



20 Annual report

16 FACTS AND FIGURES



Contents

| | | | | | | | | | | | | | |
|-----------|-----------|--------------------|--------------------------------|-----------|---|------------------------------------|----------------------------|----------------------|--------------------|--|--------------------------------|----------------|-----------|
| 06 | 07 | 10 | 12 | 14 | 17 | 18 | 19 | 20 | 23 | 24 | 25 | 26 | 29 |
| Foreword | Boards | Organization Chart | New Senior Members of Staff | Staff | Knowledge and Technology Transfer Archive for German Polar Research (AGPR) | Budget and Large Scale Projects | Scientific Publications | Cooperation Partners | Ships and Stations | Field Expeditions and Air Campaigns | Routes and Flight Campaigns | Media Response | Imprint |

Foreword



Professor Karin Lochte

Dr Karsten Wurr

As an internationally respected centre of expertise on polar and marine research, the Alfred Wegener Institute is one of the very few scientific institutions in the world that are equally active in the Arctic and Antarctic. It coordinates German polar research efforts, while also conducting research in the North Sea and adjacent coastal regions in Germany. Combining innovative approaches, outstanding research infrastructure and years of expertise, the Alfred Wegener Institute explores the complete polar ecosystem.

This annual report summarizes the most important facts and figures relating to research and development, third-party funding, young researchers and networking for the year 2016.

A major milestone was the decision of the Senate of the Helmholtz Association on October 11 to create the Helmholtz Institute for Functional Marine Biodiversity (HIFMB), a joint initiative of the AWI and the University of Oldenburg. The institute investigates how strongly and in which form the biodiversity of the ocean reacts to global warming and anthropogenic influences - from the genetics of individual marine animals, algae and bacteria to the functional analysis of an entire ecosystem. The institute also aims to value and preserve marine ecosystem functions. After a build-up phase, which will continue into the year 2020, some € 5.5 million

of institutional funds will be invested in the HIFMB. The AWI thus has a location in Oldenburg in the future, where a new state-funded institution will be built. In the medium term, this will make Lower Saxony a further contributor to the AWI.

There was also positive news for Heligoland in particular. After generous financing commitments by the federal government and under the direction of the state of Schleswig-Holstein, funds will now be invested in the renovation of the landmark aquarium building. In the future, "Bluehouse Heligoland" will not only serve as an attractive exhibition for the mediation of marine research and knowledge about climate change, but also as a new home for the student lab OPENSEA.

Important steps were taken throughout the year to progress the construction of the new pilot plant ("Technikum") in Bremerhaven. A very convincing architectural design for the targeted bundling of scientific and technical work on the site opposite the AWI campus has been found.

Even though the expansion of the AWI on the Telegrafenberg in Potsdam will be only accomplished next year. A great scientific success was celebrated in June 2016 by the staff of the section Periglacial Research: The 11th International Conference on Permafrost (ICOP) attracted over 700 participants from 36 countries and raised public awareness of the subject, and the work of AWI, beyond the borders of the specialist.

National as well as international political support is also of great importance for the realization of the ambitious MOSAIC project (2019/20), in which Polarstern will drift in the Laptev Sea from October 2019 in the course of a year-long expedition with the Arctic sea ice and serve as a central observatory until August 2020. The AWI Board of Governors gave its basic approval in October to plan and implement the project.

Please enjoy reading this report!

Professor Karin Lochte
Director

Dr Karsten Wurr
Administrative Director

Board of Governors

The Board of Governors with representatives from the government, the federal states, scientists and personages from public life, supported by the Scientific Advisory Board, takes decisions on general and financial matters relating to the Institute.

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

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

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

Dr Peter Hoth *)
Federal Ministry of Economic Affairs and Technology, Berlin

Legation Councillor First Class
Dr Rainer Lassig
Federal Foreign Office, Berlin

Staatsrat Dietmar Strehl
Office of the Senator for Financial Affairs, Bremen

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

Ministerialdirigent Dr-Ing Hartmut Euler
Ministry for Economic Affairs, Employment, Transport and Technology, Kiel (Schleswig-Holstein)

Christa Fuchs
OHB AG, Bremen

Professor Martin Claußen
(Chairman of Scientific Advisory Board)
Max Planck Institute for Meteorology, University of Hamburg

Silvia Schön
Bremen

Professor Ulrike Feudel
Institute for Chemistry and Biology of the Marine Environment (ICBM), University of Oldenburg

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

Professor Jürgen Kurths
Potsdam Institute for Climate Impact Research, Potsdam

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

As of: December 2016

Scientific Advisory Board

The Scientific Advisory Board advises the Board of Governors and the Directorate on 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 (since March 2011)
Max Planck Institute for Marine Microbiology, Bremen

The President of the German Research Foundation

Professor Peter Strohschneider, Bonn (since January 2013)

Permanent representative

Professor Silke Voigt (since June 2016)
Institute for Geosciences, Frankfurt

The President of the Federal Institute for Geosciences and Natural Resources

Professor Ralpf Watzel, Hannover (since April 2016)

Permanent representative

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

The President of the Johann Heinrich von Thünen Institute

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

Permanent representative

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

The Rector of the University of Bremen

Professor Bernd Scholz-Reiter (since October 2012)

Permanent representative

Professor Wilhelm Hagen, University Bremen (since February 2008)

Chair

Professor Martin Claußen (since September 2012)
Max Planck Institute for Meteorology, Hamburg

Deputy Chair

Professor Konrad Steffen (since September 2012)
Swiss Federal Institute for Forest, Snow and Landscape Research WSL, Switzerland

Permanent representative

Professor Shubha Sathyendranath (since July 2015)
Plymouth Marine Laboratory (PML), United Kingdom

Permanent representative

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

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

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

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

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

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

Scientific Council

The Scientific Council advises the Directorate on significant matters of the foundation, e.g. development of the Research Programme.

