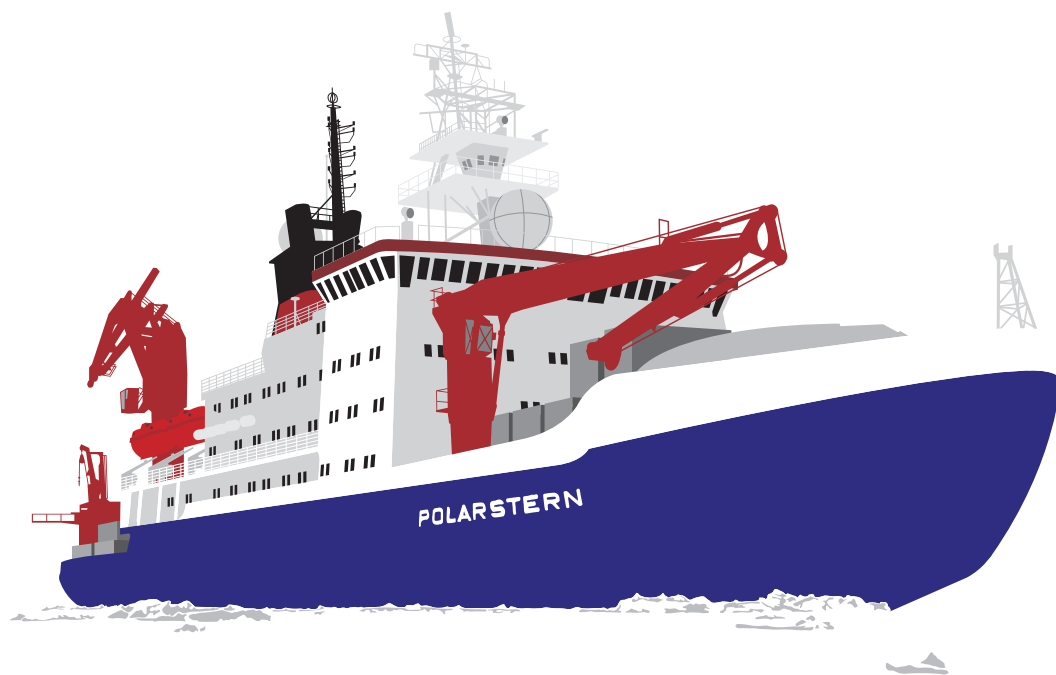
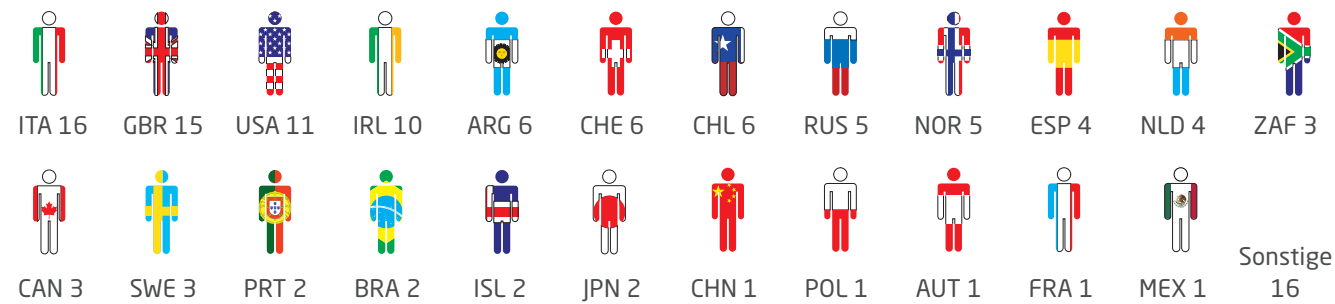
Equipment (provision of polar clothing, field equipment)	Projects	Participants Germany	Participants abroad
Ship expeditions	37	830	53
Station operations	88	142	152
Flight missions	10	54	0
Field missions	9	60	30

Field Expeditions

Land Expeditions	Projects	Participants Germany	Participants abroad	Days of deployment
Arctic				
Russia	3	19	27	61
Greenland	2	27	2	151
North America	3	8	0	75
Antarctic				
Filchner Ice Shelf Project (FISP)	1	1	0	35
Kohnen traverse Kohnen to NM ¹	0	5	1	5

¹Traverse took place in early 2017 - no traverse in season 2017/18

Native countries of international scientists on Polarstern expeditions in 2017 [Number]

