



CCAMLR

Wednesday, 27 January 2021

**COMM CIRC 21/18**

**SC CIRC 21/13**

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## **Notification by Germany of a research expedition in Subareas 48.1, 48.5 and 48.6**

TO ALL MEMBERS OF THE COMMISSION AND THE SCIENTIFIC COMMITTEE

Please find attached information from Germany of its intention to undertake the CONTinental Shelf MULTidisciplinary flux Study (COSMUS) in the eastern and southern Weddell Sea on the RVIB *Polarstern* during February and March 2021.

Sincerely,

Dr David Agnew  
Executive Secretary

Attch.

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**Post** PO Box 213, North Hobart, Tasmania  
7002 Australia  
**Address** 181 Macquarie Street, Hobart,  
Tasmania 7000 Australia

**Web** [ccamlr.org](http://ccamlr.org)  
**Email** [ccamlr@ccamlr.org](mailto:ccamlr@ccamlr.org)

**Telephone** +61 3 6210 1111  
**Fax** +61 3 6224 8744

Dear David and colleagues,

I hope this message reaches all of you well and healthy in these extraordinary times. With this Circular, I kindly draw the attention of all CCAMLR members to vessel operations and research activities, which will be carried out under the Protocol on Environmental Protection to the Antarctic Treaty by Germany in the greater Weddell Sea (CCAMLR statistical areas 48.1, 48.5 and 48.6) in the current 2020/21 season (Attachment 1). In addition, you will find important information about the location of sub-surface oceanographic research moorings, which have been (or will be) deployed by the Alfred Wegener Institute, Helmholtz Centre for Polar and Marine Research, in CCAMLR statistical areas 48.1, 48.5 and 48.6. CCAMLR members are invited to forward this information to their respective fishing vessels to ensure that fishing operations and gear are not interfering with these scientific research investigations and the sub-surface oceanographic research moorings.

I would like to also take this opportunity to inform you about the recent revision of the factsheet and the video about the Weddell Sea MPA proposal. The up-dated versions can be found at

<https://www.awi.de/en/about-us/service/press/single-view/default-11d138e1cb.html>.

Please circulate this text and the attachment to all Scientific Committee and Commission contact points under CCAMLR.

Bernd Söntgerath

Head of Unit 614 (Seafisheries management and -control, IWC) Federal Ministry of Food and Agriculture (BMEL)

[bernd.soentgerath@bmel.bund.de](mailto:bernd.soentgerath@bmel.bund.de)

## **Attachment 1**

### **Research activities by Germany in the greater Weddell Sea (statistical areas 48.1, 48.5 and 48.6): Research cruises in the 2020/21 austral summer season and location of oceanographic moorings deployed by the Alfred Wegener Institute (AWI)**

Dear CCAMLR colleagues,

Germany would like to draw the attention of all CCAMLR members to vessel operations and research activities, which will be carried out by Germany in the greater Weddell Sea (CCAMLR statistical areas 48.1, 48.5 and 48.6) in the current 2020/21 season. All these research activities are taking place under the environment protocol to the Antarctic treaty and have been permitted by the respective national competent authorities, most by the German Environment Agency.

Germany would also like to inform CCAMLR members about the location of sub-surface oceanographic research moorings, which have been (or will be) deployed by the Alfred Wegener Institute, Helmholtz Centre for Polar and Marine Research, in CCAMLR statistical areas 48.1, 48.5 and 48.6.

CCAMLR members are invited to forward this information to their respective fishing vessels to ensure that fishing operations and gear are not interfering with these scientific research investigations and the sub-surface oceanographic research moorings.

#### **1. Summary of the planned expedition PS124 (COSMUS) from January - March 2021 in the greater Weddell Sea (statistical areas 48.5 and 48.6)**

