

EXPEDITION PROGRAMME
PS139/1 and PS139/2

Polarstern

PS139/1 and PS139/2

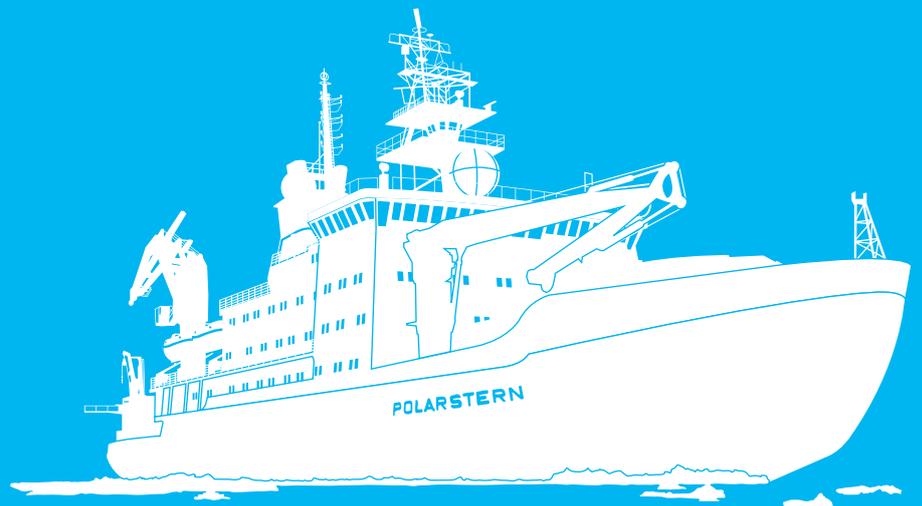
Bremerhaven - Las Palmas - Cape Town

23 October 2023 - 23 November 2023

Coordinator: Ingo Schewe

Chief Scientist PS139/1: Claudia Hanfland

Chief Scientist PS139/2: Simon Dreutter



HELMHOLTZ

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The Expedition Programme *Polarstern* is issued by the Alfred Wegener Institute, Helmholtz Centre for Polar and Marine Research (AWI) in Bremerhaven, Germany.

The Programme provides information about the planned goals and scientific work programmes of expeditions of the German research vessel *Polarstern*.

The papers contained in the Expedition Programme *Polarstern* do not necessarily reflect the opinion of the AWI.

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Bremerhaven – Cape Town

Chief scientists

**Claudia Hanfland
(PS139/1 Bremerhaven – Las Palmas)**

**Simon Dreutter
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**Coordinator
Ingo Schewe**

Contents

1.	Überblick und Expeditionsverlauf	2
2.	Bathymetric Underway Measurements	5
4.	<i>In Situ</i> Analyses of Methan Concentration and its Stable Carbon Isotopic Signature ($\delta^{13}\text{C}-\text{CH}_4$) in the Lower Atmosphere along the Ship Track	9
5.	Environmental Transport of Legacy and Emerging Organic Contaminants in the Atlantic Ocean	10
6.	Film Project: Wind	13
APPENDIX		14
A.1	Teilnehmende Institute / Participating Institutes	15
A.2	Fahrtteilnehmer:innen / Cruise Participants	17
A.3	Schiffsbesatzung / Ship's Crew	19

1. ÜBERBLICK UND EXPEDITIONSVERLAUF

Claudia Hanfland¹, Simon Dreutter¹

¹DE.AWI

Der Fahrtabschnitt PS139/1 ist der erste Abschnitt der antarktischen Forschungs-Saison 2023/24. Die Expedition PS139 startet in Bremerhaven am 23.10.2023 und endet am 23.11.2023 in Kapstadt (Abb. 1). Am 03.11.2023 wird ein Zwischenstopp in Las Palmas stattfinden, der die Fahrt in die Abschnitte PS139/1 und PS139/2 gliedert.

Während PS139 werden folgende Messungen und Tätigkeiten durchgeführt:

1. Bathymetrische Vermessung der Meeresbodentopographie mit den schiffseigenen hydroakustischen Systemen. Die Gesamt-Fahrtzeit von vier Wochen umfasst insgesamt einen Tag Stationszeit für die regelmäßige Kalibration der Echolotsysteme mittels CTD.
2. Tägliche Wetterbeobachtungen und -vorhersagen durch den Deutschen Wetterdienst
3. Luft- und Wasserbeprobung auf persistente organische Schadstoffe.