Chair

Professor Anya Waite
PD Dr Sabine Kasten (Deputy)

Members

Professor Antje Boetius
Professor Maarten Boersma (since April 2015)
Professor Thomas Brey
Professor Alan Cembella
Professor Bernhard Diekmann
Professor Stephan Frickenhaus
Dr Gunnar Gerdtts
Dr Karsten Gohl
Professor Guido Grosse
Professor Christian Haas
Dr Claudia Hanfland
Dr Christian Hass
Professor Angelika Humbert
Professor Wilfried Jokat
Professor Thomas Jung
Professor Thorsten Kanzow
PD Dr Sabine Kasten
Professor Gerrit Lohmann
Dr Martin Losch
Professor Hans-Otto Pörtner
Professor Claudio Richter
Professor Ralf Tiedemann
PD Dr Ulrike Wacker
Professor Anya Waite
Professor Karen Wiltshire
Professor Dieter Wolf-Gladrow

Permanent guests

Dr Angelika Dummermuth
AWI-Equal Opportunity Officer
Dr Stefan Hain
Professor Karin Lochte
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 Dr h.c. K. Lochte Dr K. Wurr <hr/> Dr U. Nixdorf Prof. Dr K. Wiltshire | | | Internal Boards Scientific Council Ombudsman Equal Opportunities Officer Staff Council |
| Scientific Advisory Board Professor M. Claußen | 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 Circulation Professor M. Rex | Logistics and Research Platforms Dr U. Nixdorf | |
| Glaciology Professor A. Humbert | Marine Biogeosciences Professor D. Wolf-Gladrow | Polar Meteorology PD Dr U. Wacker | Computing and Data Centre Professor S. Frickenhaus (komm.) Dr H. Pfeiffenberger (komm.) | |
| Periglacial Research Professor G. Grosse | Functional Ecology Professor T. Brey | Physical Oceanography of Polar Seas Professor T. Kanzow | Library M. Brannemann | |
| Marine Geology Professor R. Tiedemann | Benthopelagic Processes Professor C. Richter | Climate Dynamics Professor T. Jung | Scientific Workshop E. Dunker | |
| Marine Geochemistry PD Dr S. Kasten | Integrative Ecophysiology Professor H.-O. Pörtner | Sea Ice Physics Professor C. Haas | Human Resources C. Ruholl | |
| | Ecological Chemistry Professor A. Cembella | Palaeoclimate Dynamics Professor G. Lohmann | Corporate Finances C. Ungermann | |
| | Shelf Sea System Ecology Professor M. Boersma | | Purchasing Department J. Eilers | |
| | Coastal Ecology Professor K. Wiltshire | | Administration and Organization M. Bong | |
| | HGF-MPG JRG Deep-Sea Ecology and Technology Professor A. Boetius | | Construction and Facility Management M. Krüger | |
| Junior Research Groups | | | | |
| Professor G. Grosse Dr J. Müller Professor H. Lantuit | PD Dr V. Schlindwein Professor I. Weikusat | Dr H. Flores Professor S. Trimborn | Dr M. Iversen | Dr T. Laepple |
| Knowledge and Technology Transfer | | | | |
| Bionics Light Construction Dr C. Hamm | Aquaculture Dr M. J. Slater Professor B. Buck | KP Earth Environment Dr G. Krause | KTT Projects NN | Technology Transfer Centre Professor E. Sauter |

New Senior Members of Staff



Professor Christian Haas has headed the research section Sea Ice Physics since July 2016 in the Climate Sciences Division.



Dr Susanne Gatti leads the new staff unit "Scientific Education" since May 2016.



Dr Andreas Schmidt has headed the coordination of the Biological Institute Helgoland (BAH) since January 2016.

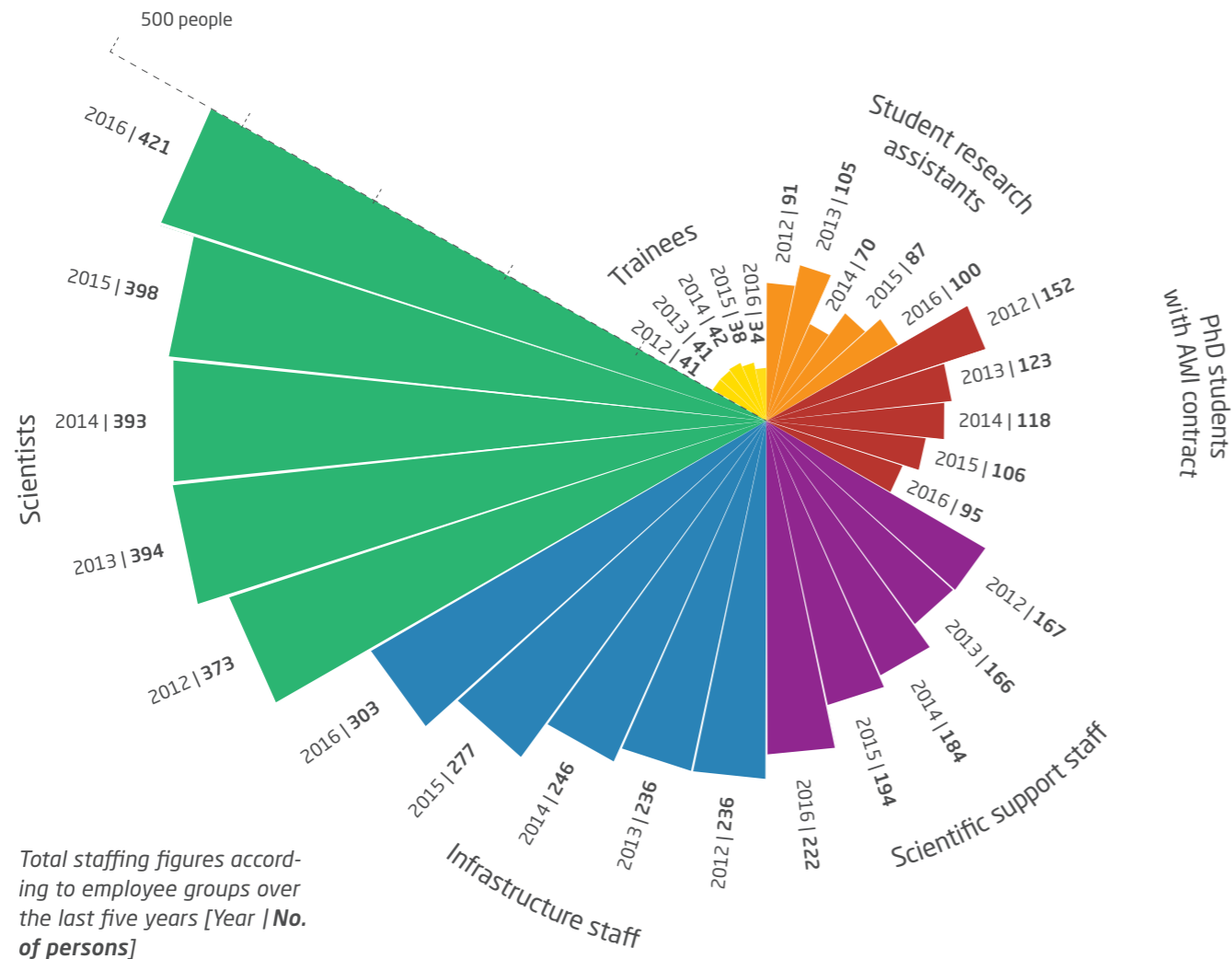


Professor Guido Grosse has headed the research section Periglacial Research since September 2016 in the Geosciences Division.



