# **PANGAEA**

# Data Publisher For Earth And Environmental Science

Janine Felden & PANGAEA Team

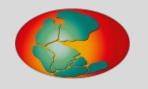






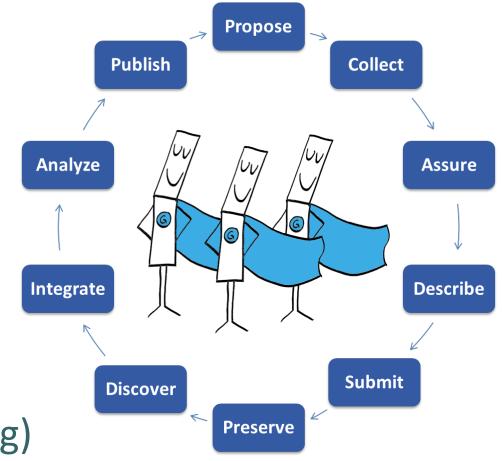


#### **GFBio - Services**



# Single point of contact for:

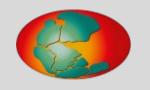
- Data management
- Long-term data archival
- Integrated data discovery
- Visualization and analyses
- Helpdesk (e.g. support, training)





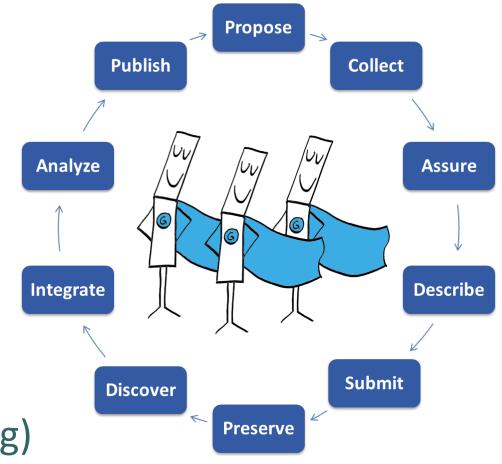


#### **GFBio - Services**



# Single point of contact for:

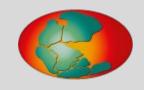
- Data management
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### **GFBio - Data Submission and Archiving**

















staatliche naturwissenschaftliche sammlungen bayerns

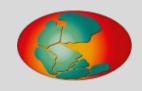








## **GFBio - Data Submission and Archiving**

















staatliche naturwissenschaftliche sammlungen bayerns

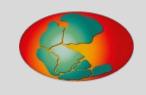


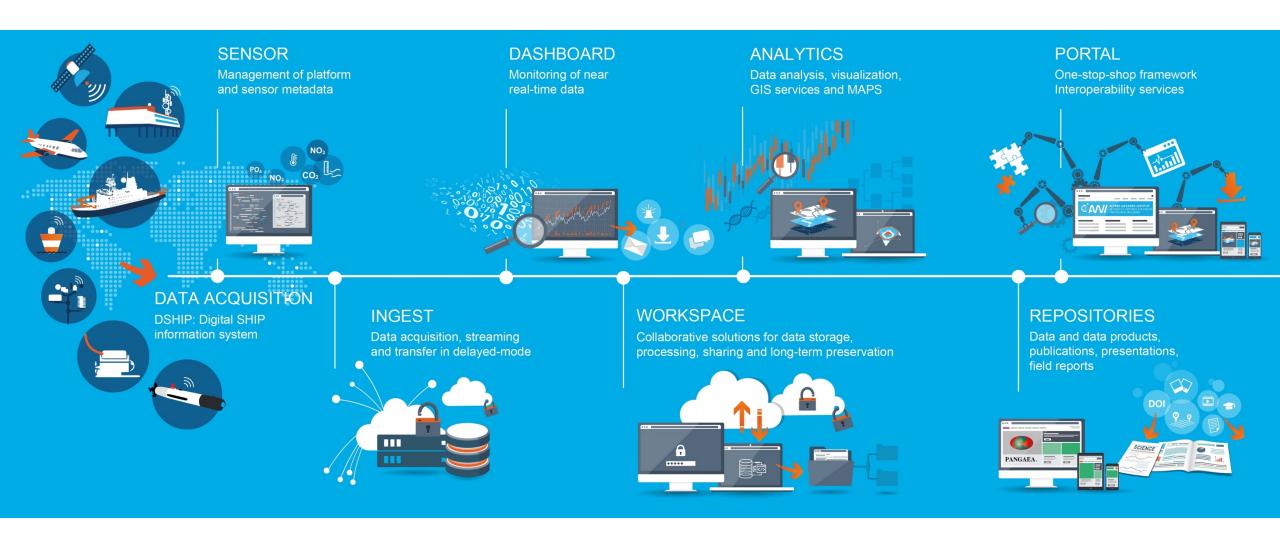






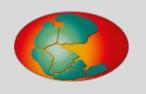
### **O2A:** Observation to Archive & Analyses

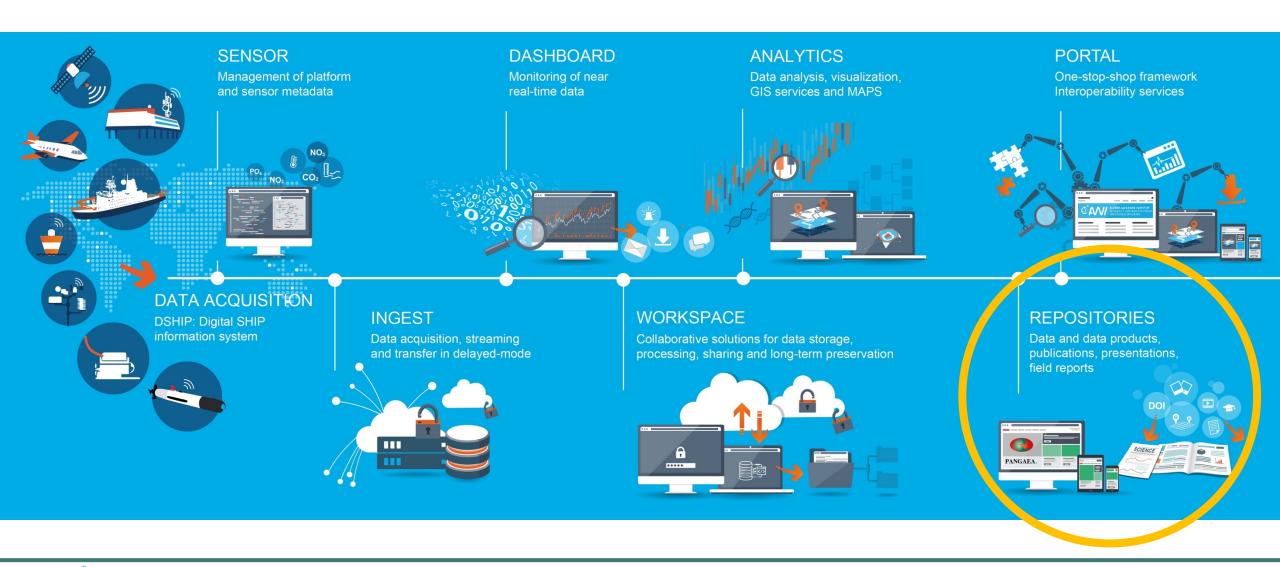






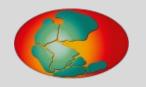
### **O2A:** Observation to Archive & Analyses