Während des Abschnitts PS139/1 finden zudem folgende Tätigkeiten statt:

4. POLMAR-TRAIN: Masterstudent:innen der Universitäten Bremen und Potsdam (jeweils Fachbereich Geowissenschaften) sowie Doktorand:innen des AWI nehmen an einer Ausbildung in geophysikalischen Methoden an den hydroakustischen Messsystemen teil. Neben den bathymetrischen Vermessungen mit dem Fächerecholot Hydrosweep wird die Gruppe den Sedimentaufbau der oberen Schichten des Meeresbodens mit dem parametrischen Sedimentecholot Parasound vermessen.
5. Bestimmung des atmosphärischen Methangehalts sowie dessen Isotopenverhältnis im Kohlenstoff.
6. Umfangreiche Tests an den schiffsseitigen Anlagen im Anschluss an die vorangegangene Wertzeit.
7. Mitarbeitende des *Polarstern II* Teams begleiten den Fahrtabschnitt zum besseren Kennenlernen des Schiffs

Während des Zwischenstopps in Las Palmas wird Treibstoff gebunkert. Für den Abschnitt PS139/2 verbleiben die Mitglieder des Deutschen Wetterdienstes sowie der Bathymetrie an Bord. Alle übrigen Fahrtteilnehmer:innen gehen in Las Palmas von Bord. Ein Dokumentarfilmer steigt auf.

SUMMARY AND ITINERARY

The expedition PS139 is the first leg of the Antarctic season 2023/24 and will bring the ship to its starting point Cape Town. The expedition PS139 will start in Bremerhaven on 23 October 2023 and will end on 23 November 2023 in Cape Town (Fig. 1). One stopover will take place in Las Palmas on 3 November 2023, thereby splitting the cruise in two legs, PS139/1 and PS139/2, respectively.

The following underway measurements and activities will be carried out throughout the entire journey (legs 1 and 2):

1. With the ship-mounted hydroacoustic systems, a swath of seabed topography will be bathymetrically surveyed along the ship's track. In summary, one day of station time will be spent on calibrating the echosounding systems by regular CTD casts.
2. Daily weather observations and forecasts will be carried out by Germany's National Meteorological Service.
3. Sampling of air and sea water for emerging and legacy organic contaminants.

During leg PS139/1, additional activities will take place:

4. POLMAR-TRAIN: master students from Universities of Bremen and Potsdam (departments of geosciences), and doctoral candidates from AWI will join the cruise for a hands-on training in geophysical methods on the ship-mounted hydroacoustic systems. Next to bathymetric surveys of the seafloor with the multibeam echosounder Hydrosweep, the group will also investigate the upper part of the sedimentary layer with the parametric sediment echosounder Parasound.
5. Determination of the atmospheric concentration and stable carbon isotopic signature of methane in the lower atmosphere.
6. Test runs and technical maintenance of the on-board facilities of *Polarstern* as follow-up of the shipyard period.
7. Staff of AWI *Polarstern* II team will join for familiarization with the ship.

During the stopover in Las Palmas fuel is bunkered. Members of the German Meteorological Service and bathymetry group will remain on board for leg PS139/2. All other participants disembark in Las Palmas. A documentary filmmaker will join for leg PS139/2.