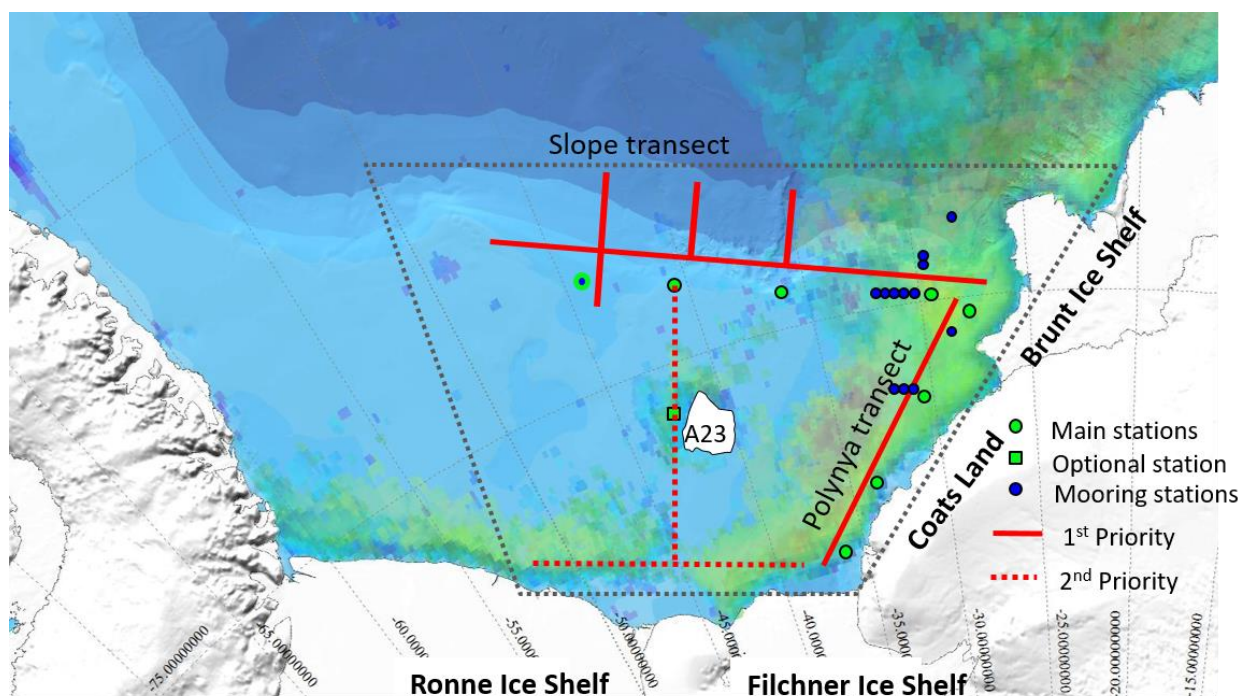
The objective of the expedition with the **German research icebreaker (RVIB) *Polarstern*** is to carry out a **CO**ntinental **S**helf **M**Ultidisciplinary flux **S**tudy (COSMUS) in the eastern and southern Weddell Sea (statistical areas 48.6 and 48.5). The intended working areas and their priorities are shown in Fig. 1. Depending on the sea ice conditions, the cruise track will switch between the continental shelf break in the northern Filchner Trough area and the narrow shelf east of the Filchner Trough.

The whole expedition has been planned and will be carried out under strict COVID-19 rules to ensure the safety and health of all personnel onboard. The crew and the international team of scientists comprising oceanography, bathymetry, sea ice physics, benthos biology, bio- and geochemistry experts from France, The Netherlands, Norway, South Africa, Switzerland, UK and Germany will undergo a 2 week quarantine and multiple COVID-19 testing prior to the start of the expedition. All travel arrangements have been made to ensure that there is no or minimum contact to other people during transfer.

#### **Scientific goals of the PS 124 (COSMUS) expedition**

On the southern Weddell Sea continental shelf, sea ice production and deep-water formation coincide spatially with a high seasonal primary production, which together suggests a significant export of biologically fixed CO<sub>2</sub> to great depth ('biological carbon pump'). At the same time, the formation of cold dense water blocks warm water masses to penetrate onto the continental shelf, thus, preventing

accelerated melting at the Filchner-Ronne Ice Shelf base. The ice shelf and the shallow marine sediments are potential sources of iron, which regulates algae blooms in the Southern Ocean and enables the high primary production rates on the continental shelf. Since climate change is expected to affect this region, it is necessary to analyse the interdependence of the physical, geochemical, and biological processes and to assess their significance for global features such as sea-level rise and CO<sub>2</sub> sequestration. As an interdisciplinary team, scientists on board therefore plan a comprehensive investigation focused on the ocean heat and mass transport, the coupled nutrient dynamics, and the conditions for biological production in this region. The goals are (i) to assess the potential for future warming of shelf waters and related ice shelf basal melting, (ii) to quantify the turnover of the biological carbon pump and understand its regulation, (iii) to determine the Antarctic shelf's contribution to global carbon and nutrient budgets, and (iv) to assess possible impacts of climate change on the marine Antarctic ecosystems of the south-eastern Weddell Sea and the corresponding / increasing need for their protection.