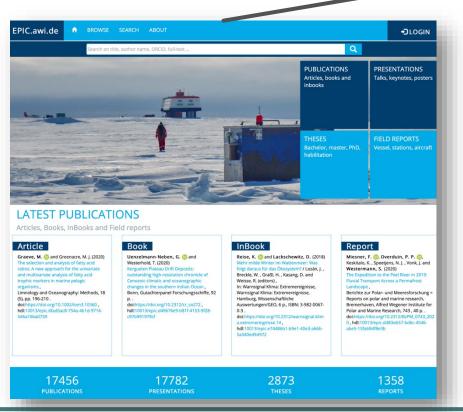


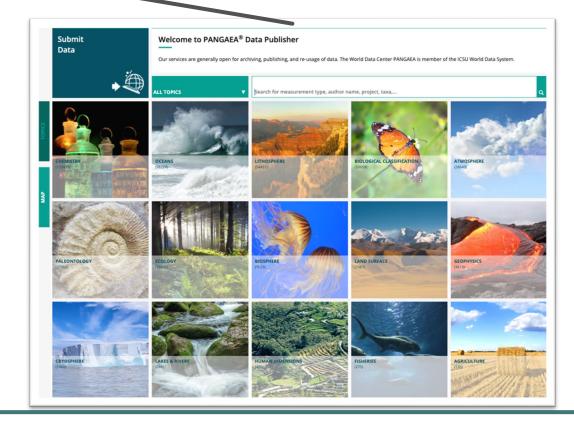


# **O2A:** Data Repositories



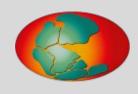


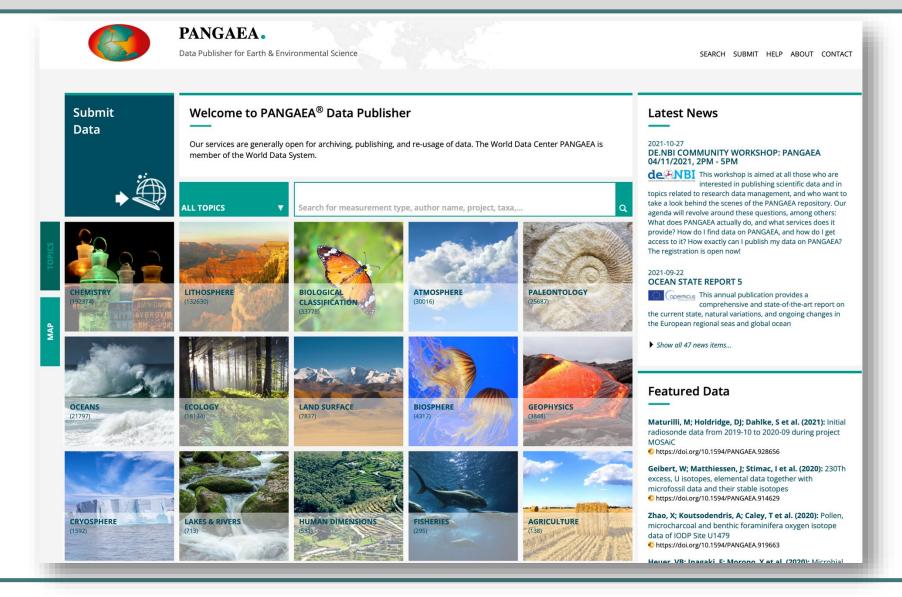






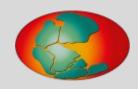
# PANGAEA de.NBI Community Workshop: 04/11/2021







# **PANGAEA** in 2021 - Organisation



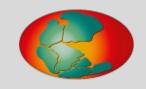
**Hosted by:** 







# PANGAEA in 2021 - Organisation



**Hosted by:** 





Managed by:



Prof. Dr. Frank Oliver Glöckner



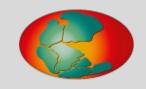
**Dr. Janine Felden** 



Dr. Michael Diepenbroek



# **PANGAEA** in 2021 - Organisation



**Hosted by:** 





Managed by:



Prof. Dr. Frank Oliver Glöckner

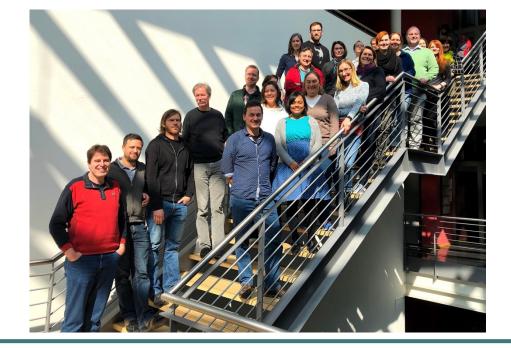


Dr. Janine Felden



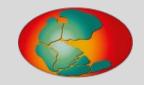
Dr. Michael Diepenbroek

Team:





#### **PANGAEA Clients**



• Research projects 🚣











Institutions





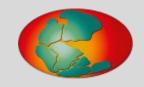








#### **PANGAEA Clients**



• Research projects 🚣







Institutions



CENTER OF APPLIED SPACE TECHNOLOGY AND MICROGRAVITY

Helmholtz Centre for Ocean Research Kiel



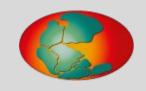


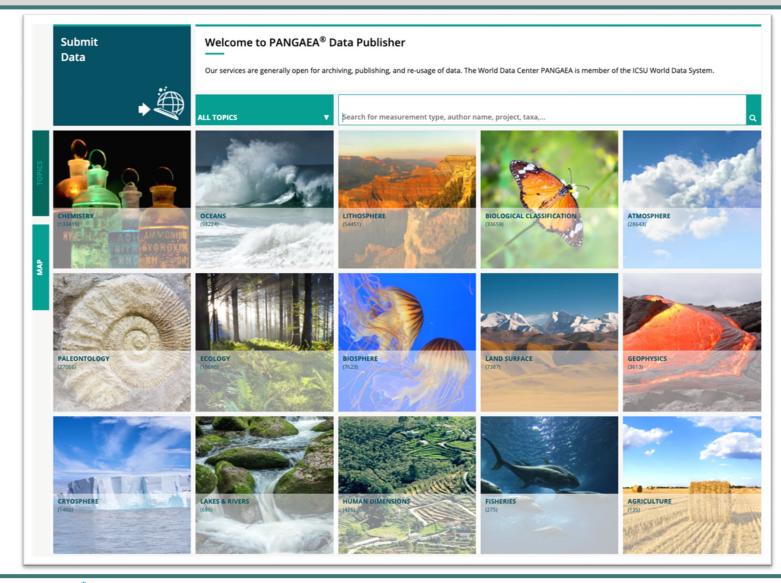
Individual researcher





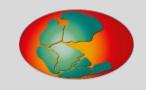
#### **PANGAEA in 2021 - Content**

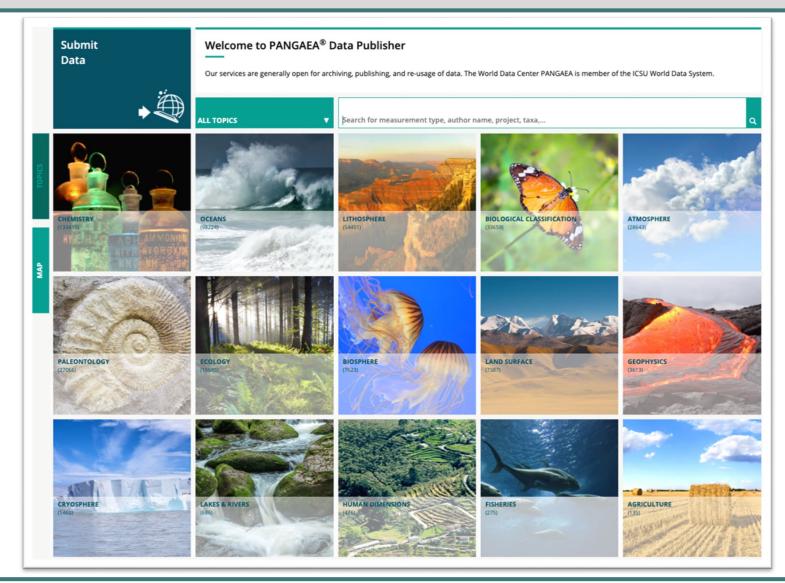






#### PANGAEA in 2021 – Content



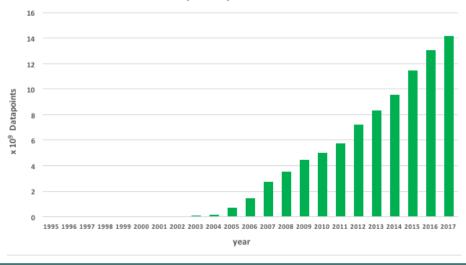


Data sets: > 400,000

Data items: ∼ 1.9 billion

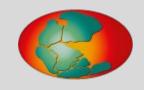
**Projects: 647** 

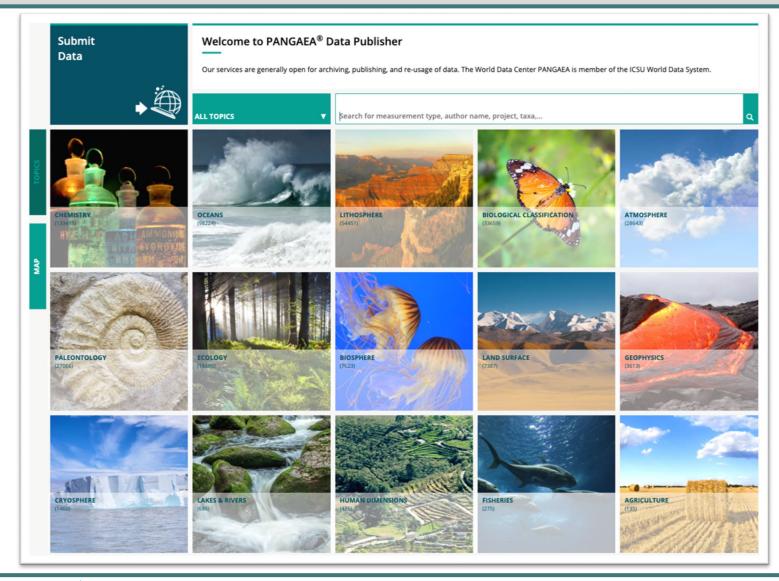
#### New datasets per year: ~ 10,000





#### PANGAEA in 2021 – Content



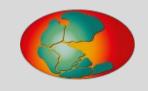


#### **Data Types:**

- Tabular data of e.g. environmental time series, biodiversity, sediment samples...
- Binary files e.g. images, movies, netCDF files...



# **FAIR Data Archiving & Publishing**

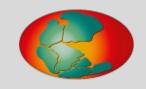


Indable Accessible Interoperable Reusable

Image credit: FAIR data principles by SangyaPundir at Wikimedia Commons



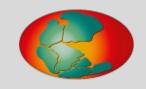
### Benefits of data publication



- Visibility more citations
- Credibility more credits
- Exchange improve accessibility



### Benefits of data publication



- Visibility more citations
- Credibility more credits
- Exchange improve accessibility

- Data authors ≠ paper authors
  - Acknowledging contributions of scientists, technicians, students, who generated the data, but did not contribute to the interpretation or manuscript writing
  - Authors of datasets: those who contributed to collection a processing of data
  - Follow general rules of good scientific practice



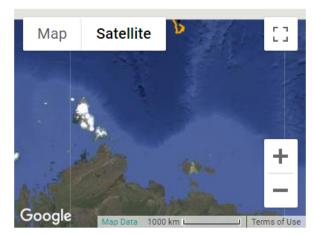
Citation:

**Nicolaus, Marcel; Fang, Yin-Chih; Hoppmann, Mario (2020):** Snow height on sea ice, meteorological conditions and drift of sea ice from autonomous measurements from buoy 2019S79, deployed during MOSAiC 2019/20. *PANGAEA*,

https://doi.pangaea.de/10.1594/PANGAEA.923187 (DOI registration in progress)

Always quote citation above when using data! You can download the citation in several formats below.

RIS Citation BIBTEX Citation & Copy Citation © Facebook © Twitter Show Map Google Earth



Abstract:

Snow height was measured by the Snow Buoy 2019S79, an autonomous platform, installed on drifting sea ice in the Arctic Ocean during MOSAiC (Leg 1) 2019/20. The resulting time series describes the evolution of snow height as a function of place and time between 07 Oct 2019 and 28 Nov 2010 in sample intervals of 1 hour. The Snow Buoy consists of four independent sonar measurements representing the area (approx. 10 m\*\*2) around the buoy. The buoy was installed on pack ice. In addition to snow height, geographic position (GPS), barometric pressure, air temperature, and ice surface temperature were measured. Negative values of snow height occur if surface ablation continues into the sea ice. Thus, these measurements describe the position of the sea ice surface relative to the original snow-ice interface. Differences between single sensors indicate small-scale variability of the snow pack around the buoy. The data set has been processed, including the removal of obvious inconsistencies (missing values). Records without any snow height may still be used for sea ice drift and meteorological analyses.

**Documentation** 

Citation and

sharing tools

Keyword(s):

autonomous platform  $\mathbf{Q}$ ; buoy  $\mathbf{Q}$ ; drift  $\mathbf{Q}$ ; snow depth  $\mathbf{Q}$ 

Further details:

Buoy Deployment Report 2019S79 (pdf) Q

Project(s):

Sea Ice Physics @ AWI (AWI Sealce)

Current sea ice maps for Arctic and Antartic (meereisportal.de)

Multidisciplinary Ice-based Distributed Observatory (MIDO) Q

Multidisciplinary drifting Observatory for the Study of Arctic Climate (MOSAiC)

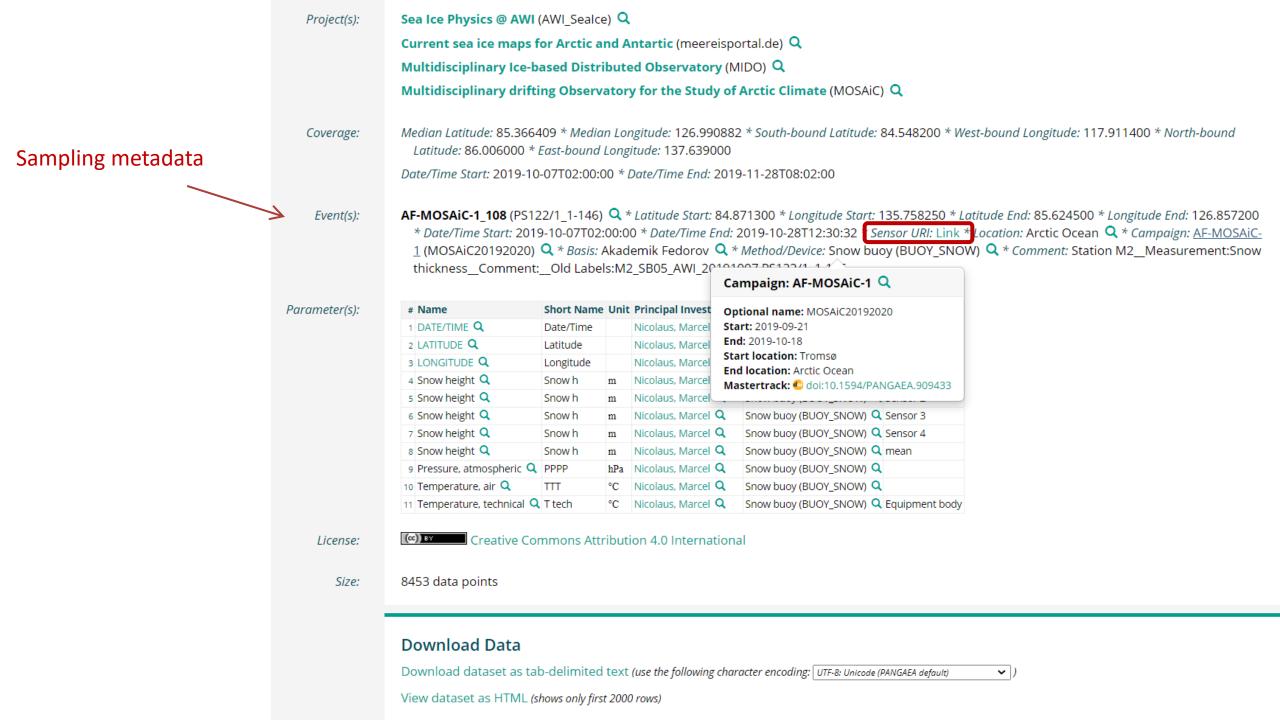
Project acknowledgement

Multidisciplinary drifting Observatory for the Study of Arctic Climate  $\,{\sf Q}\,$ 