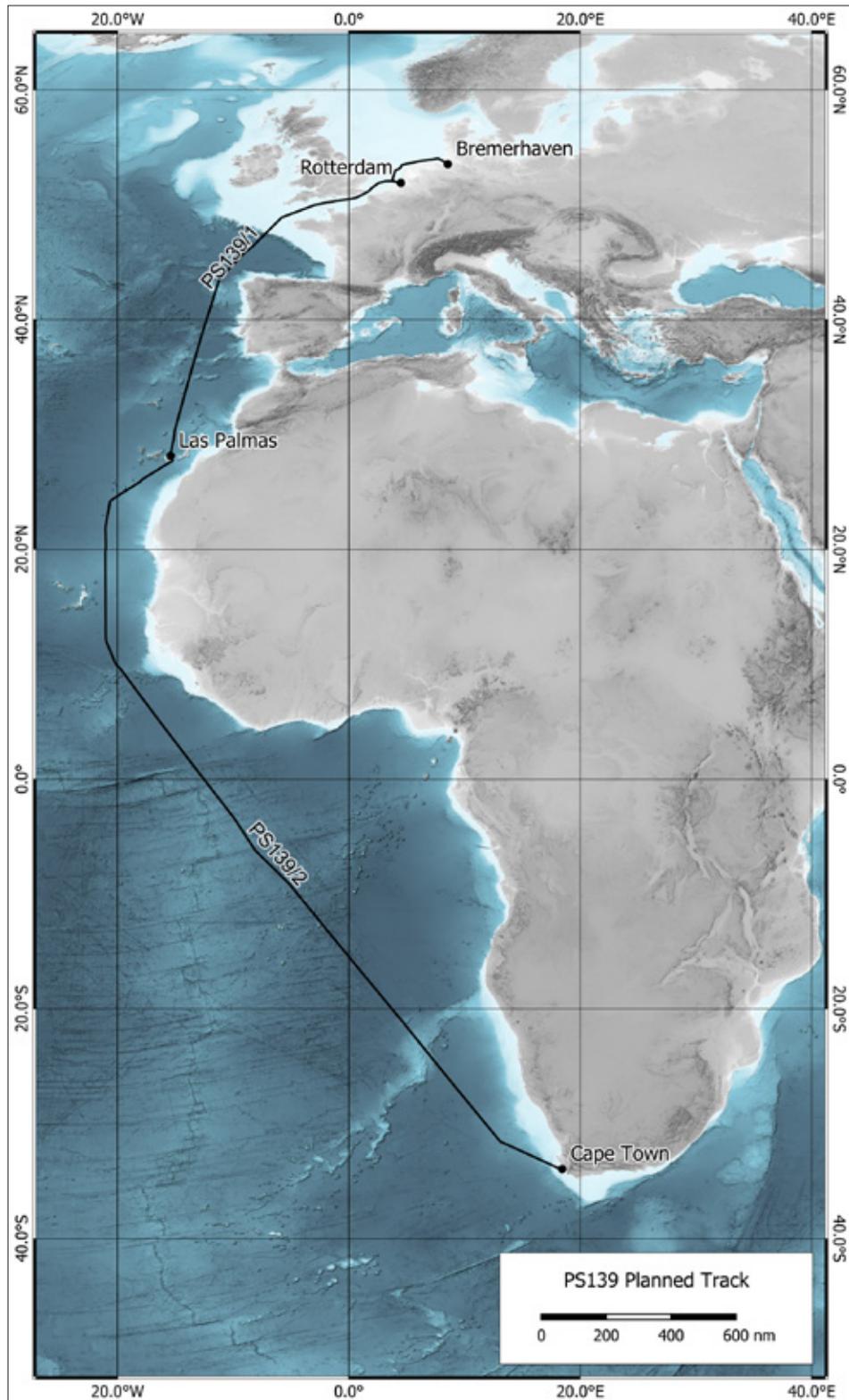


Abb. 1: Geplanter Fahrtverlauf der Expedition PS139

Fig. 1: Planned track of expedition PS139

2. BATHYMETRIC UNDERWAY MEASUREMENTS

Simon Dreutter¹, Boris Dorschel¹,
Mia Schumacher²

¹DE.AWI
²DE.GEOMAR

Grant-No. AWI_PS139_02

Objectives

Accurate knowledge of the seafloor topography, hence high-resolution bathymetry data, is a key basic information necessary to understand many marine processes. It is of particular importance for the interpretation of scientific data in a spatial context. Bathymetry, hence geomorphology, is furthermore a basic parameter for the understanding of the general geological setting of an area and geological processes such as erosion, sediment transport and deposition. Even information on tectonic processes can be inferred from bathymetry. Supplementing the bathymetric data, high-resolution sub-bottom profiler data of the top 10s of meters below the seabed provide information on the sediments at the seafloor and on the lateral extension of sediment successions.

While world bathymetric maps give the impression of a detailed knowledge of worldwide seafloor topography, most of the world's ocean floor remains unmapped by hydroacoustic systems. In these areas, bathymetry is modelled from satellite altimetry with a corresponding low resolution. Satellite-altimetry derived bathymetry therefore lack the resolution necessary to resolve small- to meso-scale geomorphological features (e.g. sediment waves, glaciogenic features and small seamounts). Ship-borne multibeam data provide bathymetry information in a resolution sufficient to resolve those features. The collection of underway data during PS139 will contribute to the bathymetry data archive at the AWI and therefore contribute to bathymetric world datasets like GEBCO (General Bathymetric Chart of the Ocean).

