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Foreword

The Alfred Wegener Institute Helmholtz Centre for Polar and Marine Research (AWI) conducts interdisciplinary and long-term research in both polar regions, as well as comparative research on coastal waters and the North Sea. This annual report presents the key facts and figures relating to the AWI in 2015. The management of the AWI has a dual leadership again this year. In February 2015 Dr Karsten Wurr assumed the position of Administrative Director.

The societal relevance of our research and our focus on knowledge and technology transfer were central topics during 2015 and will continue to be so in the years ahead as we pursue our mission as a publicly funded research institute. The AWI is already diversely engaged: We operate the sea ice portal, contribute significantly to the Earth System Knowledge Platform (ESKP), work closely with the Climate Service Centre and climate offices, create data products and advise public authorities and private companies.

At the beginning of this year, we established the cross-sectional area of Knowledge and Technology Transfer, which will be further developed in the medium term as a key organizational unit. The two IMARE (Institute for Marine Resources) working groups „Bionic Lightweight Construction“ and „Marine Aquaculture“, REKLIM, the North Sea office as well as ESKP (Earth System Knowledge Platform) are part of this new cross-sectional unit „Knowledge and Technology Transfer“.

In addition to the current three EU projects coordinated by AWI, a fourth one started in March 2015. „EU PolarNet - Connecting Science with Society“ brings together almost all major European polar research institutions in a consortium. The aim of this project is to advise the European Commission in all matters related to Polar Regions and to develop a collaborative Polar research program for the commission.

In October, the AWI welcomed for the 3rd time its new international fellows. They started a ten-month training program for marine experts as part of the Centre of Excellence in Observational Oceanography, supported by the Japanese Nippon Foundation and POGO (Partnership for Observation of the Global Ocean). A highlight of this international training program was the five-week training cruise from Bremerhaven to Cape town aboard the German research vessel Polarstern, together with 32 selected students from all over the world, in order to promote training for research at sea and in marine science.

This year, the construction of the new laboratory and office building in Potsdam has started. Moreover, the construction of AWI’s technical pilot plant in Bremerhaven has been decided and the federal government has agreed to finance the reclassification of the Helgoland aquarium into a modern scientific exhibition centre.

Please enjoy reading this report!

Board of Governors

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

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

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

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

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

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

Dr Peter Hoth *)
Federal Ministry for Economic Affairs and Energy, Berlin

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

Staatstrat Dietmar Strehl
The Senator for Financial Affairs, Bremen

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

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

Silvia Schön
Bremen Parliament

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

Professor Sarah Jones
National Meteorological Service (DWD), Offenbach

*) The representatives of these Federal Ministries participate in alternating 2-year cycles (Federal Ministry for Economic Affairs and Energy represented since January 2015)

As of: December 2015
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
  (since June 2014)
  Munich

- **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
  (since January 2013)
  Bonn

- **Permanent representative**
  Professor Wolf-Christian Dullo
  (since July 2014)
  GEOMAR Helmholtz Centre for Ocean Research, Kiel

- **The President of the Federal Institute for Geosciences and Natural Resources**
  Professor Hans-Joachim Kümpel
  (since August 2007)
  Hannover

- **Permanent representative**
  Dr Christian Reichert
  (since October 2008)
  Federal Institute for Geosciences and Natural Resources, Hanover

- **The Director of the Federal Research Centre for Fisheries**
  Professor Cornelius Hammer
  (until January 2008)
  NN

- **Permanent representative**
  NN

- **The Rector of the University of Bremen**
  Professor Bernd Scholz-Reiter
  (since October 2012)

- **Permanent representative**
  Professor Wilhelm Hagen
  (since February 2008)
  University Bremen

- **Chairman**
  Professor Martin Claussen
  (since September 2012)
  Max Planck Institute for Meteorology, Hamburg

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

- **The Director of the Federal Research Centre for Fisheries**
  Professor Shubha Sathyendranath
  (since July 2015)
  Plymouth Marine Laboratory (PML)
  United Kingdom

- **Permanent representative**
  Dr Ljuba Woppowa
  (since July 2015)
  Engineering and Science

- **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)
  United Kingdom

- **Chair**
  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 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**
  Brey, Professor Thomas
  Kasten, PD Dr Sabine (Deputy)