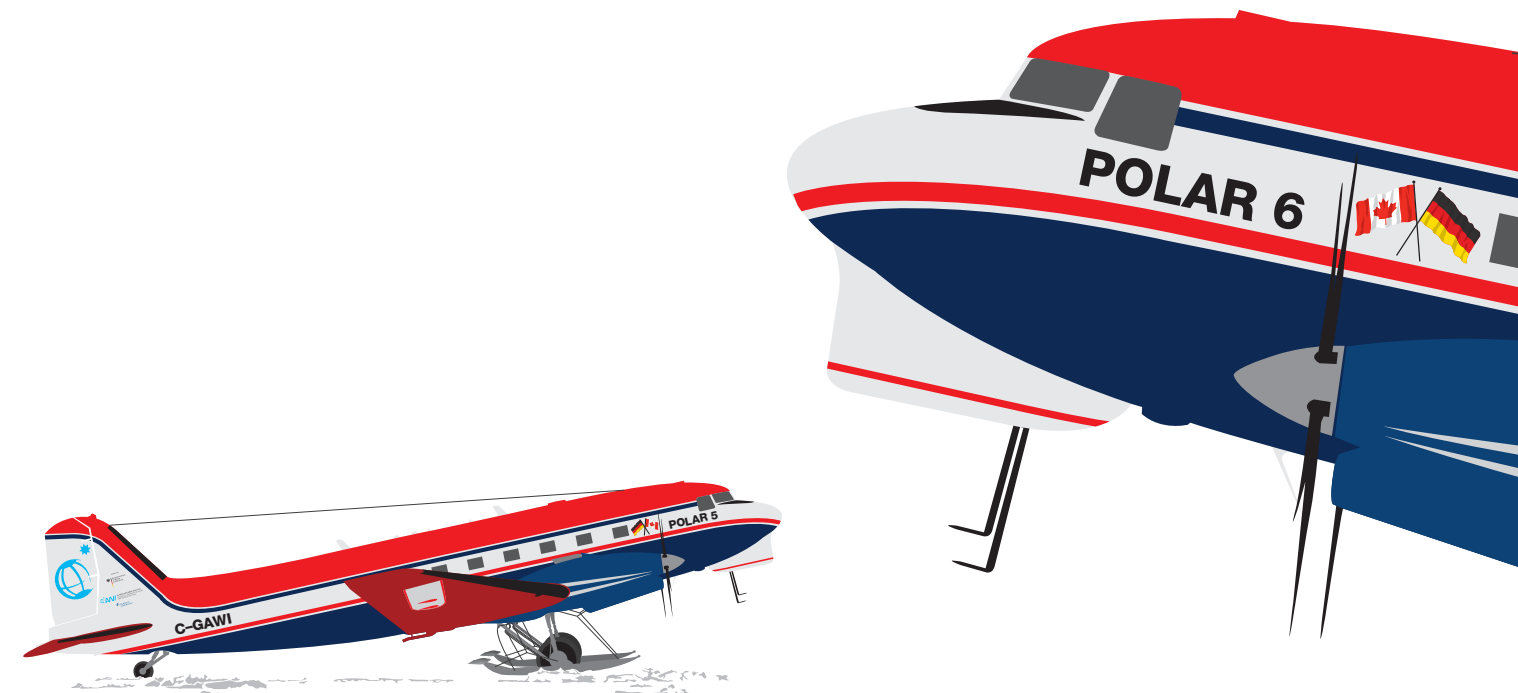


Aircraft Campaigns

In 2017, the two AWI aircraft Polar 5 and Polar 6 were used for measuring flights for six projects in the Arctic and four in Antarctica. A total of 214 flights were conducted, including test flights and transfer to the measuring areas as well as maintenance and certification flights for future missions. For the first time in 2017, 24-channel ultra-wideband radar was successfully deployed in Antarctica over various ice structures such as the Jutulstraumen outlet glacier and the Halvfarryggen ridge.

In addition to AWI scientists, external partners were involved in all campaigns. In the future, expeditions such as the GEA (Geodynamic Evolution of East Antarctica) campaign of the Federal Institute for Geosciences and Natural Resources (BGR Hannover) will also be carried out, leading to closer cooperation with external groups, data sharing and publications.