Work at sea

Bathymetric data will be recorded with the hull-mounted multibeam echosounder Teledyne Reson HYDROSWEEP DS3. The main task of the bathymetry group is to run hydroacoustic systems during transit. The raw bathymetric data will be corrected for sound velocity changes in the water column, and will be further processed and cleaned for erroneous soundings and artefacts.

Sound velocity profiles will be collected with a CTD (Conductivity Temperature Depth), an Underway CTD, or an SVP (Sound Velocity Probe) whenever possible.

Preliminary (expected) results

Expected results will consist of high-resolution seabed maps along the cruise track.

Data management

Geophysical and oceanographic data will be archived, published and disseminated according to international standards by the World Data Center PANGAEA Data Publisher for Earth &

Environmental Science (<https://www.pangaea.de>) within two years after the end of the cruise at the latest. By default, the CC-BY license will be applied. Furthermore, bathymetric data will be provided to the Nippon Foundation – GEBCO Seabed 2030 Project.

This expedition was supported by the Helmholtz Research Programme “Changing Earth – Sustaining our Future” Topic 2, Subtopic 3 Sea Level Change.

In all publications based on this expedition, the **Grant No. AWI_ PS139_02** will be quoted and the following publication will be cited:

Alfred-Wegener-Institut Helmholtz-Zentrum für Polar- und Meeresforschung (2017) Polar Research and Supply Vessel POLARSTERN Operated by the Alfred-Wegener-Institute. Journal of large-scale research facilities, 3, A119. <http://dx.doi.org/10.17815/jlsrf-3-163>.

3. ECHOSOUNDING TRAINING POLMAR-TRAIN

Claudia Hanfland¹, Tabea Altenbernd-Lang¹,
Bernhard Diekmann¹, Boris Dorschel¹,
Estella Weigelt¹

¹DE.AWI

Grant-No. AWI_PS139_01

Objectives

The project POLMAR-TRAIN is a training course jointly run by the AWI-based Helmholtz Graduate School for Polar and Marine Research (POLMAR) and the University of Bremen, Department of Geosciences.

It offers Master students and doctoral candidates from geosciences and related disciplines a hands-on training in operating the hull-mounted echosounding systems of *Polarstern* (multibeam echosounder Teledyne Reson HYDROSWEEP DS3 and sediment echosounder Parasound P70). Both systems will be operated continuously between Bremerhaven and Las Palmas. The course is part of the programme “Master of Sciences Marine Geosciences” at the University of Bremen. This ship-based training complements the PhD education offered by POLMAR. Students will be trained in data acquisition, evaluation, interpretation and visualisation with *en route* collected examples as well as published case studies. This training format has been carried out every other year since 2014.

Work at sea

After embarkation, students will start with a half-day introduction to get familiar with the principles of hydro-acoustic data acquisition, to learn how to use the required software and to know how to operate the echosounding systems. Participants will be trained in all parts of the systems and go on watches in 2-hours shifts at day and 4-hours shifts at night. They will learn about sediment properties, reflector horizons, bottom topography and the principles of sediment acoustics.

Practical training on the systems will be complemented through plenary lectures and software training in smaller groups to discuss published case studies. Being able to combine and interpret sediment core and multibeam-bathymetric data with Parasound profiles is a further learning outcome.

Participants will also be introduced to survey planning, data handling, editing, and visualization with different kind of profiling and GIS mapping software. Being able to produce a map from originally raw data will be one of the outcomes participants can “take home”.

Station time will comprise a CTD cast in the Bay of Biscay. Time permitting, the sound velocity profiler will be deployed for calibration purposes.

Besides the watch duties and learning sessions, students will give a 15-minute presentation on their individual research project (Ms or PhD) and the relevance of the course content for their project. Given the composition of participants (both Master and PhD students), participants will

greatly benefit from each other. By experience we know that peer-learning is an added value in every course. Working and living together on a ship will foster this exchange. Master students can further clarify their motivation for their next career step, e.g. whether following a PhD is an option for them.

Preliminary (expected) results

Expected results will consist of high-resolution seabed and sedimentary maps along the cruise track.

Data management

Environmental data will be archived, published and disseminated according to international standards by the World Data Center PANGAEA Data Publisher for Earth & Environmental Science (<https://www.pangaea.de>) within two years after the end of the cruise at the latest. By default, the CC-BY license will be applied. Furthermore, bathymetric data will be provided to the Nippon Foundation – GEBCO Seabed 2030 Project.