- **Members**
  Boelius, Professor Antje
  Boersma, Professor Maarten (since April 2015)
  Cembella, Professor Alan
  Dethloff, Professor Klaus
  Diekmann, Professor Bernhard
  Franke, Professor Heinz-Dieter (until March 2015)
  Gerdes, Professor Rüdiger
  Gerth, Dr Gunnar
  Gohl, Dr Karsten
  Hanfland, Dr Claudia
  Hass, Dr Christian
  Hiller, Professor Wolfgang
  Hubberten, Professor Hans-Wolfgang
  Humbert, Professor Angelika
  Jokat, Professor Wilfried
  Jung, Professor Thomas
  Kanzow, Professor Thorsten
  Lohmann, Professor Gerrit
  Losch, Dr Martin
  Pörtner, Professor Hans-Otto
  Richter, Professor Claudio
  Tiedemann, Professor Ralf
  Wacker, PD Dr Ulrike
  Waite, Professor Anja
  Wiltshire, Professor Karen
  Wolf-Gladrow, Professor Dieter

- **Permanent guests**
  Dummermuth, Dr Angelika
  Damm, Dr Ellen (AWI-Equal Opportunity Officer)
  Hain, Dr Stefan
  Lemke, Professor Peter
  Lochte, Professor Karin
  Nixdorf, Dr Uwe
  Röchert, Ralf
  Sauter, Professor Eberhard
  Schmengler, Dr Almut
  Wilhelms, Dr Frank (AWI Staff Council)
  Wurr, Dr Karsten (Administrative Director since February 2015)
Organization Chart

Board of Directors
Professor K. Locht | Dr. K. Wurr
Dr. U. Nixdorf | Professor K. Wiltshire

Board of Governors
MinDr Dr K. E. Huthmacher

Scientific Advisory Board
Professor M. Claußen

Directorates Office
Dr. A. Dummermuth

Internal Boards
Scientific Council
Ombudsman | Equal Opportunities Officer
Staff Council

International Offices | National Offices

User Boards for Large Equipment

Scientific Divisions, Technologies and Services

Geosciences
Geophysics
Professor W. Jokat
Glaciology
Professor A. Humbert
Periglacial Research
Professor H.-W. Hubberten
Marine Geology and Palaeontology
Professor R. Tiedemann
Marine Geochemistry
PD Dr. S. Kasten

Biosciences
Molecular Ecology
Professor A. Waite
Functional Ecology
Professor T. Brey
Integrative Ecosystem Ecology
Professor H.-D. Pörtner
Ecological Chemistry
Professor A. Cembella

Climate Sciences
Atmospheric Circulation
Professor K. Dethloff
Polar Meteorology
PD Dr. U. Wacker
Physical Oceanography of Polar Seas
Professor T. Kanzow

Infrastructure/Administration
Logistics and Research Platforms
Dr. U. Nixdorf
Computing and Data Centre
Professor W. Hiller
Library
M. Brannemann

Scientific Workshop
E. Dunker
Human Resources
C. Ruholt

Corporate Finances
C. Ungermann
Purchasing Department
J. Eilers
Administration and Organization
M. Boersma
Construction and Facility Management
M. Krüger
Technology and Environmental Protection
G. Tautorat
Legal Department
F. Dopatka

Junior Research Groups

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

As of: October 2015
New Senior Members of Staff

Professor Eberhard Sauter is new honorary professor at the University of Applied Sciences Bremerhaven in the field of Marine Technology. With the professorship his scientific performance and dedication have been recognized.

Dr Karsten Wurr started in February 2015 as the Administrative Director of the AWI.

Dr Uwe Nixdorf has been Vice Director of the AWI since August 2015.

Professor Maarten Boersma has headed the research section Shelf Sea Ecology since April 2015 in the Biosciences Division on Helgoland.

Dr Matthew James Slater and his working group Aquaculture Research came from the Institute of Marine Resources (IMARE) to AWI in January 2015.

Dr Kerstin Mölter has headed the coordination of the Wadden Sea Station in List / Sylt since February 2015.

Professor Bernhard Diekmann has headed the Alfred Wegener Institute’s research centre in Potsdam since April 2015 and represents the AWI in the regional environment of Potsdam.