**Fig. 1:** Map of the southern Weddell Sea with chlorophyll-a distribution in colour together with planned hydrographic sections (different priorities), and location of mooring sites and multi-disciplinary stations.

## **2. Location of sub-surface oceanographic research moorings**

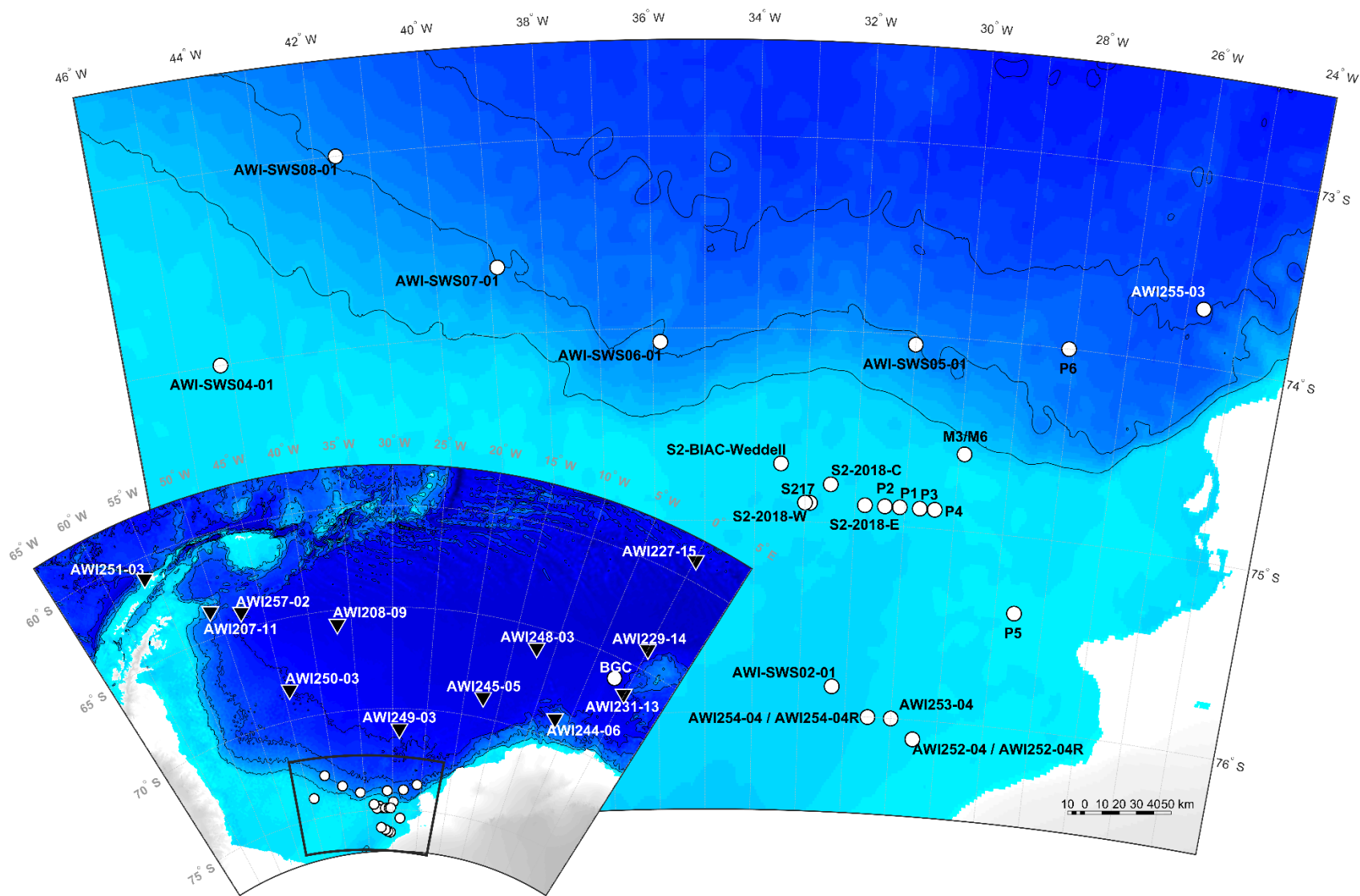
During the PS124 (COSMUS) expedition it is planned to recover 17 and deploy 20 oceanographic moorings along the continental slope of the southeastern Weddell Sea and in the northern Filchner Trough area for monitoring the water mass density structure and the onshore flow of warm water masses. The target mooring locations are listed in Tab. 1 below together with the locations of other sub-surface oceanographic research moorings deployed by AWI in previous years in the statistical areas 48.1, 48.5, and 48.6.