Aircraft	Projects	Flight hours scientific	Flight hours logistics incl. ferry	Total hours
Arctic				
Polar 5	3	165	84	249
Polar 6	3	135	81	216
Antarctic				
Polar 5	0	0	0	0
Polar 6	4	131	173	304



Routes and flight campaigns

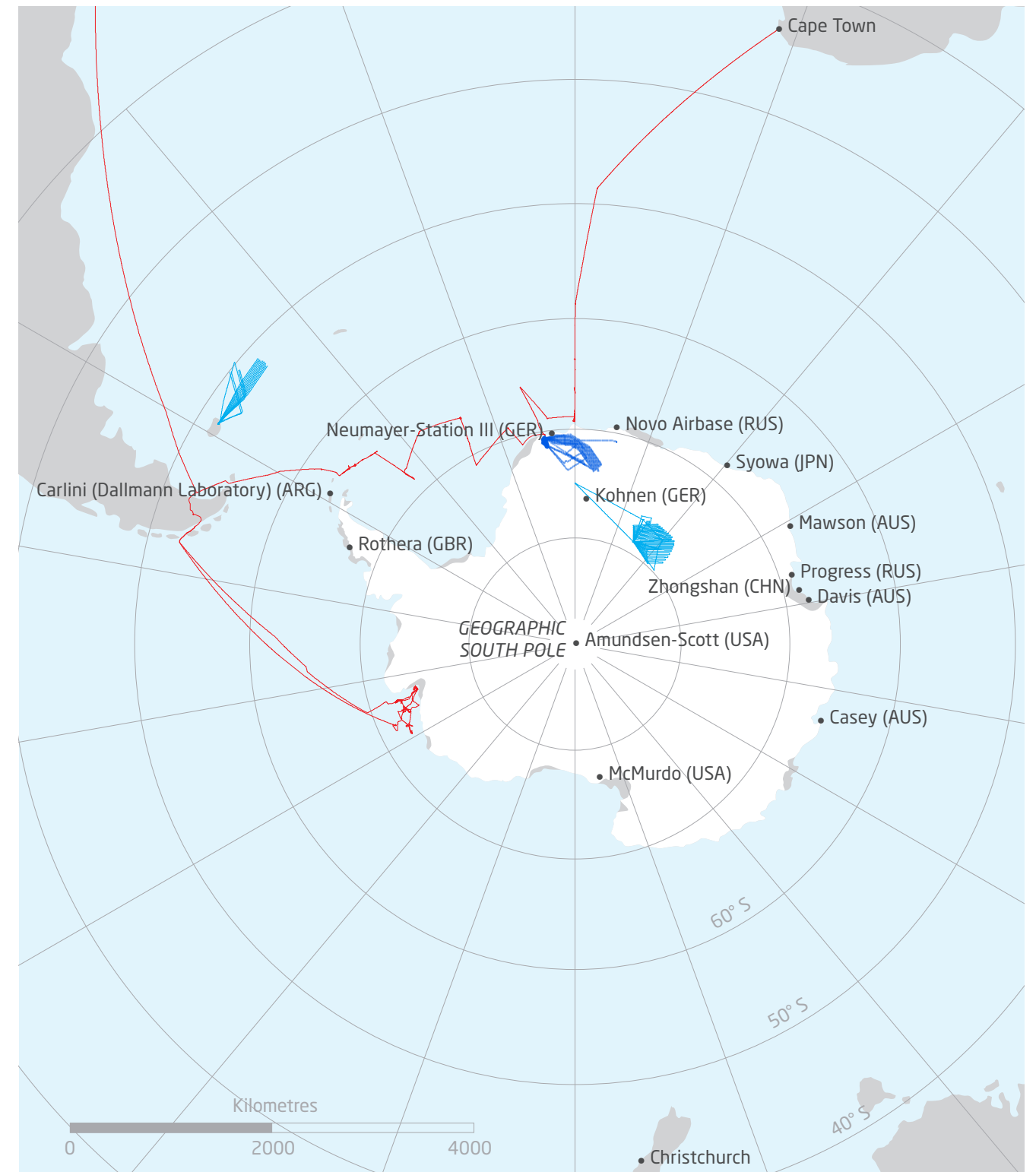
Scientific and logistical routes and flight campaigns in the North



Arctic

— Flight campaigns Polar 5 and Polar 6 — Research Vessel Polarstern — Research Vessel Heincke