Professor Eberhard Sauter is new honorary professor at the University of Applied Sciences Bremerhaven in the field of Marine Technology. With the professorship his scientific performance and dedication have been recognized.
Balancing Responsibilities for Work and Family

The reconciliation of work and family is a key issue for the AWI. There is a broad consensus across the institute for working towards this objective and it is particularly evident in everyday operations. It is an ongoing task of the Family Office to give meaning to this notion of reconciling family and work commitments. We do this through a number of initiatives, including:

- bridging the gap between school holidays and individual leave entitlement with 37 days of holiday program with an average of 12 to 13 participants, corresponding to 500 participant days
- the company crèche, providing a total of 20 seats in an educational facility where different nationalities are cared for
- individual help and advice regarding child care and school for new staff

The Family Office is also a point of contact for new members of staff from around the world, providing individual support and advice as they settle in. Employees from all work areas use the Family Office services to achieve life balance and we encourage the active participation of all employees to deliver a family-friendly life at the AWI.

Gender Equality

In 2015 the number of females as a percentage of total AWI personnel remained unchanged over the 2014 year, standing at 47%. There was however a decrease of 1% in the percentage of female scientist employees, with the 2015 figure at 39%. For doctoral students, the proportion of women in comparison to the previous year also remained constant at 54%. There were some small shifts in gender composition within the other occupational groups:

- the rate for the infrastructure staff (administration, logistics and staff positions) fell five percentage points to 42%
- due to an increase in male training graduates taken on by the institute, so that our infrastructure staff is now 53% female. The number of female science support staff (technicians, engineers) now stands at 54% due to the engagement of more female training graduates (e.g. biology technician), which corresponds to an increase of 5 percentage points. From 2014 to 2015, the proportion of female student assistants fell from 43% to 41% and for trainees, the percentage of women increased by 6 percentage points to 42%.

<table>
<thead>
<tr>
<th>No. of persons</th>
<th>Proportion of women [%]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trainees</td>
<td>43</td>
</tr>
<tr>
<td>Student research assistants</td>
<td>49</td>
</tr>
<tr>
<td>PhD students with AWI contract</td>
<td>55</td>
</tr>
<tr>
<td>Total assisted PhD students</td>
<td>180</td>
</tr>
<tr>
<td>Scientific support staff (technicians, engineers)</td>
<td>48</td>
</tr>
<tr>
<td>Infrastructure staff (administration, logistics)</td>
<td>62</td>
</tr>
<tr>
<td>Scientists</td>
<td>37</td>
</tr>
<tr>
<td>Total</td>
<td>48</td>
</tr>
</tbody>
</table>

No. of persons | Proportion of women [%] * The percentage increase in the infrastructure personnel can be accounted for to some extent by restructuring measures for service personnel
Technology transfer

At the beginning of 2015 AWI established a cross-sectional unit “Knowledge and Technology Transfer” (KTT) with the aims of joining forces and increasing the internal and external visibility of transfer activities. Besides the two working groups Aquaculture Research and Bionics/Light Structure Engineering integrated from the Institute for Marine Resources (MARE into AWI), this new KTT unit includes the Marine Aquaculture Group, the Technology Transfer Office, and the Earth System Knowledge Platform, altogether approx. 50 persons.

The KTT also coordinates and advises in relation to the transfer activities of other operational units of the AWI, providing expert advice on patents, licensing, the development of spin-off companies, innovation and scientific knowledge transfer to society.

For 2015 the following transfer examples can be given to illustrate AWI’s knowledge and technology transfer performance:

- Three new patent applications for technical inventions in the fields underwater analytics, laboratory tide simulation, and bionic structures
- EUR 435,000 revenues from licenses, contract research and industry co-operations
- Registration of a new spin-off company (SubSeaSpec) and successful application of two pre-seed projects within Helmholtz Enterprise (Helmöländer Hummer GmbH, MültroNet)
- Over 3,500 new user downloads of the software “Ocean Data View”
- Continuation of the Arctic Dialogue series with the involvement of seven federal Ministries
- Publication of an extensive open-access compendium on “Marine Anthropogenic Litter”
- Presentation of a study on invasive species (neobiota) in the North and Baltic Seas by the AWI North Sea Office in collaboration with local authorities
- Intensive engagement of AWI within the Working Group II of the IPCC on the assessment of risks and consequences of climate change and the options of adaptation; the AWI biologist and climate researcher Professor Hans-Otto Pörtner was officially voted Co-Chair of the IPCC’s Working Group II
- Delivery of new model scenarios for the acceleration of the Indonesian tsunami early warning system

The ELise/AG bionics working group presents new lightweight models at a trade fair.
**Budget**