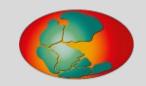
Label: MOSAiC

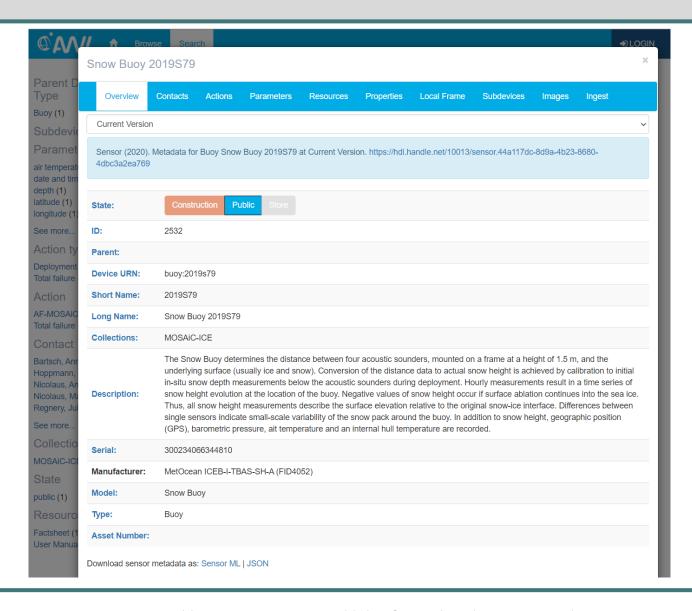
Funded by: Alfred Wegener Institute, Helmholtz Centre for Polar and Marine Research, Bremerhaven, grant/award no. AWI\_PS122\_00

0 \* West-bound Longitude: 117.911400 \* North-bound



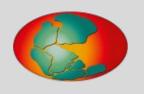
#### sensor.awi.de

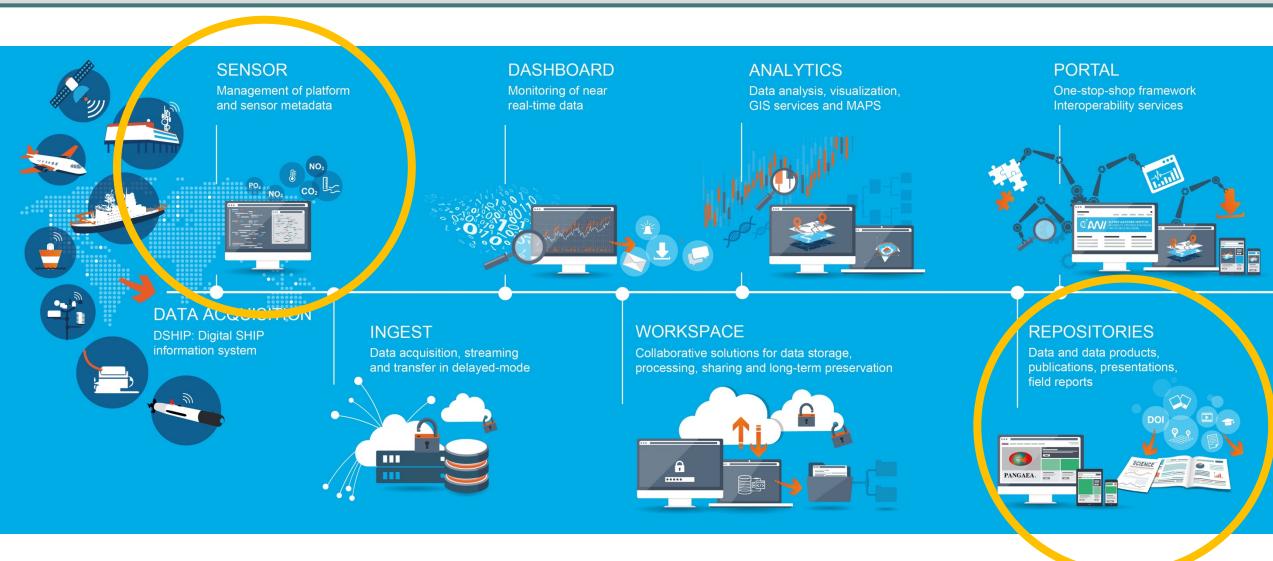






### **O2A:** Observation to Archive & Analyses





Event(s):

AF-MOSAiC-1\_108 (PS122/1\_1-146) Q \* Latitude Start: 84.871300 \* Longitude Start: 135.758250 \* Latitude End: 85.624500 \* Longitude End: 126.857200 \* Date/Time Start: 2019-10-07T02:00:00 \* Date/Time End: 2019-10-28T12:30:32 \* Sensor URI: Link \* Location: Arctic Ocean Q \* Campaign: AF-MOSAiC-1 (MOSAiC20192020) Q \* Basis: Akademik Fedorov Q \* Method/Device: Snow buoy (BUOY\_SNOW) Q \* Comment: Station M2\_Measurement:Snow thickness\_Comment:\_Old Labels:M2\_SB05\_AWI\_20191007,PS122/1\_1-146

Parameter(s):

#	Name	<b>Short Name</b>	Unit	<b>Principal Investigator</b>	Method/Device	Comment
1 🏭	DATE/TIME <b>Q</b>	Date/Time		Nicolaus, Marcel Q		Geocode
2 🏭	LATITUDE <b>Q</b>	Latitude		Nicolaus, Marcel <b>Q</b>		Geocode
3 🏭	LONGITUDE <b>Q</b>	Longitude		Nicolaus, Marcel Q		Geocode
4 🏭	Snow height 🔍	Snow h	m	Nicolaus, Marcel <b>Q</b>	Snow buoy (BUOY_SNOW) Q	Sensor 1
5 🏭	Snow height Q	Snow h	m	Nicolaus, Marcel Q	Snow buoy (BUOY_SNOW) Q	Sensor 2
6 🏭	Snow height Q	Snow h	m	Nicolaus, Marcel <b>Q</b>	Snow buoy (BUOY_SNOW) Q	Sensor 3
7 🏭	Snow height Q	Snow h	m	Nicolaus, Marcel Q	Snow buoy (BUOY_SNOW) Q	Sensor 4
8 🏭	Snow height Q	Snow h	m	Nicolaus, Marcel Q	Snow buoy (BUOY_SNOW) Q	mean
9 🏭	Pressure, atmospheric 🔍	PPPP	hPa	Nicolaus, Marcel Q	Snow buoy (BUOY_SNOW) Q	
10 🏭	Temperature, air 🔍	TTT	°C	Nicolaus, Marcel Q	Snow buoy (BUOY_SNOW) Q	
1 🏭	Temperature, technical Q	T tech	°C	Nicolaus, Marcel Q	Snow buoy (BUOY_SNOW) Q	Equipment bo

License:

Creative Commons Attribution 4.0 International

Size:

8453 data points

#### Data

Parameters, units



#### Data

Download dataset as tab-delimited text (use the following character encoding: UTF-8: Unicode (PANGAEA default)