In all publications based on this expedition, **the Grant No. AWI_ PS139_01** will be quoted and the following publication will be cited:

Alfred-Wegener-Institut Helmholtz-Zentrum für Polar- und Meeresforschung (2017) Polar Research and Supply Vessel POLARSTERN Operated by the Alfred-Wegener-Institute. Journal of large-scale research facilities, 3, A119. <http://dx.doi.org/10.17815/jlsrf-3-163>.

4. ***IN SITU* ANALYSES OF METHAN CONCENTRATION AND ITS STABLE CARBON ISOTOPIC SIGNATURE ($\delta^{13}\text{C-CH}_4$) IN THE LOWER ATMOSPHERE ALONG THE SHIP TRACK**

Not on board: Ellen Damm¹, Markus Rex¹

¹DE.AWI

Grant-No. AWI_PS139_04

Objectives

The main objective is to record a time series of the atmospheric concentration and stable carbon isotopic signature of methane in the lower atmosphere along the ship track from Bremerhaven to Cape Town. Methane is the second most important human-influenced greenhouse gas in terms of climate forcing, after carbon dioxide. For methane, both bottom-up and top-down approaches are subject to large uncertainties, leading to a significant mismatch in modelling.

Work at Sea

In situ analyses will be carried out with the Picarro 2132 installed on *Polarstern*. The air inlet will be localized on Peildeck.

Preliminary (expected) results

The time series will contribute to quantify methane sources and sinks along a north-south transect in the Atlantic Ocean and to improve the process understanding needed for the improvement of the model parameterization

Data management

Environmental data will be archived, published and disseminated according to international standards by the World Data Center PANGAEA Data Publisher for Earth & Environmental Science (<https://www.pangaea.de>) within two years after the end of the cruise at the latest. By default, the CC-BY license will be applied.

This expedition was supported by the Helmholtz Research Programme “Changing Earth – Sustaining our Future” Topic 2, Subtopic 1 Warming Climates.

In all publications based on this expedition, **the Grant No. AWI_PS139_04** will be quoted and the following publication will be cited:

Alfred-Wegener-Institut Helmholtz-Zentrum für Polar- und Meeresforschung (2017) Polar Research and Supply Vessel POLARSTERN Operated by the Alfred-Wegener-Institute. Journal of large-scale research facilities, 3, A119. <http://dx.doi.org/10.17815/jlsrf-3-163>.

5. ENVIRONMENTAL TRANSPORT OF LEGACY AND EMERGING ORGANIC CONTAMINANTS IN THE ATLANTIC OCEAN

Zhiyong Xie¹

¹DE.Hereon

Grant-No. AWI_PS139_03

Outline

Legacy and emerging organic contaminants can enter the coast, marine and ocean environment by a number of processes (Xie et al., 2022a). Once introduced they are subject to biogeochemical cycling, sinks, and bioaccumulation process in the ocean. Apart from the discharge of the rivers and runoff, atmosphere is considered the primary and most rapid pathway for pollutant transport to the coast and marine environment as a result of their hydrophobic and semi-volatile nature, respectively (Xie et al., 2020). During PS139/1&2 we sample high-volume air and seawater to determine emerging and legacy organic contaminants in moderate latitudes of the Northern and Southern hemisphere in proposal to further investigate their up to date levels and air-sea interactions in remote oceans. The research program is focused on the determination of selected organic contaminants in air and water, which is subdivided into several major groups. Considering ocean currents and fronts, the origin of air masses as well as changing air-sea gradients of pollutants, field study-based analysis of long oceanic transects from source regions to remote areas are considered a promising approach to improve the understanding of the underlying transport mechanisms (Xie et al., 2022b)

Objectives

The investigation of emerging and legacy organic contaminants (PFAS, BFR, OPFR, PAE, UV filters, alkyl phenols, PPCPs and pesticides) in this project aims to improve the knowledge for a better understanding of the occurrence, distribution and transport pathways of chemical contaminants. The main objectives are

- To provide data sets on the occurrence and distribution of selected emerging organic contaminants in atmospheric and seawater samples along latitudinal transects from the north to the south Atlantic Ocean,
- To evaluate atmospheric transport mechanisms of microplastics and related organic chemical additives,
- To compare data on legacy persistent organic pollutants to earlier data regarding temporal trends and the efficacy of international regulations,
- To investigate atmospheric and oceanic transport pathways along the sampling transects with respect to the possible source regions Europe and Africa,
- To improve the understanding of the underlying transport mechanisms based on ocean currents,

- To estimate air-sea gas exchange fluxes and atmospheric deposition of the investigated emerging organic contaminants.