<table>
<thead>
<tr>
<th>Operation</th>
<th>Bremerhaven</th>
<th>Heligoland</th>
<th>Potsdam</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Staff</strong></td>
<td>35,165</td>
<td>4,608</td>
<td>3,491</td>
<td>43,664</td>
</tr>
<tr>
<td><strong>Materials and Equipment</strong></td>
<td>24,774</td>
<td>7,645</td>
<td>1,989</td>
<td>34,308</td>
</tr>
<tr>
<td><strong>Investments</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Current investments</td>
<td>5,229</td>
<td>1,141</td>
<td>430</td>
<td>7,200</td>
</tr>
<tr>
<td>Investments &gt; EUR 2,5 Mio</td>
<td>773</td>
<td>2</td>
<td>733</td>
<td>1,500</td>
</tr>
<tr>
<td>Investments &gt; EUR 15 Mio</td>
<td>578</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Income</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Revenues and profits</td>
<td>-5,170</td>
<td>-1,572</td>
<td>-8</td>
<td>-6,750</td>
</tr>
<tr>
<td>Reserves*</td>
<td></td>
<td></td>
<td></td>
<td>125</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>92,099</td>
<td>11,824</td>
<td>6,555</td>
<td>110,583</td>
</tr>
</tbody>
</table>

**Third-party funding**

<table>
<thead>
<tr>
<th>Bremerhaven</th>
<th>Heligoland</th>
<th>Potsdam</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>19,698</td>
<td>1,146</td>
<td>3,215</td>
<td>24,060</td>
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</table>

**Source of third-party funding**

<table>
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<tr>
<th>Helmholtz</th>
<th>BMBF</th>
<th>DFG</th>
<th>EU</th>
<th>others</th>
</tr>
</thead>
<tbody>
<tr>
<td>5,689</td>
<td>8,963</td>
<td>2,593</td>
<td>3,739</td>
<td>3,076</td>
</tr>
</tbody>
</table>

**PalMod**

German Climate Modeling Initiative for understanding climate system dynamics and variability during the last glacial cycle, BMBF-Project.

Scientific Coord. and Pls: Professor G. Lohmann, Dr P. Köhler, Dr F. Lamy, Professor U. Herzschuh, Dr C. Völker, Dr M. Werner, Dr D. Barbi, Professor A. Humbert, Dr G. Knorr, Dr T. Laepple. Scientific Coord. and PIs: Professor G. Lohmann, Dr P. Köhler, Ralf Müller, Wolfgang Neumann and Ritschy Kreie. These colleagues form the caretaker team at the AWI location in Bremerhaven and are employed in the AWI building services department.

**DUALBAND WALROS**

Thermography for purposes of wildlife and biodiversity, automatic detection of whales, seals and walruses in hot and cold seas, PTJ/FZ (Jülich)

Pl: Dr O. Boebel
Term: 2015 - 2016
Funding: EUR 476,953

**SO246-CHATHAM-Rise**

Compression, extension and cancellation mechanisms of a submarine continental plateau, BMBF-Project.

Pl: Dr K. Gohl
Term: 2015 - 2018
Funding: EUR 440,140

**Climate Change Initiative Sea Ice (Phase 2)**, ESA/NERC-Project.

Development of an operational system for the measurement and validation of sea ice thickness using satellite data.

Pl: Dr M. Nicolaus
Term: 2015 - 2018
Funding: EUR 345,270

**Scientific publications and awards**

The scientists of the Alfred Wegener Institute published 519 peer-reviewed items in the course of 2015 (source: Science Citation Index, Web of Science, 01.03.2015). In 215 cases, AWI scientists were named as first author. Almost a quarter (24,3%) of all publications from 2015 were obtained through work with the United States, one of AWI’s most important international cooperation partners. Further significant publication partners are the United Kingdom (20,2% of publications), France (13,5%) and the Netherlands (9,6%). In 2015 the AWI published in collaboration with a total of 57 partner countries.

A similar scenario emerges when examining a longer time period (2010-2015) (see also world map, pages 20/21, ‘International co-operation’, in dark red): The AWI published 2841 joint items with a total of 70 partner countries worldwide; most of them with the United Kingdom (595), the United States (585), France (318), Norway (242), Canada (222) and the Netherlands (220).

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 2015 was 27,2%; almost a doubling since 2009 (12%).

The ‘Friends of the AWI’ (Förderverein) awards three prizes each year. The AWI Science Prize (EUR 2,000) for the best scientific publication in 2015 was awarded to Dr Hanno Meyer (Meyer et al., 2015¹). This publication is the result of difficult but successful development of something new, an isotope thermometer for winter precipitation. This demonstration for the first time that winter temperatures in the Arctic during the Central and Late Holocene continuously increased and during the last century a particularly steep rise was detected.