Scientific and logistical routes and flight campaigns in the South



Antarctic

— Flight campaigns Polar 6 — Research Vessel Polarstern

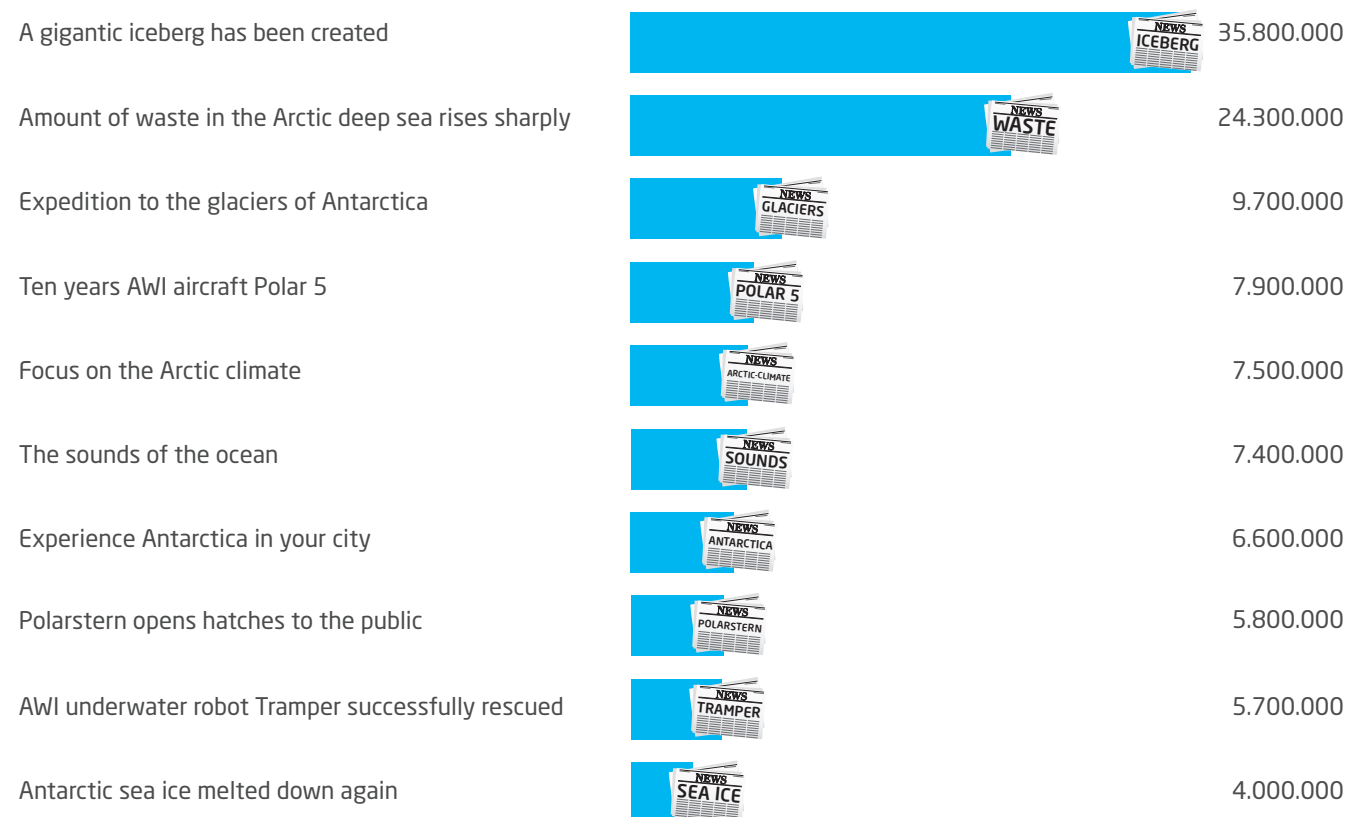
Communications and Media Relations

AWI's media presence was increased in 2017: Over 16,000 articles in the German media represent an increase of 46 percent compared to the previous year with circa 11,000 articles. This means that more than 966 million readers, listeners and viewers in Germany were reached through press work (reach in 2016: 713 million; this corresponds to an increase of 35 percent).

Numerous articles on AWI appeared in the leading national media in the year under review: Die Zeit (4), Süddeutsche Zeitung (16), FAZ (14) and Frankfurter Rundschau (18). The AWI was also represented in the magazines Spiegel (5), Stern (1), Focus (5) and Geo (2). International contributions were made in the Wall Street Journal by a photojournalist accompanying the ROBEX Polarstern expedition and on BBC radio, for example, by presenting the planned MOSAiC project to the AAAS (American Association for the Advancement of Science).

The list of the top 10 press releases leads a report on the breaking up of an iceberg from the Antarctic Larsen C Ice Shelf in 2017. The topic also took third place in the ranking of the American magazine Science News and was taken up internationally, for example in the Guardian. A report on waste at sea aroused great interest as a consumer-oriented topic. In addition, the range of coverage reflects the high popularity of our infrastructures: Many media reported on „Ten years of AWI aircraft Polar 5“; four press releases about the Polarstern made it into the top 10, including the announcement of the Open Ship in April 2017, which was also the pre-opening for „Science on the Road“. Under the motto „Experience Antarctica in your city“, visitors at twelve locations throughout Germany were able to take a virtual tour through Antarctica in the multimedia Polar Camp using VR glasses, make phone calls to Neumayer Station III or exchange information directly with scientists.

TOP 10 AWI press releases by reach (print only)



Imprint

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