Work at sea

Air sampling. Two high-volume air samplers will be mounted on the upper deck of the research vessel. While airborne particles will be collected on quartz fibre filters, the gaseous compounds will be trapped on PUF/XAD-2 glass cartridges. Field blanks will be prepared by espousing the PUF/XAD-2 column and quartz fibre filters shortly to the sampling site. The samples will be stored at -20°C until sample extraction in a clean laboratory (Xie et al. 2011).

Water sampling. 1 L surface seawater will be collected in polypropylene bottles for analysis of PFAS and PPCP. They will be taken from the ship's seawater intake system (stainless steel pipe) in 11 m depth at regular intervals along the cruise track. Simultaneously, another 1 L surface seawater will be collected in glass bottle and filtered on board, and then stored in cooling room at 5°C. besides, 1L seawater samples will be also collected from CTD in order to determine the vertical profile of chemical contaminants in the water column.

High-volume water sampling. High volume seawater about 100-500 L are collected in the wet lab via a seawater intake system. Samples are collected with a glass fibre filter for the particles and an XAD-2 resin column for the dissolved chemicals. Samples are stored at 0°C in the cooling room.

Preliminary (expected) results

To investigate the occurrence and the environmental fate of legacy and emerging organic contaminants, high-volume air and water samples will be simultaneously taken along PS139 cruise route. Concentrations of emerging organic contaminants in ocean waters and the atmosphere from southern Hemisphere will be investigated across several provinces of the Atlantic Ocean. Both the particulate and the gas or water phase will be analysed to identify the partitioning behaviour in the oceans and the atmosphere. Based on the data, the transport behaviour and long-range transport potential of emerging organic contaminants on the southern and northern Hemisphere will be studied, and the air-water exchange process will be estimated. Unknown substances and transform products of chemical contaminants will be identified with nontarget analysis and suspecting program.

Data management

Environmental data will be archived, published and disseminated according to international standards by the World Data Center PANGAEA Data Publisher for Earth & Environmental Science (<https://www.pangaea.de>) within two years after the end of the expedition at the latest. By default, the CC-BY license will be applied.

Any other data will be submitted to an appropriate long-term archive that provides unique and stable identifiers for the datasets and allows open online access to the data.

This expedition was supported by the Helmholtz Research Programme "Changing Earth – Sustaining our Future" Topic 4, Subtopic 4.1.

In all publications based on this expedition, the **Grant No. AWI_PS139_03** will be quoted and the following publication will be cited:

Alfred-Wegener-Institut Helmholtz-Zentrum für Polar- und Meeresforschung (2017) Polar Research and Supply Vessel POLARSTERN Operated by the Alfred-Wegener-Institute. Journal of large-scale research facilities, 3, A119. <http://dx.doi.org/10.17815/jlsrf-3-163>.

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- Xie Z, Zhang P, Wu ZL, Zhang S, Wei LJ, Mi LJ, Kuester A, Gandrass J, Ebinghaus R, Yang RQ, Wang Z, Mi W (2022b) Legacy and emerging organic contaminants in the polar regions. *Science of the Total Environment* 835. <https://doi.org/10.1016/j.scitotenv.2022.155376>
- Xie Z, Wang Z, Magand O, Thollot A, Ebinghaus R, Mi W, Dommergue A (2020) Occurrence of legacy and emerging organic contaminants in snow at Dome C in the Antarctic. *Science of the Total Environment* 741:140200. <https://www.sciencedirect.com/science/article/pii/S0048969720337219>
- Xie Z, Moller A, Ahrens L, Sturm R, Ebinghaus R (2011) Brominated Flame Retardants in Seawater and Atmosphere of the Atlantic and the Southern Ocean. *Environmental Science & Technology* 45(5):1820–1826. <https://pubs.acs.org/doi/10.1021/es103803t>

6. FILM PROJECT: WIND

Alexander Riedel¹

¹DE.Pellefilm

Grant-No. AWI_PS139_00

The documentary film WIND explains the significance of wind over the course of six episodes. We travel with the wind and feel the expansive freedom it provides across the globe. We experience its powerful forces and its gentle hugging, its terrifying violence and its ability to move.

At various locations along our journey, we witness people working on making the phenomenon of wind and its meteorological marvels on Earth measurable, striving to understand it better. The story is about a global vision: a complete and worldwide network of meteorological data for making precise forecasts to help protect us from upcoming climate challenges. Not only for the here and now – but also for future generations.