The AWI PhD Prize is awarded to young AWI scientists with outstanding research results during the course of their doctorate and who are additionally heavily involved in their groups and outreach activities. This year’s prize – also endowed with EUR 2,000 - was awarded to Dr Jens Strauss.

The so-called ‘Silent Hero’ Award – a prize of EUR 2,000 awarded to colleagues who are absolutely necessary for scientific achievements and who support our scientists only in the background - was awarded to three colleagues: Ralf Müller, Wolfgang Neumann and Ritschy Kreie. These colleagues form the caretaker team at the AWI location in Bremerhaven and are employed in the AWI building services department.

Cooperation Partners

International cooperation

In 2015, the AWI has signed the following new cooperation agreements with international partners:

- Russia: P.P. Shirshov Institute of Oceanology in Moscow, Russian Academy of Science (RAS) and Yakutsk Division Geophysical Survey, Siberian Branch, RAS, Yakutsk for joint work in the Arctic Ocean

- Canada: LGL Limited from Ontario to jointly develop sensors to detect marine mammals in Canadian Arctic waters

- Micronesia: Palau Community College to jointly build an atmosphere observatory

- Norway: University Tromsø (UiT) on joint research in the Arctic.

In addition, the MoU between AWI and Japan Agency for Marine-Earth Science and Technology (JAMSTEC) was extended by five years on 27 April 2015 during the Arctic Science Summit Week (ASSW) 2015 in Toyama, Japan. Several additional meetings with Japanese partners took place during the ASSW e.g. with directors of the National Institute for Polar Research (NIPR) and JAMSTEC. A further intensification of the cooperation was the main topic of these meetings. An EU - Japan - US Workshop, co-organized by EU-PolarNet, was held to discuss the strengthening of cooperation with Japan and the US in Arctic research. Another bilateral AWI - JAMSTEC - NIPR workshop is planned for summer 2016 in Tokyo by invitation of MEXT (Ministry of Education, Culture, Sports, Science and Technology - Japan).

The AWI is working on a stronger collaboration with Dalhousie University and the Halifax Marine Research Institute (HMRI), Canada. This cooperation will be conducted within the framework of the Heilholzmoi with HMRI. The cooperation is planned as part of the Canadian First Research Excellence Fund (CFREF) proposal, in which a Dalhousie’s Ocean Frontier Institute will be requested. The joint work will take place in the Canadian Arctic and includes all relevant marine research disciplines.

In order to expand cooperation between the Heilholz Association and Russian institutions the AWI plans to visit several Russian Heilholz partners in Moscow. An interesting new partner for the AWI could be the Skolkovo Institute of Science and Technology in Moscow, working very intensively on methane hydrates in the Arctic. For the next year, a Russian-German expedition in the Lena Delta (Lena-2016) is planned, which is coordinated on the German side by AWI Potsdam. The Russian partner is the Arctic and Antarctic Research Institute (AARI) in St. Petersburg. On this expedition, new data on environmental development in the late Pleistocene and Holocene based on geomorphological and hydrological activities in the Lena Delta are to be obtained.

In October, a second workshop between AWI scientists and scientists from various Argentinian institutions took place in Bremerhaven. The aim was to apply jointly for a large project in Horizon2020. This project will focus on training of PhD students. The workshop in Bremerhaven was a follow-up meeting to the workshop in Buenos Aires in November 2014.

The Argentinian ambassador, Daniel Polski, visited the AWI in Bremerhaven on 20th July to inform himself about the AWI-Argentinian cooperation in the South Atlantic Ocean and in Antarctica.

Since 1 March 2015 AWI coordinates the EU project EU-PolarNet - “Connecting Science with Society”. The EU-PolarNet kick-off meeting took place on 9 March - 11 March 2015 at the German Emigration Centre in Bremerhaven. The event was attended by 65 participants from almost every major polar research institution in Europe.