1 <b>0</b>	2 <b>0</b>	3 <b>0</b>	4 <b>8</b> 🐼	5 😝 🖾 Spour b [m]	6 <b>8</b> 🐼	7 <b>8</b> 🖾	8 <b>8</b> 🖾	9 <b>6</b> 🖬	10 <b>6</b>	
Date/Time	Latitude	Longitude	(Sensor 1)	(Sensor 2)	(Sensor 3)	Snow h [m] (Sensor 4)	(mean)	PPPP [nPa]	III [°C]	(Equipment body)
2019-10-07T02:00:00	84.8720	135.7358						1023.5	-5.9	-2.0
2019-10-07T03:00:00	84.8708	135.7702						1023.2	-6.0	-1.7
2019-10-07T04:00:00	84.8694	135.8062						1023.0	-6.0	-1.6
2019-10-07T05:00:00	84.8676	135.8422	0.114	0.14		0.12	0.125	1022.7	-6.0	-1.5
2019-10-07T06:00:00	84.8654	135.8788	0.114	0.14		0.12	0.125	1022.4	-5.9	-1.4
2019-10-07T07:00:00	84.8630	135.9138	0.124	0.14		0.12	0.128	1022.0	-6.1	-1.3
2019-10-07T08:00:00	84.8606	135.9468	0.124	0.14	0.13	0.12	0.129	1021.6	-6.0	-1.2
2019-10-07T09:00:00	84.8584	135.9796	0.124	0.14	0.13	0.12	0.129	1021.3	-5.6	-1.2
2019-10-07T10:00:00	84.8560	136.0152	0.124	0.14	0.13	0.12	0.129	1021.2	-5.3	-1.1
2019-10-07T11:00:00	84.8536	136.0572	0.124	0.14	0.13	0.12	0.129	1020.5	-5.8	-1.0
2019-10-07T12:00:00	84.8512	136.1066	0.114	0.14	0.13	0.12	0.126	1019.8	-6.0	-1.0

#### Status (in review)

Password protection ———

Dataset collection ————

Citation: Granskog, Mats A; Høyland, Knut V; De La Torre, Pedro R; Divine, Dmitry; Katlein, Christian; Itkin, Polona; Raphael, Ian; Olsen, Lasse M (2020):

Temperature and heating induced temperature difference measurements from the sea ice mass balance SIMBA 2020T60 from one.

https://doi.pangaea.de/10.1594/PANGAEA.924 (69 (dataset in review)

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Abstract:

Temperature and heating-induced temperature differences were measured along a chain of thermistors. SIMBA 2020T60 (a.k.a. HAVOC 0101) is an autonomous instrument that was installed on drifting sea ice in the Arctic Ocean during the 2nd leg of MOSAiC in February 2020. The thermistor chain was 10m long and included 250 sensors with a regular spacing of 4cm.

The resulting time series describes the evolution of temperature and temperature differences after two heating cycles of 30 and 120 s as a function of place, depth and time between 08 Jan 2020 and 22 Apr 2020 in sample intervals of 6 hours for temperature and 24 hours for temperature differences. The buoy was installed on the ridge crest known as SIRO.

In addition to temperature, geographic position, barometric pressure, air temperature measured 1m over the ice level, tilt and compass were measured. The data set has been processed as follows: obvious inconsistencies (missing values) and unrealistic values in position have been removed.

This instrument was deployed as part of the project Ridges - Safe HAVens for ice-associated Flora and Fauna in a Seasonally ice-covered Arctic OCean (HAVOC).

Keyword(s):

Autonomous buoy Q; Ice mass balance Q; Temperature Q; Thermistor Q

Further details:

SIMBA HAVOC0101 (SRSL UI 02943) deployment description (pdf) Q SIMBA HAVOC0101 (SRSL UI 02943) deployment record (pdf) Q

Project(s):

Ridges - Safe HAVens for ice-associated Flora and Fauna in a Seasonally ice-covered Arctic OCean (HAVOC) Q

Current sea ice maps for Arctic and Antartic (meereisportal.de) Q

Multidisciplinary drifting Observatory for the Study of Arctic Climate (MOSAiC) Q

Coverage:

Median Latitude: 86.585397 \* Median Longitude: 51.011861 \* South-bound Latitude: 84.101210 \* West-bound Longitude: 7.594640 \* North-bound Latitude: 88.653070 \* East-bound Longitude: 115.615480

Date/Time Start: 2020-01-08T09:00:17 \* Date/Time End: 2020-04-22T03:00:16

9

4 datasets

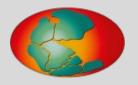
#### Download Data (login required)

Download ZIP file containing all datasets as tab-delimited text (use the following character encoding: UTF-8: Unicode (PANGAEA default)

#### Datasets listed in this bundled publication

- Granskog, MA; Høyland, KV; De La Torre, PR et al. (2020): Auxiliary data from the sea ice mass balance SIMBA 2020T60. https://doi.pangaea.de/10.1594/PANGAEA.924251
- Granskog, MA; Høyland, KV; De La Torre, PR et al. (2020): Heating induced temperature difference measurements from the sea ice mass balance SIMBA 2020T60: 120 s after the heating cycle. https://doi.pangaea.de/10.1594/PANGAEA.924268
- Granskog, MA; Høyland, KV; De La Torre, PR et al. (2020): Heating induced temperature difference measurements from the sea ice mass balance SIMBA 2020T60: 30 s after the heating cycle. https://doi.pangaea.de/10.1594/PANGAEA.924267
- Granskog, MA; Høyland, KV; De La Torre, PR et al. (2020): Temperature measurements from the sea ice mass balance SIMBA 2020T60. https://doi.pangaea.de/10.1594/PANGAEA.924265

### **FAIR Data Archiving & Publishing**



#### Citation:

Fernández-Méndez, Mar; Wenzhöfer, Frank; Peeken, Ilka; Sørensen, Heidi L; Glud, Ronnie N; Hendricks, Stefan; Nicolaus, Marcel; Katlein, Christian; Nöthig, Eva-Maria; Bakker, Karel; Boetius, Antje (2014): Biogeochemical characterization of pennate diatom and Melosira arctica ice algal aggregates in the Central Arctic Ocean collected in summer 2011 and 2012. PANGAEA, 6 https://doi.org/10.1594/PANGAEA.832345,

Supplement to: Fernández-Méndez, Mar; Wenzhöfer, Frank; Peeken, Ilka; Sørensen, Heidi L; Glud, Ronnie N; Boetius, Antje; Vopel, Kay (2014): Composition, Buoyancy Regulation and Fate of Ice Algal Aggregates in the Central Arctic Ocean. PLoS ONE, 9(9), e107452, thttps://doi.org/10.1371/journal.pone.0107452

■ Always quote above citation when using data! You can download the citation in several formats below.

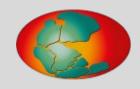
RIS Citation | BibTeX Citation | Text Citation | & Facebook | & Twitter | & Google + Show Map | Google Earth

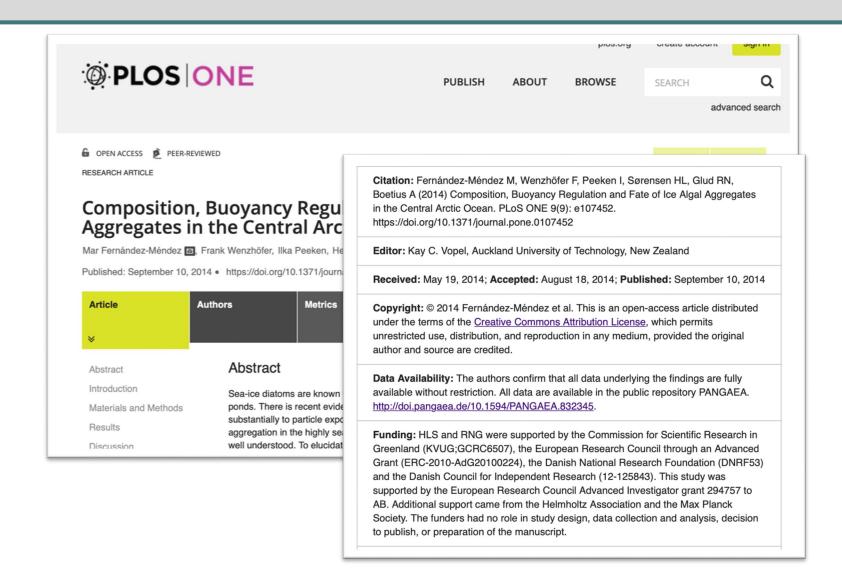
#### Abstract:

Sea-ice diatoms are known to accumulate in large aggregates in and under the sea ice including melt ponds. In the Arctic, they can contribute substantially to particle export when sinking from the ice. The role and regulation of microbial aggregation in the highly seasonal, nutrient- and light-limited Arctic sea-ice ecosystem is not yet well understood, and may vary in relation to the fate of the Arctic sea-ice cover. To elucidate the mechanism controlling the formation and export of algal aggregates from sea ice, we investigated samples taken in late summer 2011 and 2012, during two cruises to the Eurasian Basin of the Central Arctic Ocean. Dense, spherical aggregates composed mainly of pennate diatoms, and filamentous aggregates formed by Melosira arctica were found in different degradation stages, with carbon to Chlorophyll a ratios ranging from 110 to 66700, and carbon to nitrogen molar ratios of 8-35 and 9-40, respectively. Fresh sub-ice algal aggregate densities ranged between 1 and 17 aggregates/m\*\*2, corresponding to a net primary production of 0.4-40 mg C/m\*\*2/d, contributing 3-80% of total biomass and up to 94% of total production at a local scale. A key factor controlling buoyancy of the aggregates was light intensity, regulating photosynthetic oxygen production and flotation by gas bubbles trapped within the mucous matrix, even at low ambient nutrient concentrations. Our data was used to evaluate the factors regulating the distribution and importance of the Arctic algal aggregates as carbon source for pelagic and benthic communities.



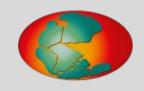
#### **Make Your Data Citation Count!**

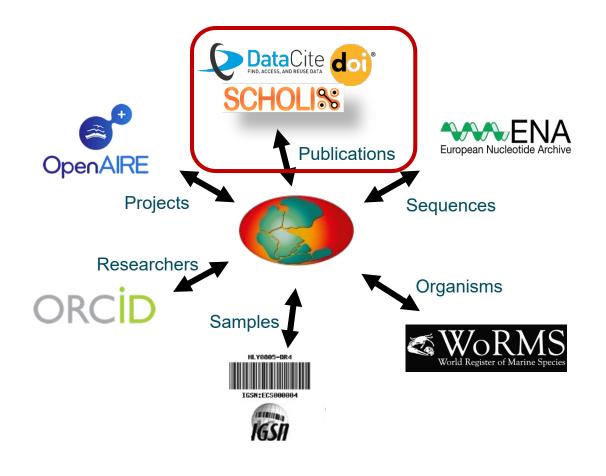




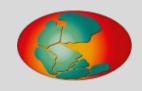


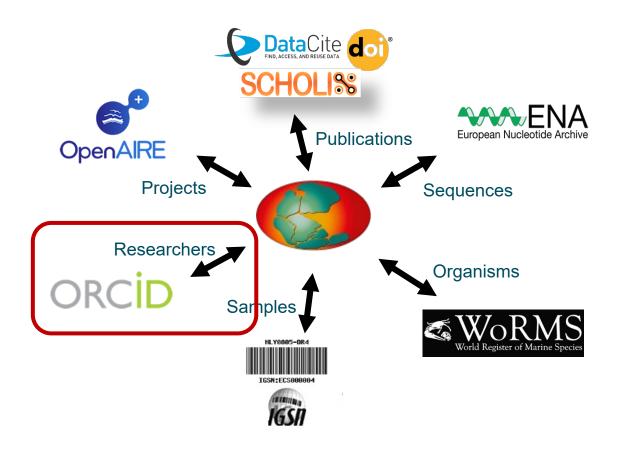




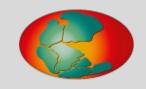


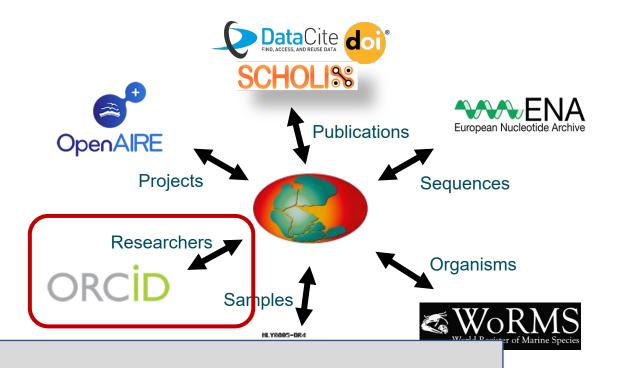








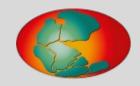






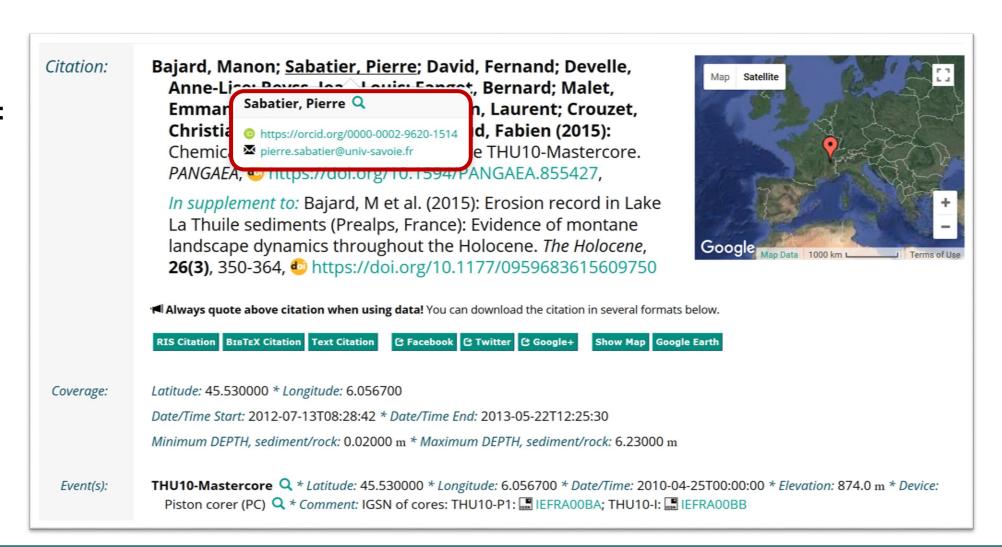
ORCID: Open Researcher and Contributor ID is a nonproprietary alphanumeric code to uniquely identify scientific and other academic authors and contributors.



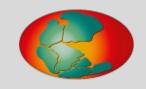


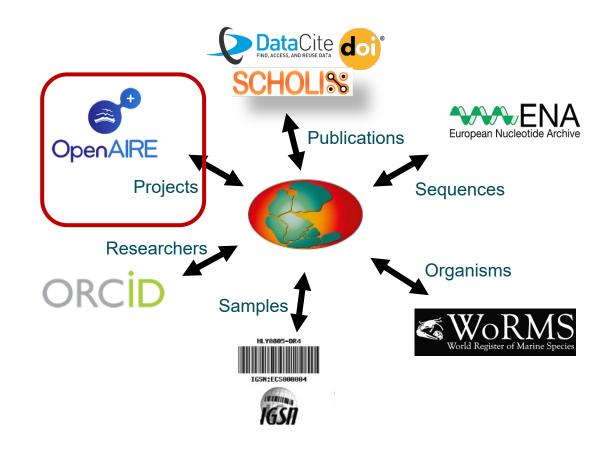
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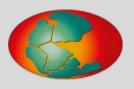