Dr Juliane Müller has headed the Helmholtz Young Investigator Group PALICE (Palaeo Sea Ice and Climate Dynamics) since April 2016 in the Geosciences Division.

Staff



Total staffing figures according to employee groups over the last five years [Year | No. of persons]

Human Resources Development Activities

The Alfred Wegener Institute is significantly involved in the U Bremen Research Alliance. In 2016, a joint initiative saw the establishment of a cooperation agreement aimed at strengthening common efforts targeting the 'Welcome Centre'. The intention is to intensify cooperation in order to make Bremen even more attractive as a research location, particularly to international scientists. AWI's International Office, part of the Human Resources Development group, will take on an important role in this activity, with particular emphasis on the Bremerhaven location.

The human resources development concept for postdocs at the AWI has been discussed by the directorate with various internal boards of the institute. In spring 2017, the concept shall be adopted in order to implement first activities and measures.

The development of career paths and corresponding qualification profiles is planned to be a core element, building the base for matching human resources development offers.

In the field of further education, 178 employees attended seminars and courses offered within AWI in 2016, covering the topics soft skills/ transferrable skills, languages and computing. All in all, about 3,700 working hours were spent on participating in in-house further education with total costs of around 48,700 EUR. Beyond that, employees are being counseled on possible external further development measures, based on the need-related agreements established with their supervisors in the annual one-on-one meetings.

Balancing Responsibilities for Work and Family

The compatibility of work and family life is a central strategic goal for AWI. It is a permanent task of the Family Office to fill this goal with life and to create helpful instruments. The Office of Work and Family plans and organizes various measures, tailored to the individual needs of the various organizational units.

The following measures are given by way of example:

- AWI's holiday program for school children in 2016. This program was offered during the Easter holidays, 17 days during the summer holidays and in the autumn holidays. There were a total of 725 registrations; an increase of 50% compared to the previous year.
- AWI's nursery school, with a total of 20 places, is a pedagogical institution with many different nationalities.
- An initial network meeting with other Helmholtz centers in Bremerhaven is the beginning of what will become a

continuous collaboration with all the responsible persons in the field of work-life balance in the Helmholtz centers.

- An individual childcare at the International conference of permafrost (ICOP) in Potsdam.
- A total of 4 events conducted on the topic of „compatibility of work and care“.

The Office of Work and Family is recognized as a vital service resource for new and international employees, providing individual support and advice as they settle in. Its primary task is to react flexibly to the individual interests and varied needs of the employees in a coherent overall concept. Their work is therefore characterized by a high degree of adaptability and expertise to consistently meet the requirements while reconciling these perspectives.

Gender Equality

In 2016, the AWI employed 1175 persons in total with a share of 47.23% female employees. This ratio varies between 47 and 48% since 2012. In all employment sectors (trainees, student assistants, doctoral students, research supporting personnel and infrastructure personnel) women represent 47 to 55%. In the infrastructural sector the share of women slowly decreased from 59 to 55% since 2012, but increased again by 2%

between 2015 and 2016 (= 26 persons). Only in the science sector women clearly constitute an unbalanced fraction below 50%, stagnating around 39% since 2012. In 2016 there were only 38.24% female scientists, nevertheless the total number of employees increased. In total 161 women were employed as scientists in contrast to 155 women in 2015 (=39%).

| Staff | 2012 | 2013 | 2014 | 2015 | 2016 |
|---|-------------------|-------------------|-------------------|-------------------|-------------------|
| Trainees | 41 41 | 41 39 | 42 36 | 38 42 | 34 47 |
| Student research assistants | 91 46 | 105 48 | 70 43 | 87 41 | 100 48 |
| PhD students with AWL contract | 152 53 | 123 57 | 118 52 | 106 53 | 95 51 |
| Total assisted PhD students | 180 59 | 195 60 | 200 54 | 234 54 | 214 56 |
| Scientific support staff (technicians, engineers) | 167 53 | 166 54 | 184 49 | 194 54 | 222 52 |
| Infrastructure staff (administration, logistics) | 236 59 | 236 57 | 246 58 | 277 53 | 303 55 |
| Scientists | 373 39 | 394 39 | 393 40 | 398 39 | 421 38 |
| Total | 1.060 48 | 1.065 48 | 1.053 47 | 1.100 47 | 1.175 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 2016 |
|--------------------------------|------------------------|
| Permanent staff | 533 499,32 |
| Limited-term contract staff | 642 565,96 |
| Total | 1175 1065,3 |
| of these, third-party financed | 257 202,63 |
| of these, international | 151 k. A. |



| Bremerhaven | 82% |
|--------------------------------|--------------------|
| Permanent staff | 441 412,7 |
| Limited-term contract staff | 519 460,8 |
| Total | 960 873,5 |
| of these, third-party financed | 206 162 |
| of these, international | 120 k. A. |

| Potsdam | 9% |
|--------------------------------|--------------------|
| Permanent staff | 42 39,91 |
| Limited-term contract staff | 69 58,02 |
| Total | 111 97,93 |
| of these, third-party financed | 37 28,27 |
| of these, international | 16 k. A. |

| Heligoland | 6% |
|--------------------------------|-------------------|
| Permanent staff | 34 32,26 |
| Limited-term contract staff | 30 27,31 |
| Total | 64 59,57 |
| of these, third-party financed | 6 5,76 |
| of these, international | 7 k. A. |

| Sylt | 3% |
|--------------------------------|-------------------|
| Permanent staff | 16 14,45 |
| Limited-term contract staff | 24 19,83 |
| Total | 40 34,28 |
| of these, third-party financed | 8 6,4 |
| of these, international | 8 k. A. |

Knowledge and Technology Transfer

In general terms, knowledge and technology transfer (KTT) becomes increasingly important also for the AWI. Accordingly, this area was further developed strategically in 2016 by establishing a virtual cross-sectional area "knowledge and technology transfer". The following knowledge and technology transfer outcomes are noteworthy for 2016:

- During the reporting year ten inventions were disclosed to the technology transfer office in fields such as marine, environmental and sensor technologies.
- In these fields four new patents were filed, including a sediment-micro plastics separator.
- Revenues from licenses, contract research and infrastructure user contracts were 988 TEUR. About one third thereof came from contract research in the field of bionic light-weight optimization for industry. This technology transfer is particularly remarkable since results from plankton research could be transferred across the sectors e.g. into the automotive, space, aviation and medical industry.
- Funded by the Helmholtz Enterprise program, two spin-off projects were conducted 2016 in the aquaculture

sector, one of which focusses on the commercial restocking of lobster populations around Heligoland.