EU PolarNet works closely with the European Commission (EC) to advise and support them in all issues relating to the polar regions. Currently, the project advises the EC in the implementation of the trans-Atlantic Research Alliance with the U.S. and Canada as well as in cooperation with the European Space Agency. EU PolarNet was also instrumental in the development of the four polar calls in the current work programme 2016 - 17 of Horizon 2020.
National cooperation

The AWI is a member of the Helmholtz Association, the German Research Foundation and the Northeastern German Research Association (NIW). These cooperation efforts have been extended to the field of ocean and climate dynamics, as well as underwater technology and earth observation. The Northwest Atlantic Marine Research Consortium, which includes the AWI and MARUM, the Max-Planck Institute for Marine Microbiology and the Institute for Chemistry and Biology of Marine Microorganisms and Ecosystems, forms the research network of the AWI.

In the context of the AWI-MARUM Alliance, existing since 2010, joint collaborative projects in the fields of ocean and climate dynamics, underwater technology and earth observation, as well as data information systems were successfully applied. Examples include the Graduate College ArcTrain with Canadian partners in Halifax, the EU project PalMod, the Helmholtz Alliance ROBEX and the data portal marine research (Manida). To expand the range of issues of cooperation also in view of possible future calls for proposals for collaborative projects, it was suggested to examine the synergy potential of the topic "Arctic-North Atlantic ocean and ecosystems in a changing climate". There were already several existing priorities in the scope of MARUM, the AWI research program PACES II as well as projects funded by the German Research Foundation or the European Union.

Currently, there are 29 professors associated with universities by means of cooperative professorships; thereof 19 are at the University of Bremen in the departments of Physics, Biology/Chemistry, Mathematics and Geosciences. In addition, there are 11 extraordinary professorships. The close cooperation with the University of Bremen is being re-established and subsequently developed programmes. Based on the concept of the "Campus Alliance" with joint research activities between AWI and MARUM, an expanded concept is being pursued. The "Northwest Alliance Marine Research and Technologies" will create a common research area building on five scientific columns and following joint graduate training, operation and development of infrastructure as well as planning of professorships. The research themes "ocean and climate", "dynamics of the sea floor", "aquatic-biosphere interactions", "innovative marine technologies" and "marine ecosystems and biodiversity" build the five columns. Besides the AWI and MARUM, the Max-Planck Institute for Marine Microbiology and the Institute for Chemistry and Biology of the Sea (ICBM) at the University of Oldenburg are involved as further partners. Additional partners may be involved in the further development, for example Jacobs University, Sensorberg am Meer as well as applied universities in the region. It is the aim of the Northwest Alliance to face big future themes of marine research with this internationally outstanding research network in a comprehensive approach working with natural, engineering and social sciences.

Both the University of Oldenburg (ICBM) and AWI have extensive expertise in the field of marine functional biodiversity. These complementary capabilities should be combined in a joint research cluster for functional marine biodiversity at the University of Oldenburg.

To further this initiative, an expression of interest has been delivered to the Helmholtz Association, applying for a new Helmholtz Institute for functional marine biodiversity (HiFMB). The participating institutions (AWI, University of Oldenburg) initially develop the institute with their own finances and with funding from the Federal State of Lower Saxony. Should the Helmholtz Association agree to the establishment of the Institute, sufficient finances will be provided by both partners until the Helmholtz Association funding period commences. Discussions around the financing and the location of the Institute in Oldenburg were conducted throughout 2015 and the participating institutions anticipate an adequate financial and operational solution in the event of success with the application to the Helmholtz Association.

This initiative implements a recommendation of the structural analysis of the German marine research, attaching high importance to the theme "Functional biodiversity" and demanding coordinated interdisciplinary research in Germany. The marine biodiversity research which is rather fragmented in Germany could be focused and better linked with this approach.

In February 2015 the AWI and the Institute for Advanced Sustainability Studies jointly hosted the 5th Arctic Dialogue with focus on "Governance" and "Black Carbon". In September 2015 the Federal Ministry for Education and Research invited participants to Berlin for an evaluation of the Arctic Dialogue series and the assessment proved extremely positive. All participating ministries and authorities sought the continuation of the Arctic Dialogue series as a discussion platform. Additional expressions of interest for participation have also been raised by ministries not previously involved, indicating strong interest in the event.