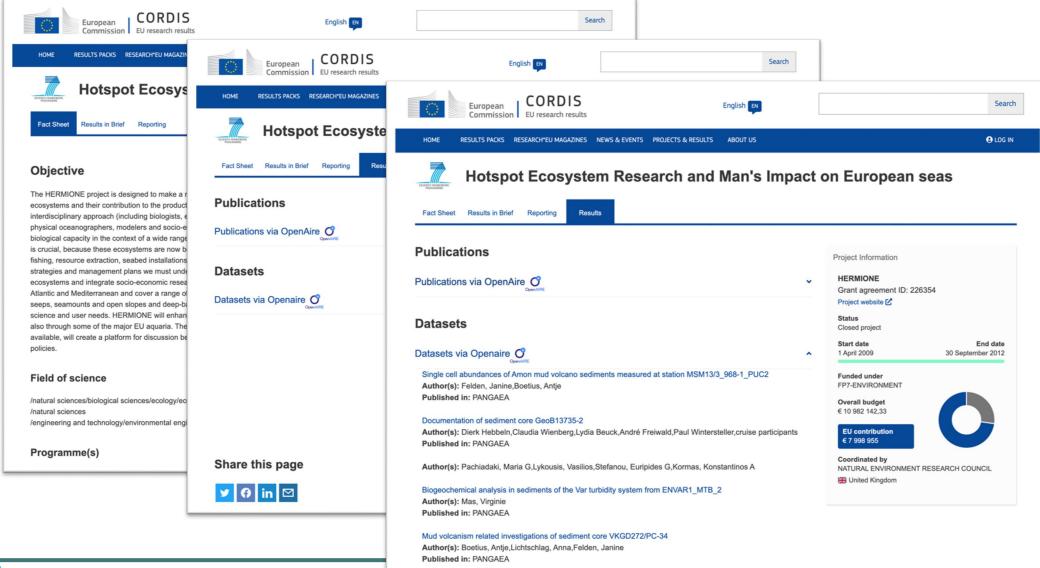






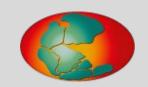
### **Cross Referencing – Open Air - CORDIS**





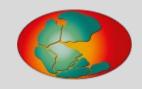


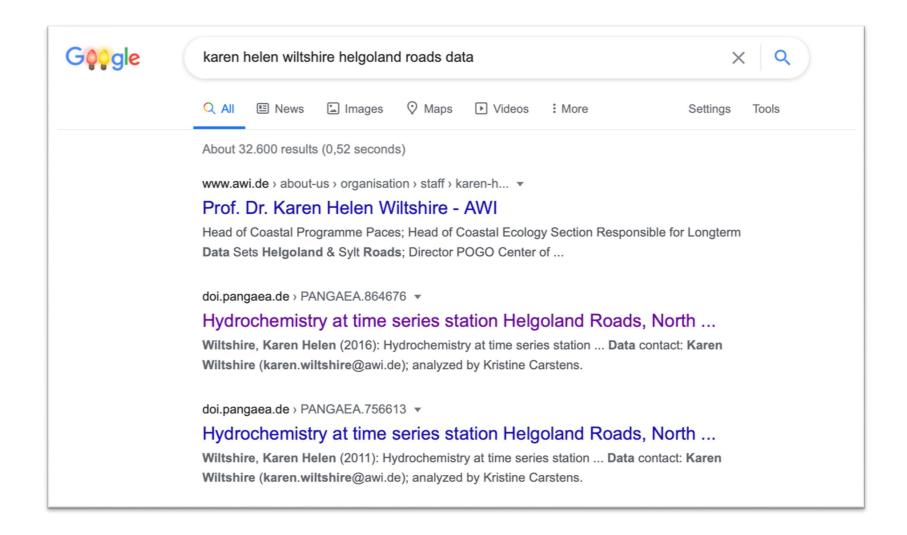
#### **Data Access**





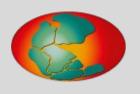
#### **Data Access - Google Search**







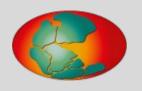
# **Data Access – Community Portal (e.g. GFBio)**

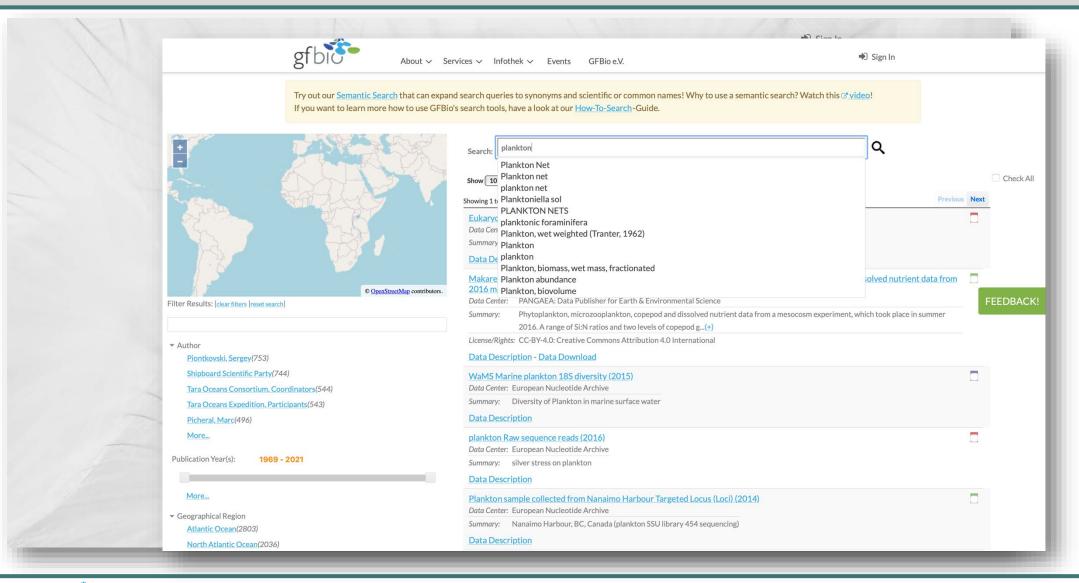






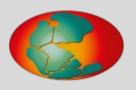
# Data Access - Community Portal (e.g. GFBio)

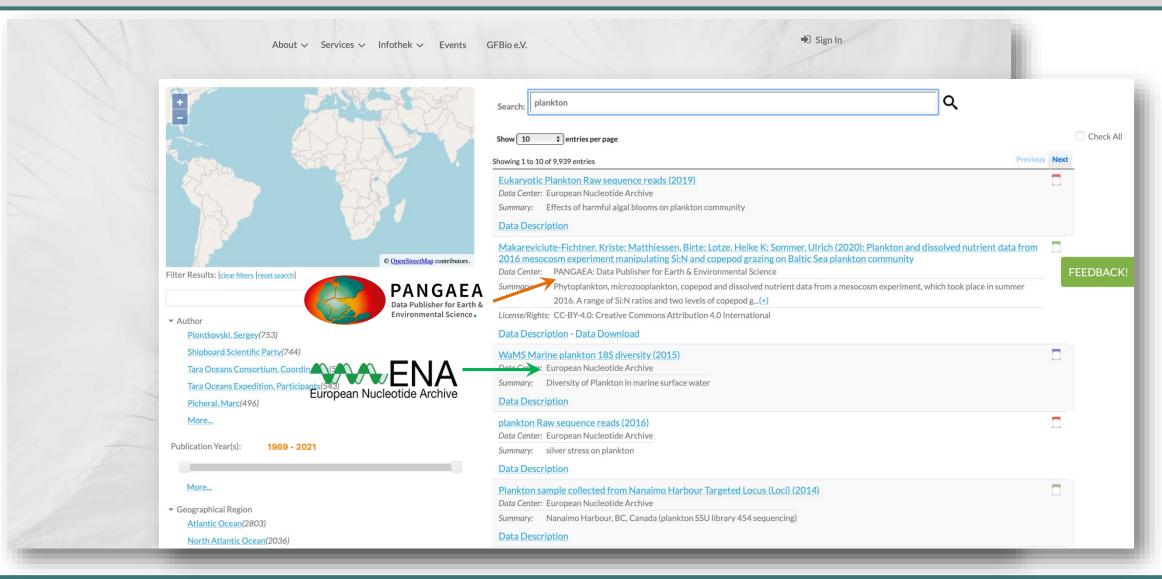






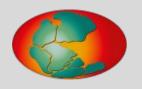
## Data Access – Community Portal (e.g. GFBio)