**Tab. 1: Sub-surface oceanographic research moorings, which have been deployed (or will be deployed) by the Alfred Wegener Institute in the CCAMLR area**

Note: The depth given for moorings to be deployed in the next 2020/2021 Antarctic season is an approximation and will depend on the ultimate location of the mooring. All moorings are positioned vertically in the water column with the top float about 400-300 m below the surface.

Yellow shading indicates Norwegian moorings, blue shading indicates French moorings, deployed by AWI/ RVIB Polarstern in the context of collaborative research projects with institutes from these countries.

<b>Moorings</b>	<b>statistical area</b>	<b>Latitude</b>	<b>Longitude</b>	<b>Depth (m)</b>	<b>Deployment (day / season)</b>
BGC-Mooring	48.6	66.0° S	2.0° W	3450	Jan-Mar 2021
AWI207-11	48.1	63.7° S	50.8° W	2555	29.01.2019
AWI227-15	48.6	59.0° S	00.1° E	4605	31.12.2018
AWI229-14	48.6	64.0° S	00.0° W	5060	01.01.2019
AWI231-13	48.6	66.5° S	00.1° W	4580	27.12.2018
AWI244-6	48.6	69.0° S	07.0° W	2900	05.01.2019
AWI248-3	48.6	66.0° S	12.2° W	4950	07.01.2019
AWI245-5	48.6	69.0° S	17.4° W	4734	08.01.2019
AWI249-3	48.5	71.0° S	29.0° W	4407	20.01.2019
AWI208-9	48.5	65.7° S	36.7° W	4766	23.01.2019
AWI250-3	48.5	68.5° S	44.1° W	4141	24.01.2019
AWI251-3	48.1	61.0° S	56.0° W	334.8	01.02.2019
AWI-252-4	48.5	76.1° S	30.5° W	465	Jan-Mar 2021
AWI-252-4R (SWS01-01)	48.5	76.1° S	30.5° W	465	Jan-Mar 2021
AWI-253-4	48.5	76.0° S	31.0° W	470	Jan-Mar 2021
AWI-254-4	48.5	76.0° S	31,5° W	600	Jan-Mar 2021
AWI-254-4R (SWS03-01)	48.5	76.0° S	31,5° W	600	Jan-Mar 2021
AWI-255-3	48.5	73.7° S	25,7° W	3260	Jan-Mar 2021
AWI257-2	48.5	64.2° S	47.5° W	4215	27.01.2019
AWI SWS02-01	48.5	76.0° S	31,9° W	700	Jan-Mar 2021
AWI SWS04-01	48.5	74.0° S	44,0° W	700	Jan-Mar 2021
AWI-SWS05-01	48.5	74.1° S	31.0° W	2000	Jan-Mar 2021
AWI-SWS06-01	48.5	74.2° S	34.9° W	2000	Jan-Mar 2021
AWI-SWS07-01	48.5	73.9° S	38.0° W	2000	Jan-Mar 2021
AWI-SWS08-01	48.5	73.4° S	40.5° W	2000	Jan-Mar 2021
S2-2018-E	48.5	74.9° S	31.8° W	630	Jan-Mar 2021
S217	48.5	74.9° S	32.9° W	600	Jan-Mar 2021
S2-2018-C	48.5	74.8° S	32.5° W	600	Jan-Mar 2021
S2-2018-W	48.5	74.9° S	33.0° W	600	Jan-Mar 2021
S2-BIAC-Weddell	48.5	74.7° S	33.5° W	600	Jan-Mar 2021
M3	48.5	74.6° S	29.9° W	800	Jan-Mar 2021
M6	48.5	74.6° S	29.9° W	530	Jan-Mar 2021
P1	48.5	74.9° S	31.1° W	580	Jan-Mar 2021
P2	48.5	74.9° S	31.4° W	540	Jan-Mar 2021
P3	48.5	74.9° S	30.7° W	480	Jan-Mar 2021
P4	48.5	74.9° S	30.4° W	440	Jan-Mar 2021
P5	48.5	75.4° S	28.6° W	420	Jan-Mar 2021
P6	48.5	74.0° S	28.1° W	2500	Jan-Mar 2021



**Fig. 1:** Map of the southern Weddell Sea showing the locations of sub-surface oceanographic research moorings listed in Tab. 1, which have been deployed (or will be deployed) by the Alfred Wegener Institute in the CCAMLR area.