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1. ArcTrain (International Research Training Group ArcTrain "Processes and impacts of climate change in the North Atlantic (Ocean and the Canadian Arctic")
2. PalMod - Palaeo modeling - A national initiative for palaeo-climate modeling
3. ROBEX - Robotic exploration of extreme environments
4. MaNIDA - Marine Network for Integrated Data Access

Ship expeditions

<table>
<thead>
<tr>
<th>Ship</th>
<th>Participants Germany</th>
<th>Participants abroad</th>
<th>Days of deployment</th>
<th>Man days (of which AWI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>RV Polarstern</td>
<td>9</td>
<td>235</td>
<td>127</td>
<td>245 (120)</td>
</tr>
<tr>
<td>RV Heincke</td>
<td>27</td>
<td>354</td>
<td>15</td>
<td>288 (77)</td>
</tr>
</tbody>
</table>

Stations

<table>
<thead>
<tr>
<th>Station</th>
<th>Projects</th>
<th>Participants Germany</th>
<th>Participants abroad</th>
<th>Days of deployment</th>
<th>Man days (of which AWI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arctic</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AWIPEV Research Base</td>
<td>52</td>
<td>74</td>
<td>35</td>
<td>365</td>
<td>2.533 (828)</td>
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<tr>
<td>Samoylov Station</td>
<td>12</td>
<td>36</td>
<td>33</td>
<td>183</td>
<td>2.059 (465)</td>
</tr>
<tr>
<td>summer station</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Neumayer Station III</td>
<td>26</td>
<td>45</td>
<td>2</td>
<td>365</td>
<td>3.135 (2.143)</td>
</tr>
<tr>
<td>summer station</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dallmann Laboratory</td>
<td>18</td>
<td>7</td>
<td>28</td>
<td>150</td>
<td>1.468 (1.23)</td>
</tr>
</tbody>
</table>

Antarctic

<table>
<thead>
<tr>
<th>Station</th>
<th>Projects</th>
<th>Participants Germany</th>
<th>Participants abroad</th>
<th>Days of deployment</th>
<th>Man days (of which AWI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>permanently manned</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kronen Station</td>
<td>2</td>
<td>20</td>
<td>1</td>
<td>21</td>
<td>231</td>
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</table>

Equipment

<table>
<thead>
<tr>
<th>(provision of polar clothing, field equipment)</th>
<th>Projects</th>
<th>Participants Germany</th>
<th>Participants abroad</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ship expeditions</td>
<td>36</td>
<td>589</td>
<td>142</td>
</tr>
<tr>
<td>Station operations</td>
<td>101</td>
<td>182</td>
<td>88</td>
</tr>
<tr>
<td>Flight missions</td>
<td>10</td>
<td>20</td>
<td>4</td>
</tr>
<tr>
<td>Field missions</td>
<td>16</td>
<td>57</td>
<td>16</td>
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</table>
### Field Expeditions

<table>
<thead>
<tr>
<th>Field Expeditions</th>
<th>Projects</th>
<th>Participants Germany</th>
<th>Participants abroad</th>
<th>Days of deployment</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Arctic</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Russia, Sobo-Sise, Lena delta, summer</td>
<td>2</td>
<td>5</td>
<td>3</td>
<td>19</td>
</tr>
<tr>
<td>Russia, Jakutsk</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>27</td>
</tr>
<tr>
<td>Russia, Kolyma</td>
<td>1</td>
<td>3</td>
<td>0</td>
<td>15</td>
</tr>
<tr>
<td>Russia, Yamal</td>
<td>1</td>
<td>2</td>
<td>0</td>
<td>22</td>
</tr>
<tr>
<td>Greenland, RECAP</td>
<td>1</td>
<td>4</td>
<td>4</td>
<td>61</td>
</tr>
<tr>
<td>Greenland, NOW</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>62</td>
</tr>
<tr>
<td>Alaska, PETACARB</td>
<td>1</td>
<td>4</td>
<td>0</td>
<td>45</td>
</tr>
<tr>
<td>Alaska, NARF 2</td>
<td>1</td>
<td>2</td>
<td>0</td>
<td>153</td>
</tr>
<tr>
<td>Yukon Coast</td>
<td>1</td>
<td>4</td>
<td>6</td>
<td>68</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Field Expeditions</th>
<th>Projects</th>
<th>Participants Germany</th>
<th>Participants abroad</th>
<th>Days of deployment</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Antarctic</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FISP (Filchner Ice Shelf Project)</td>
<td>3</td>
<td>4</td>
<td>2</td>
<td>34</td>
</tr>
<tr>
<td>Kohnen traverse NM to Kohnen</td>
<td>0</td>
<td>7</td>
<td>0</td>
<td>9</td>
</tr>
<tr>
<td>Kohnen traverse Kohnen to NM</td>
<td>0</td>
<td>7</td>
<td>0</td>
<td>6</td>
</tr>
</tbody>
</table>