- A VDI Guideline for bionic light structure optimization was finished 2016.
- A day on knowledge transfer was organized at the AWI on March 17, 2016, entitled "Bridging science and society". In lectures and discussions, exemplary results and processes of KT were presented, but mainly the requirements and different approaches for successful KT at the AWI were discussed.
- In the framework of the Earth System Knowledge Platform (ESKP), six new proposals were funded with the "Call for Tender 2015", covering especially the topic of impacts of climate change in coastal and shelf seas and/or biodiversity.
- The "Arctic Dialogue", a discussion format between science and seven ministries organized by the AWI, has been established as an important exchange platform. From January 2017 this activity will continue and be developed in the newly created Arctic Office.

Archive for German Polar Research (AGPR)

The Archive for German Polar Research has been operating since 2011 and in that time has been able to secure the written and oral tradition of German polar and marine research to a significant degree.

It has made 68 archive holdings accessible and released 1700 description results for research purposes on its website.

AGPR has published a Polarstern and an institute chronicle. It carries out individual user advice, informs users about its holdings, and imparts knowledge on the history of German polar and marine history to the interested public.

In 2016 the archive fulfilled its research task by the addition of Alfred Wegener's diary from the Denmark expedition 1906/08.

Budget

| | CURRENT at 12/31/2015 (unit: thousands of EUR) | | | | PLANNED 2016* (unit: thousands of EUR) *The final figures will be available at the end of June 2016 | | | |
|--------------------------------------|---|----------------|--------------|----------------|--|----------------|--------------|----------------|
| | Bremerhaven | Helgoland Sylt | Potsdam | total | Bremerhaven | Helgoland Sylt | Potsdam | total |
| Operation | | | | | | | | |
| Staff | 37.852 | 5.228 | 3.534 | 46.614 | 37.300 | 4.900 | 3.900 | 46.100 |
| Materials and Equipment | 53.523 | 6.347 | 1.825 | 61.695 | 56.149 | 8.100 | 1.900 | 66.149 |
| Investments | | | | | | | | |
| Current investments | 6.482 | 1.452 | 564 | 8.498 | 9.565 | 1.000 | 750 | 11.315 |
| Investments > EUR 2,5 Mio | 4.961 | 0 | 3.407 | 8.368 | 6.809 | 0 | 198 | 7.007 |
| Investments > EUR 15 Mio | 7.014 | 0 | 0 | 7.014 | 5.659 | 0 | 0 | 5.659 |
| Income | | | | | | | | |
| Revenues and profits | -5.551 | -1.109 | -36 | -6.696 | -1500 | -500 | 0 | -2.000 |
| Reserves | | | | 53 | | | | 0 |
| Total | 104.282 | 11.918 | 9.293 | 125.493 | 113.982 | 13.500 | 6.748 | 134.230 |
| Third-party funding | 19.216 | 1.274 | 3.036 | 23.526 | 17.500 | 1.000 | 1.500 | 20.000 |
| Source of third-party funding | | | | | | | | |
| (unit: thousands of EUR) | Helmholtz | BMBF | DFG | EU | others | | | |
| | 6.620 | 7.285 | 1.719 | 2.448 | 3.752 | | | |

Major projects inaugurated in 2016 under AWI management or with AWI participation

APPLICATE

Advanced prediction in polar regions and beyond: Modelling, observing system design and linkages associated with arctic climate change, EU Project
 PI: Professor Thomas Jung
 Term: 2016 - 2020
 Funding: EUR 994.750

BE-OI

Beyond EPICA - Oldest Ice, EU-Coordination and Support Action
 PI: Professor Olaf Eisen
 Term: 2016 - 2019
 Funding: EUR 740.000

INTAROS

An Integrated Arctic Observation System, EU Research and innovation action under the H2020
 PI: Dr Thomas Soltwedel
 Term: 2016 - 2021
 Funding: EUR 805.936

SeaDataCloud

Further developing the pan-European infrastructure for marine and ocean data management, EU Research and innovation action under the H2020
 PI: Professor Reiner Schlitzer
 Term: 2016 - 2020
 Funding: EUR 355.969

Scientific publications

The scientists of the Alfred Wegener Institute published 564 peer-reviewed items in the course of 2016 (source: Science Citation Index, Web of Science, 23.01.2017). In 217 cases, AWI scientists were named as first author. Almost a quarter (24%) of all publications from 2016 was obtained through work with the United States, one of AWI's most important international cooperation partners. Further significant publication partners are the United Kingdom (18% of publications), Norway (15%) and France (14%). In 2016 the AWI published in collaboration with a total of 59 partner countries.

A similar scenario emerges when examining a longer time period (2011-2016) (see also page 20/21, figure 'International co-operation', in dark red): The AWI published 3012 joint items with scientists from a total of 93 partner countries worldwide; most of them with the United States (658), United Kingdom (455), France (348), Norway (307), Canada (264), Russia (234) and the Netherlands (231) (January 2017).

Free access to scientific publications (open access) is a major concern for both the AWI and the Helmholtz Association. The portion of our publications in open-access journals in 2016 was 26%; similar to last year (27% in 2015).

Scientific Prizes and Awards

Professor Heinz Miller was awarded the SCAR Medal for International Coordination 2016.

Professor Antje Boetius became a member of the European Academy of Sciences. In Japan she was awarded the Goldschmidt medal 2016.

Dr Anja Diez received the Karl Zueppritz-Preis of the German Geophysical Association 2016 for young investigators for her dissertation.

Dr Maria-Gema Llorens was awarded by the University of Tübingen for the best dissertation in the department of geosciences.

Dr Boris Biskaborn received the Data Stewardship Award by World Data System (WDS) for building up the Global Terrestrial Network for Permafrost (GTNP).

Laura Stapp received a prize for the best student talk at the conference „4th Ocean in a High-CO2 World“ in Hobart (Tasmania).

Liv Heinecke received the Outstanding Student Poster and PICO Award 2016.

Spela Korez was awarded the best scientific talk at the You-MaRes conference in Hamburg.

The „Friends of the AWI“ award three prizes each year. The AWI Science Prize (EUR 2.000) for the best scientific publication in 2016 was awarded to Dr Vera Schlindwein for her article published in Nature [1].