APPENDIX

A.1 TEILNEHMENDE INSTITUTE / PARTICIPATING INSTITUTES

A.2 FAHRTTEILNEHMER:INNEN / CRUISE PARTICIPANTS

A.3 SCHIFFSBESATZUNG / SHIP'S CREW

A.1 TEILNEHMENDE INSTITUTE / PARTICIPATING INSTITUTES

Affiliation	Address
DE.AWI	Alfred-Wegener-Institut Helmholtz-Zentrum für Polar- und Meeresforschung Postfach 120161 27515 Bremerhaven Germany
DE.BBS2	Berufsbildende Schulen 2 Aurich Am Schulzentrum 15 26605 Aurich Germany
DE.DWD	Deutscher Wetterdienst Seewetteramt Bernhard-Nocht-Str. 76 20359 Hamburg Germany
DE.GEOMAR	GEOMAR Helmholtz-Zentrum für Ozeanforschung Wischhofstr. 1-3 24148 Kiel Germany
DE.HEREON	Helmholtz-Zentrum hereon GmbH Max-Planck-Str. 1 21502 Geesthacht Germany
DE.LAEISZ	Reederei F. Laeisz GmbH Bartelstraße 1 27570 Bremerhaven Germany
DE.MWB	MWB Elektrotechnik Service GmbH Rudloffstr. 49 27568 Bremerhaven Germany
DE.P	Pelle Film Riedel & Timm GmbH Baaderstr. 45 80469 München Germany
DE.UNI-Bremen	Universität Bremen Klagenfurter Straße 2-4 28359 Bremen Germany

Expedition Programme PS139/1 and PS139/2

Affiliation	Address
DE.UNI-Potsdam	Universität Potsdam Am Neuen Palais 10 14469 Potsdam Germany
DE.UNI-Tübingen	Eberhard Karls Universität Tübingen Geschwister-Scholl-Platz 72074 Tübingen Germany
ES.Konsberg	Konsberg Discovery Partida Atalayas 20 03570 Villajoyosa Spain

A.2 FAHRTTEILNEHMER:INNEN / CRUISE PARTICIPANTS

PS130/1: Bremerhaven – Las Palmas				
Name/ Last name	Vorname/ First name	Institut/ Institute	Beruf/ Profession	Fachrichtung/ Discipline
Allertseder	Paula	DE.UNI-Potsdam	Student (Master)	Geology
Allner	Anke	DE.AWI	Other	Science Management
Altenbernd-Lang	Tabea	DE.AWI	Scientist	Geophysics
Audebert	Catherine, Josette	DE.AWI	Other	Science Management
Barfs	Fridtjof	DE.BBS2	Other	Biology
Beech	Nathan	DE.AWI	PhD student	Physics
Braun	Alexander	DE.UNI-Tübingen	Student (Master)	Data
Cornish	Natalie Roslyn	DE.AWI	Scientist	Geosciences
Correa Rojas	Claudia Ximena	DE.UNI-Bremen	Student (Master)	Geology
Crenan	Brieuc	DE.LAEISZ	Other	Logistics
Diekmann	Bernhard	DE.AWI	Scientist	Geology
Dorschel	Boris	DE.AWI	Scientist	Geophysics
Dreutter	Simon	DE.AWI	Technician	Geophysics
Freudinger	Christian	DE.AWI	Engineer	Logistics
Gerchow	Peter	DE.AWI	Engineer	Logistics
Giere	Luca	DE.UNI-Bremen	Student (Master)	Geology
Gupta	Aman	DE.UNI-Bremen	Student (Master)	Geosciences
Gürses	Can	DE.UNI-Bremen	Student (Master)	Geosciences
Hähnel	Uwe	DE.MWB	Engineer	Logistics
Hanfland	Claudia	DE.AWI	Scientist	Geology
Heyen	Matthis Remmer	DE.BBS2	Other	Physics
Jörss	Anna-Marie	DE.AWI	PhD student	Meteorology
Klingenberg	Malin	DE.UNI-Tübingen	Student (Master)	Public Outreach
Klinkhart	Jan	DE.AWI	Engineer	Logistics
Konyssova	Gaziza	DE.AWI	PhD student	Oceanography
Krocker	Ralf	DE.AWI	Engineer	Logistics
Lin	Tsai-Wen	DE.AWI	PhD student	Geosciences
Martin	Enrique	ES.KONSGBERG	Engineer	Logistics
Matthes	Jörg	DE.AWI	Engineer	Logistics