Native countries of international scientists on Polarstern expeditions in 2015 [Number]

- CAN 16
- IRL 16
- NLD 14
- NOR 14
- FRA 8
- GBR 8
- ZAF 8
- ESP 6
- SWE 6
- USA 5
- FIN 4
- RUS 4
- HRV 3
- POL 3
- AUT 2
- CHE 2
- CYP 2
- GHA 2
- GRC 2
- MDG 2
- NGA 2
- PAK 2
- PRT 2
- SEN 2
- ARG 1
- BEL 1
- DNK 1
- ITA 1
- KOR 1
- other 1

### Aircraft Campaigns

During 2015, AWI’s two aircraft conducted measurement flights for seven projects in the Arctic and three in the Antarctic, in the area of geosciences and atmosphere science. They also conducted transportation flights for logistical support for two projects. In addition to solely research-motivated measurement campaigns, a test mission for implementing two newly developed radar systems in Greenland, in cooperation with the CReSIS (Center for Remote Sensing of Ice Sheets, University of Kansas, Lawrence, KS, USA), was conducted.

The new radar systems are the latest advancements of systems and are currently employed in flight measurements of the NASA for operation IceBridge in the Arctic and Antarctic. With these systems, AWI has a transmission channel broadband radar system for high-resolution field mapping of ice thickness and internal structure of glaciers, ice shields, and ice shelf, as well as combined radar equipment for altimetry and identification of snow layers on top of sea ice.
Routes and flight campaigns

Scientific and logistical routes and flight campaigns in the North

Scientific and logistical routes and flight campaigns in the South
The year 2015 was marked by the relaunch of the AWI website: The institute’s fresh and modern internet site has been live since July. The welcome page includes a large visual opener, teasers to announce featured topics, many fascinating pictures, and a new drop-down navigation menu. Posts from social networks such as Facebook, Twitter and YouTube, as well as blogs from the Helmholtz portal, are also integrated into the welcome page to ensure additional up to date information. A responsive web design enables users to access awi.de from their mobile devices.

The website also contains a wide range of information on key topics, infrastructure and other institute issues. The ‘work and study’ section specifically addresses potential applicants at all career levels, and the research section has its own science-to-science communication area. We placed great emphasis on the search function, which allows users easy access to the specific content they are looking for.

As in the previous year, the press work of the Alfred Wegener Institute received positive response from the media. More than 8,500 articles about the institute were published in the German media (previous year: 8,700). With more than 618 million readers, listeners and viewers, we even managed to increase the audience reached (reach in 2014: 550 million). A press release about the Polarstern expedition at the beginning of the year, which had to be aborted due to repairs, had the widest reach. Three additional Polarstern press releases made it to the top ten, demonstrating the high public interest - may news be good or bad - in Germany’s popular research icebreaker. Three reports on the topic of plastic litter in the oceans were among the ten most widely distributed press releases. The discovery of a crater in the Antarctic and the tenth anniversary of the “Library in the Ice” at the Neumayer Station were also widely covered. Another topic to make it into the top ten was the results of the 15 years of long-term studies in the AWI Arctic deep sea observatory “Hausgarten.”

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

<table>
<thead>
<tr>
<th>Title</th>
<th>Reach</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research icebreaker Polarstern returns from the Antarctic prematurely</td>
<td>23,557,848</td>
</tr>
<tr>
<td>Microplastics in the ocean: biologists study effects on marine animals</td>
<td>21,638,225</td>
</tr>
<tr>
<td>Plastic Litter taints the sea surface, even in the Arctic</td>
<td>20,013,756</td>
</tr>
<tr>
<td>Crater found in the Antarctic</td>
<td>18,159,509</td>
</tr>
<tr>
<td>Ten years Library in the Ice</td>
<td>16,321,932</td>
</tr>
<tr>
<td>Warm water is mixing up life in the Arctic</td>
<td>8,900,304</td>
</tr>
<tr>
<td>Polarstern Embarks for Cape Town on Training Cruise</td>
<td>5,111,685</td>
</tr>
<tr>
<td>Polarstern returns from the Arctic after a five-month journey</td>
<td>4,351,176</td>
</tr>
<tr>
<td>Pilot study reveals new findings about microplastics in wastewater</td>
<td>3,693,631</td>
</tr>
<tr>
<td>Into the ice - RV Polarstern opens the arctic season by setting course for Svalbard</td>
<td>3,028,991</td>
</tr>
</tbody>
</table>