The AWI PhD Prize (EUR 2.000) was awarded to Dr Amelie Schmitt for her thesis „Convective processes in the polar atmospheric boundary layer: a study based on measurements and modeling“.

The 'Silent Hero' Award is a prize (EUR 2.000) awarded to colleagues who are absolutely necessary for scientific achievements by their work in the background. In 2016, 3 silent heroes have been awarded: Annegret Müller from the research section Ecological Chemistry for her above average commitment to the laboratory organisation and her great help for students, trainees and scientists. Heiko Gericke and Tobias Schmidt from Computing and Data Center in Potsdam have been awarded for their extraordinary commitment to solving numerous unforeseen power and server failures during the building activities in Potsdam and preventing more than once, extensive damage.

¹ Schlindwein, V. & Schmid, F. (2016): Mid-ocean ridge seismicity reveals extreme types of ocean lithosphere, Nature. doi: 10.1038/nature18277.

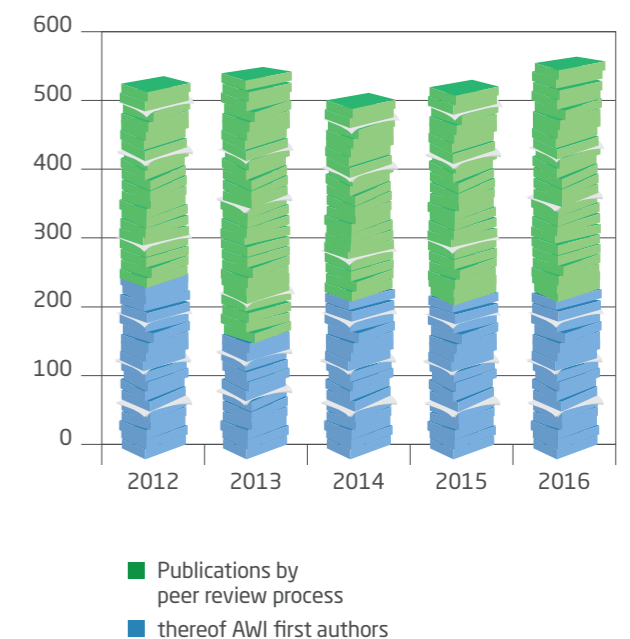


Figure AWI scientific publications over the last 5 years

Cooperation Partners

International cooperation

AWI is permanent member in the following international boards and committees:

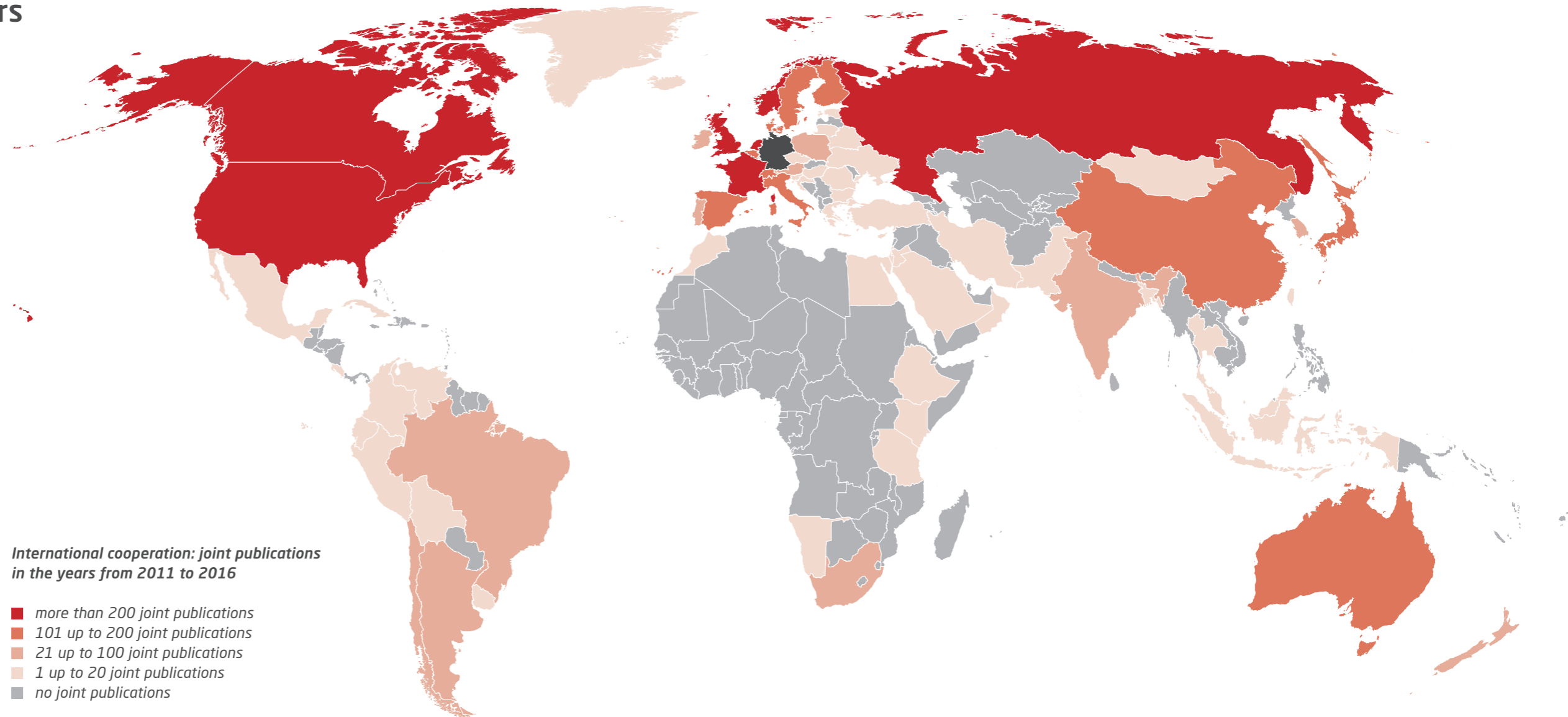
- Scientific Committee on Antarctic Research (SCAR)
- International Arctic Science Committee (IASC)
- European Polar Board (EPB)
- Partnership for Observation of the Global Oceans (POGO)
- Council of Managers of National Antarctic Program (COMNAP)
- European Climate Research Alliance (ECRA)

In 2016, the AWI has signed the following new cooperation agreements with international partners and organisations:

- Russian Federation: North-Eastern Federal University - NEFU, Yakutsk on scientific cooperation in the Arctic
- Turkey: Polar Research Center of the Istanbul Technical University (ITU) on scientific cooperation in Polar Research
- Nepal: Academy of Science and Technology (NAST) in Lalitpur on joint scientific investigations on air pollution and climate change in Nepal (StratoClim Project)
- Switzerland: World Meteorological Organisation(WMO) in Geneva on Implementing an International Cooperation Office for the Year of Polar Prediction (YOPP)

A prolongation of the MoUs with IFREMER, France and with the University of Fairbanks, Alaska is in preparation. IFREMER, AWI and MARUM are jointly organising a workshop in May 17 in Brest to identify common research themes and to prepare the prolongation of the AWI-IFREMER MoU.