PS130/1: Bremerhaven – Las Palmas				
Name/ Last name	Vorname/ First name	Institut/ Institute	Beruf/ Profession	Fachrichtung/ Discipline
Mellat Ardakani	Moein	DE.AWI	PhD student	Geosciences
Niraula	Bimochan	DE.AWI	Scientist	Geosciences
Otto	Denise	DE.UNI-Bremen	Student (Master)	Geology
Pluder	Andreas	ES.KONSGBERG	Engineer	Logistics
Prasannakumar	Aparna	ES.KONSGBERG	Student (Master)	Geology
Rohleder	Christian	DE.DWD	Technician	Meteorology
Schätz	Lina Anita	DE.UNI-Bremen	Student (Master)	Geosciences
Schumacher	Mia	DE.GEOMAR	Technician	Geophysics
Selles Moreno	Javier	ES.KONSGBERG	Engineer	Logistics
Sievers	Oliver	DE.DWD	Scientist	Meteorology
Spettnagel	Ralf	DE.AWI	Technician	Logistics
Vasudeva	Deepanshu	DE.UNI-Bremen	Student (Master)	Geosciences
Vural	Deniz	DE.AWI	PhD student	Geology
Weigelt	Estella	DE.AWI	Scientist	Geophysics
Wiedenfeld	Alexandra	DE.MWB	Technician	Logistics
Xie	Zhiyong	DE.HEREON	Scientist	Chemistry

PS130/2: Las Palmas – Cape Town				
Name/ Last name	Vorname/ First name	Institut/ Institute	Beruf/ Profession	Fachrichtung/ Discipline
Dreutter	Simon	DE.AWI	Technician	Geophysics
Hoop	Denise	DE.LAEISZ	Engineer	Logistics
Riedel	Alexander	DE.P	Photographer	Public Outreach
Rohleder	Christian	DE:DWD	Technician	Meteorology
Schumacher	Mia	DE.AWI	Technician	Geophysics
Sievers	Oliver	DE:DWD	Scientist	Meteorology
Xie	Zhiyong	DE.HEREON	Scientist	Chemistry

A.3 SCHIFFSBESATZUNG / SHIP'S CREW

No.	Name/ Last name	Vorname/ First name	Position/ Rank
1	Schwarze	Stefan	Master
2	Kentges	Felix	C/M
3	Strauß	Erik	2/M
4	Dmoch	Renè	2/M
5	Hering	Igor	3/M
6	Grafe	Jens	C/E
7	Baehler	Stefanie	2/E
8	Beyer	Mario	2/E
9	Brose	Thomas	E/E Com.
10	Mueller	Andreas	E/E Brücke
11	Redmer	Jens	E/E SET
12	Zivanov	Stefan	E/E SET
13	Huettebraeucker	Olaf	E/E Labor
14	Pliet	Johannes Oliver	E/E Sys
15	Jaeger	Vladimir	E/E Winde
16	Krueger	Lars	E/E Winde
17	Kliemann	Olaf	Bosun
18	Meier	Jan	Bosun
19	Ehm	Lars-Ole	MPR
20	Haenert	Ove	MPR
21	Kistenmacher	Mario	MPR
22	Klaehn	Anton	MPR
23	Klee	Philipp	MPR
24	Klinger	Dana	MPR
25	Muenzenberger	Boerge	MPR
26	Niebuhr	Tim	MPR
27	Schwarz	Uwe	MPR
28	Wieckhorst	André	MPR
29	Neisner	Winfried	Carp.
30	Baecker	Andreas	AB
31	Burzan	Gerd-Ekkehard	AB
32	Preussner	Joerg	Fitter/E

Expedition Programme PS139/1 and PS139/2

No.	Name/ Last name	Vorname/ First name	Position/ Rank
33	Hofmann	Werner	Cook
34	Dietrich	Emilia Felizitas Ilse Lieselotte	2./Cook
35	Silinski	Frank	2./Cook
36	Wartenberg	Irina	C Stew.
37	TBN		Stew./Nurse
38	Arendt	Rene	2./Stew.
39	Braendli	Monika	2./Stew.
40	Dibenau	Torsten	2./Stew.
41	Silinski	Carmen	2./Stew.
42	Chen	Dansheng	2./Stew.
43	Cheng	Qi	2./Stew.
44	Goessmann-Lange	Petra	Ship's doctor
45	Deutschbein	Felix Maximilian	Trainee
46	Schroeder	Paul	Trainee