The AWI is currently intensifying its cooperation with the University of Mani-



toba and the Université Laval, Canada on the development of the Baffin Bay Observatory (BBOS). A first workshop with AWI participation took place in Winnipeg in April 2016. Another important AWI partner in Canada is the Dalhousie University in Halifax. A large cooperation within the planned Canadian Marine Frontier Institute (CFREF) is anticipated.

The Otto Schmidt laboratory in St. Petersburg has been operated jointly by AWI and the Arctic and Antarctic Research Institute (AARI) for about 16 years. For the implementation of tasks, a contract is concluded every year. The new Scientific Advisory Board met for

the first time at 1st of April 2016 in St. Petersburg. A call for polar research jointly promoted by the German Federal Ministry of Education and Research BMBF and Russian science ministry received organizational support from the Otto Schmidt laboratory.

In February 2016, an AWI delegation took part in the visit of the new Helmholtz president, Professor Wiestler, to Russia. The goal of this visit was to improve the cooperation between Helmholtz Centres and respective Russian institutes. The delegation visited several Russian research institutes. The Skolkovo Institute of Science in Technology in Moscow, which focusses on

methane hydrates in the Arctic, could be an interesting new partner for the AWI in Russia.

A workshop jointly organised by the German and Norwegian consulate general took place in St. Petersburg on 01.06.2016. The goal of this workshop was to advertise the project "Synoptic Arctic Survey (SAS)" and to involve Russia, which owns the longest Arctic coastline, more intensively in SAS. SAS is an initiative of individual Arctic researchers who want to perform comparable measurements at as many as possible stations in the Arctic in one season. The aim is to get a comprehensive and comparable data set. The

necessary infrastructure, especially research vessels, shall be used jointly. SAS is planned for 2020.

Dr Anne Morgenstern is responsible for the coordination of AWI scientific research in Russia and can be contacted concerning all questions, suggestions and problems related to cooperation with Russia.

The EU-PolarNet project coordinated by the AWI advises the European Commission, among others, on improving the cooperation in polar research with non-European partners, especially from USA and Canada. In July 2016, EU-PolarNet published an International Coop-

eration Strategy for European Polar research. It recommends to intensify the collaboration with Asian (China, South Korea, Japan) partners since they are owning and further developing an excellent infrastructure in the polar areas. EU-PolarNet is also heavily contributing to the new calls on polar research within the 2018 - 20 work programme of H2020. On 27.09.2016 the project organised a high-level Town Hall event in Brussels called "Towards the 1.5°C climate goal - Perspectives from the Polar Regions". Several representatives of the European Commission and the European Parliament participated in that event.

National cooperation

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

Currently, there are 30 professors associated with universities and colleges by means of cooperative professorships; 19 of those are with the University of Bremen in the disciplines of physics, biology / chemistry, mathematics / computer science and geosciences. These are supplemented by 10 honorary and adjunct professorships.

The close cooperation between the AWI and the University of Bremen will be relaunched with a view to the planned proposals of the University of Bremen in the context of the Excellence Initiative. A Memorandum of Understanding with all non-university partner institutions has been adopted in 2016 under the title „U Bremen Research Alliance“ (UBRA) in order to promote stronger cooperation in comprehensive measures (e.g. welcome centre, technology transfer, access to infrastructure) and administration. The AWI participates as usual in the Cluster of Excellence of MARUM under the title „The Ocean Floor as Dynamic Interface“. The AWI also supports the preparation of an additional cluster in the field of satellite remote sensing of the Institute for Environmental Physics at the University of Bremen on the subject of the Polar Ocean System Observed from Space (POSOS). The preparation for both networks of excellence is funded for one year through the Helmholtz Initiative and Networking Fund. A further Excellence Cluster with AWI contribution is being prepared at the University of Potsdam „How events couple geological, biological, and climatic processes in Earth’s environment system (EarthE)“.

The University of Oldenburg (UOL) and the AWI have combined their complementary expertise in the field of functional marine biodiversity research. In collaboration with the state of Lower Saxony, the Helmholtz Institute for Functional Marine Biodiversity (HIFMB) at the University of Oldenburg was established on 11 October 2016 by resolution of the Helmholtz Association Senate, following the excellent results of the proposal evaluation. Until the start of the funding period from 2021 onwards, AWI and UOL as cooperative partners will ensure a sufficient level of funding, with the support of the State of Lower Saxony, to build up the Institute. From 2021, the HIFMB will be formally established as a Helmholtz Institute, institutionally funded by State and Federal State in Oldenburg. The establishment of four new professorships, jointly appointed by the AWI and the UOL, is planned, as well as relocation of four AWI working groups to

| University | W3/W2 Professorships | W1, apl und Honorarprofs |
|--------------------------|----------------------|--------------------------|
| Bremen | 19 | 6 |
| Jacobs University Bremen | | 3 |
| HS Bremerhaven | 3 | |
| Potsdam | 3 | 1 |
| Kiel | 1 | |
| Göttingen | 1 | |
| Oldenburg | 1 | |
| Tübingen | | 1 |

Oldenburg in order to strengthen HIFMB. The scientific cooperation of the working groups around the new professorships with the already existing AWI and UOL working groups takes place through the three research areas „Causes and Drivers of Marine Biodiversity“, „Biodiversity and Functioning of Ecosystems“ and „Marine Protection and Ecosystem Services“. Further external partners will also be involved.

Scientific collaboration within the Consortium of German Marine Research (KDM) is provided through various Strategic Groups, each of which includes AWI scientists. The following recent KDM activities have relevance for the AWI:

- In March 2015, the Senate of the German Research Foundation (DFG) resolved to establish the regional program „Regional Sea Level Change and Society“. Colleagues from the KDM Strategic Group on Ocean Circulation and Climate were involved in the drafting of the application. The aim of the program is the analysis of climate-related and anthropogenic sea-level changes and associated interactions with coastal areas and their populations.
- The KDM Strategic Group on Biodiversity is currently developing a survey of marine biodiversity research in Germany with the aim of creating a research atlas. A second focus is the introduction of marine research into international platforms of biodiversity, e.g. The Intergovernmental Platform for Biodiversity and Ecosystem Services (IPBES).
- The ongoing activities of the KDM Strategic Group on Coasts are aimed at consolidating the dialogue with the donors of the federal government and the states, as well as the further development of national and international networking of coastal research. The BMBF-funded projects on German coastal research (FONA) have been coordinated, and the Platform for the Dialogue between Science and Policy, as well as the Forum for Marine Research, are now integrated into the Coastal Sea Research agenda process.

Ships and Stations

The Alfred Wegener Institute provides vessels, stations and aircraft for use in polar and marine research. The expeditions made possible by this infrastructure are summarized in the following figures.

The expeditions of the RV Polarstern could be operated successfully in the Arctic and in the Antarctic without limitations. The transit routes between north and south have

increasingly been used for education of students. Thereby an extensive training programme was offered to students from 16 countries.

The design specification for the successor ship of the RV Polarstern has been completed under the direction of the federal ministry of education and research and is the basis for the ongoing compilation of tenders of interested ship yards.

| Research vessels | Expeditions | Participants Germany | Participants abroad | Days of deployment harbour / docks | Days Attended (of which AWI) |
|------------------|-------------|----------------------|---------------------|------------------------------------|------------------------------|
| RV Polarstern | 10 | 377 | 128 | 320 (46) | 15.303 (5340) |
| RV Heincke | 29 | 394 | 1 | 270 (96) | 2.444 (585) |

| Stations | Projects | Participants Germany | Participants abroad | Days of deployment | Days Attended (of which AWI) |
|---|----------|----------------------|---------------------|--------------------|------------------------------|
| Arctic | | | | | |
| AWIPEV Research Base permanently attended | 50 | 60 | 50 | 366 | 3.102 (807) |
| Samoylov Station summer station | 12 | 25 | 26 | 108 | 1.530 (399) |
| Antarctic | | | | | |
| Neumayer Station III permanently attended | 22 | 40 | 4 | 366 | 3.034 (2.219) |
| Kohnen Station summer station | 3 | 15 | 7 | 83 | 617 (458) |
| Dallmann Laboratory at the Carlini Station (Argentina) summer operation | 18 | 10 | 22 | 151 | 1.801 (402) |

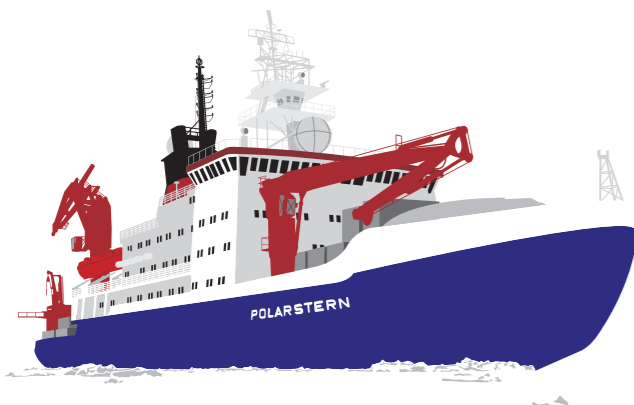
| Equipment (provision of polar clothing, field equipment) | Projects | Participants Germany | Participants abroad |
|--|----------|----------------------|---------------------|
| Ship expeditions | 39 | 771 | 129 |
| Station operations | 105 | 150 | 91 |
| Flight missions | 9 | 29 | 2 |
| Field missions | 20 | 75 | 14 |

Field Expeditions

| Land Expeditions | Projects | Participants Germany | Participants abroad | Days of deployment |
|------------------------------|----------|----------------------|---------------------|--------------------|
| Arctic | | | | |
| Russia, Muastach/Mammut Klyk | 1 | 4 | 2 | 27 |
| Russia, KEPERVEEM | 1 | 8 | 0 | 48 |
| Greenland, EGRIP | 2 | 6 | 0 | 45 |
| Greenland, 79'-Gletscher | 2 | 5 | 2 | 25 |
| Canada, Trail Valley Creek | 1 | 3 | 0 | 30 |
| Alaska, PETACARB | 1 | 5 | 0 | 26 |
| Alaska, NAAT 2 | 1 | 2 | 0 | 96 |
| Yukon Coast | 2 | 10 | 0 | 75 |

| Land Expeditions | Projects | Participants Germany | Participants abroad | Days of deployment |
|-----------------------------------|----------|----------------------|---------------------|--------------------|
| Antarctic | | | | |
| FISP (Filchner Ice Shelf Project) | 6 | 10 | 4 | 91 |
| Kohnen traverse NM to Kohnen | 0 | 6 | 0 | 9 |
| Kohnen traverse Kohnen to NM | 0 | 5 | 1 | 5 |

Native countries of international scientists on Polarstern expeditions in 2016 [Number]



Aircraft Campaigns

In 2016, survey flights were conducted by both AWI aircraft Polar 5 and Polar 6 for six projects in the Arctic and three projects in the Antarctic, serving geoscientific subjects as well as those of atmospheric chemistry and physics. Moreover the aircraft served for logistical support of the Filchner Ronne Ice Shelf Project (FISP) in 2015/16. An ultra-modern radar system that allows the study of ice shields with yet unknown accuracy, has been installed on the AWI aircraft and successfully tested in the Arctic and Antarctic.

In all campaigns during 2016, external partners worked alongside AWI scientists. Expeditions such as the GEA (Geodynamic Evolution of East Antarctica) campaign, are conducted together with the Institute for Geosciences and Natural Resources (BGR Hannover) resulting in close cooperation with external partners and joint publications.

| Aircraft | Projects | Flight hours scientific | Flight hours logistics incl. ferry | Total hours |
|------------------|----------|-------------------------|------------------------------------|-------------|
| Arctic | | | | |
| Polar 5 | 2 | 72 | 90 | 162 |
| Polar 6 | 4 | 98 | 144 | 242 |
| Antarctic | | | | |
| Polar 5 | 1 | 13 | 87 | 100 |
| Polar 6 | 2 | 76 | 108 | 184 |



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

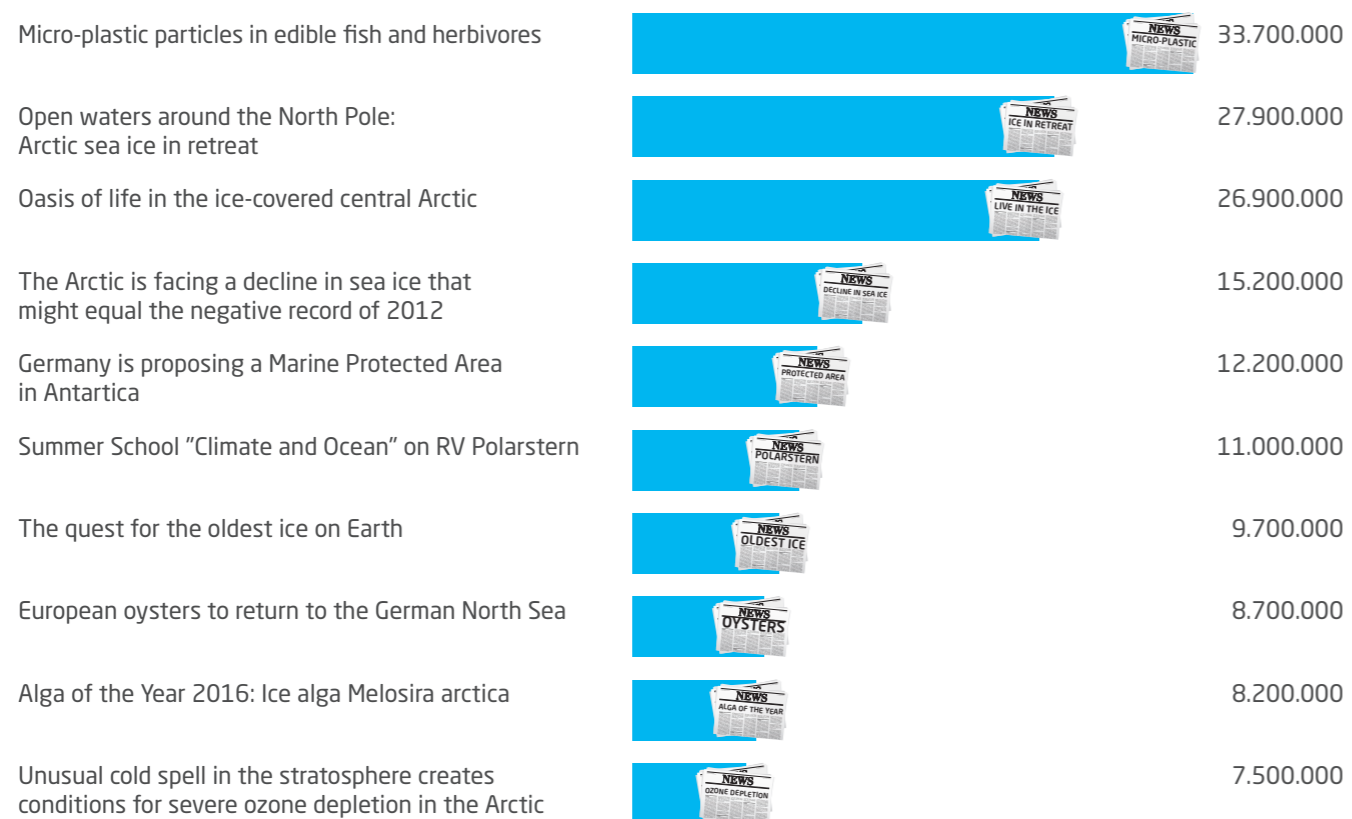
In 2016 the Alfred Wegener Institute successfully expanded its presence in the media: there were more than 11,000 news items relating to AWI in the German media, representing a 31 per cent increase over the previous year (8,500 items). As a result, our media relations efforts allowed us to reach nearly 714 million readers, listeners and viewers across Germany (reach in 2015: 550 million; equates to a 16 per cent increase). This increase is mainly due to the activities as part of the Science Year 2016/17 – Seas and Oceans.

Between 6 and 14 articles on the Institute appeared in each of the leading national newspapers Die Zeit, Süddeutsche Zeitung, FAZ and Frankfurter Rundschau. The AWI was also mentioned several times in the magazines Spiegel and Stern. A photojournalist accompanying one of our research flight campaigns led to international articles in the Wall Street Journal, the Guardian and the New York Times. Just before the end of the year, two freelance journalists reported at regular intervals from aboard the RV Polarstern. Their coverage was broadcast e.g. on the rbb television network, sev-

eral ARD radio programmes, and the website wissenschaftsjahr.de. An AWI infographic on marine litter, which appeared in the newspaper Stuttgarter Zeitung, was honoured in the European Newspaper Awards.

A further focus was on supporting the German Federal Ministry of Education and Research (BMBF) Science Year 2016/17 – Seas and Oceans. AWI was actively involved in creating a polar research exhibition in the BMBF's foyer, supplied numerous expert articles and successfully helped shape media relations in the Science Year. Further examples have been the summer coastal programme for children, Open Air Cinema on board RV Polarstern and contribution to the exhibition on board the MV Wissenschaft. The ship's calls to port in Bremerhaven and Bremen were accompanied by several events with AWI staff (a press conference, Meet the Scientist, and panel discussion). In addition, the Institute took part in the events "Science goes Pub/lic" and the Science Slam, both in Bremerhaven.

Figure TOP 10 of AWI press releases according to coverage [print only]



Imprint

Alfred Wegener Institute
Helmholtz Centre for Polar
and Marine Research

Am Handelshafen 12
27570 Bremerhaven
Germany
Telephone: +49 471 / 48 31 0
Email: info@awi.de
www.awi.de/en

Responsible according to press legislation:
Professor Karin Lochte (Director)

Credits for images:
Paolo Verzone (cover)
Anais Orsi Coen Hofstede (pp. 2 / 3)
Martina Buchholz (p. 6)
Yves Nowak (pp. 12 / 13)
Steven Franke (pp. 30 / 31)

Route maps:
Dr Christine Wesche (pp. 26 / 27)

Graphics:
Yves Nowak

Design: Inge Glinsmann
Editor: Dr Corinna Kanzog, Alfred Wegener Institute
Printed by: Müller Ditzen AG, Bremerhaven

Copyright: 2017, Alfred Wegener Institute





ALFRED-WEGENER-INSTITUT
HELMHOLTZ-ZENTRUM FÜR POLAR-
UND MEERESFORSCHUNG

BREMERHAVEN

Am Handelshafen 12
27570 Bremerhaven
Germany
Phone +49 471 4831-0
Fax +49 471 4831-1149
www.awi.de