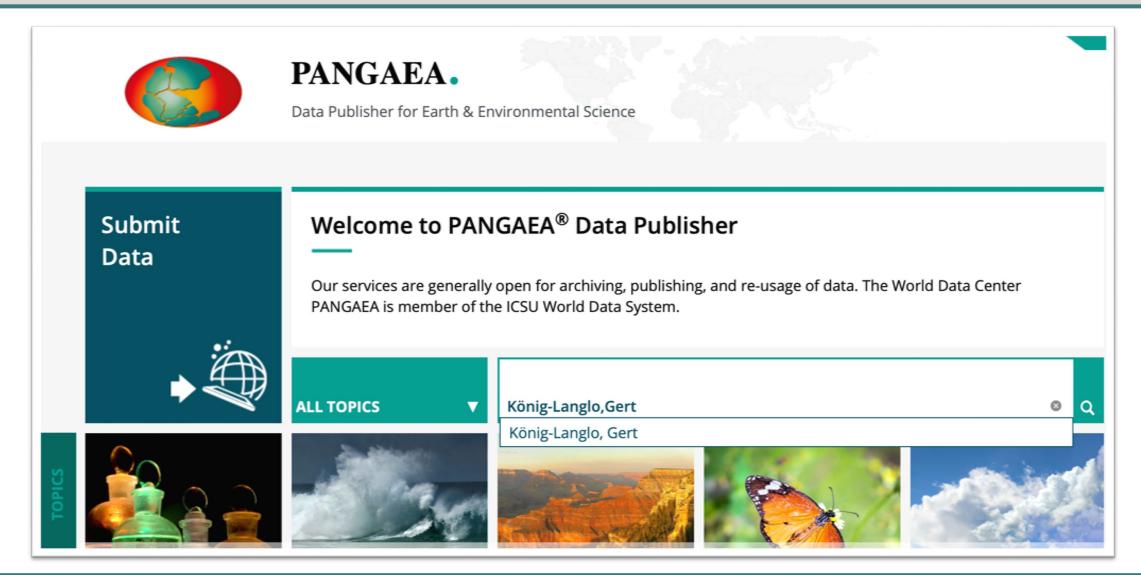




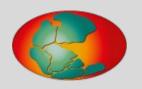


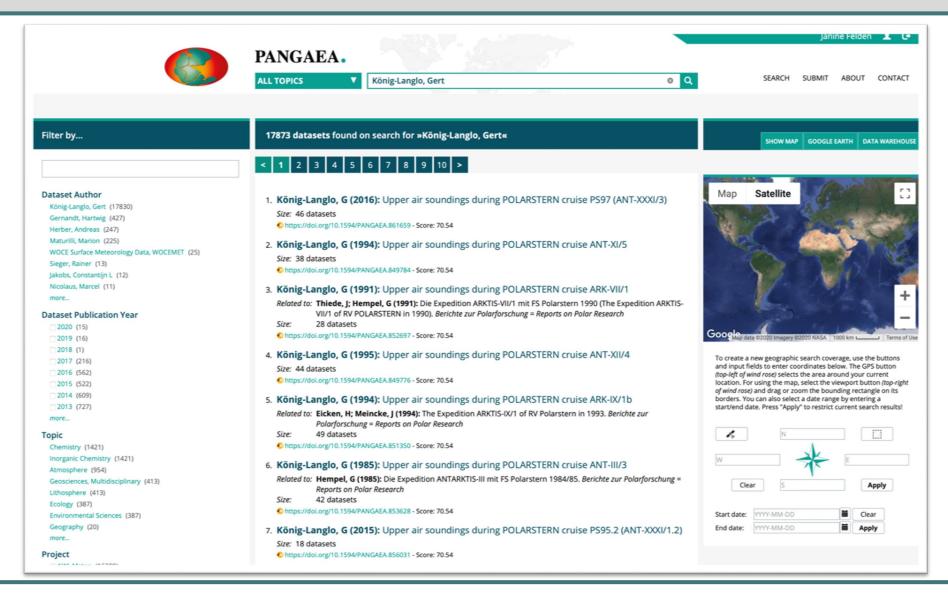
# **Data Access - Webportal**





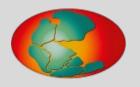
## **Data Access - Webportal**







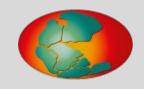
#### **Data Re-Use**

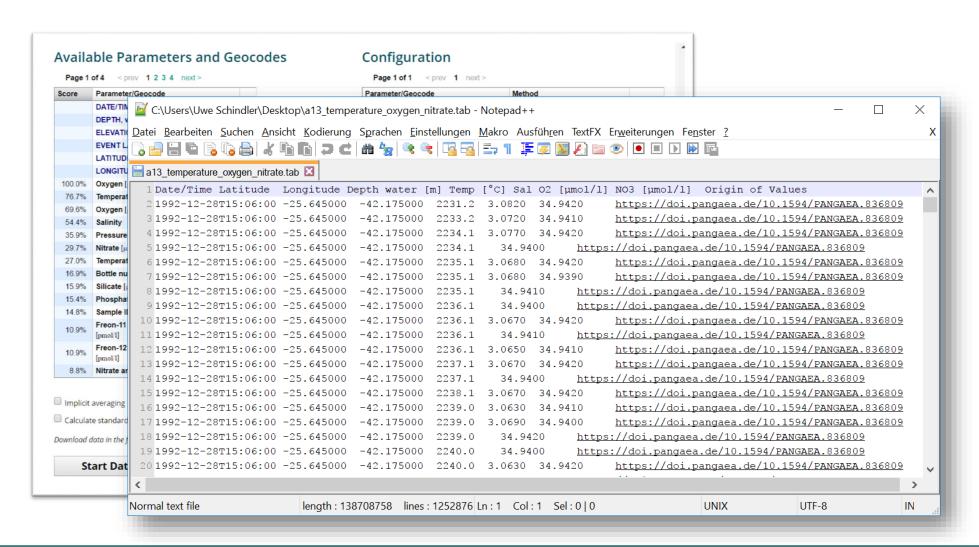






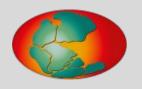
#### **Data Re-Use**

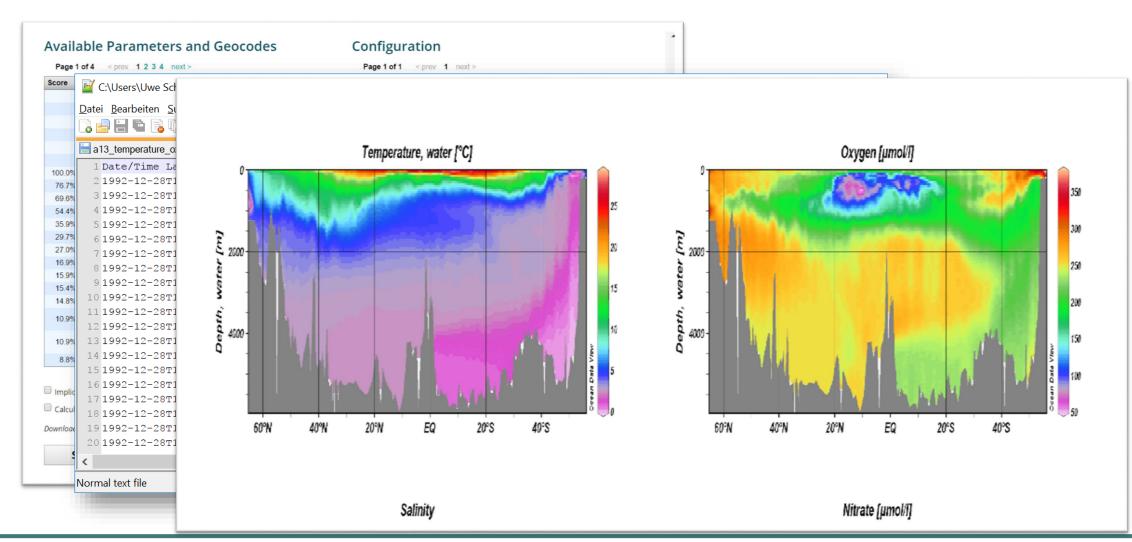






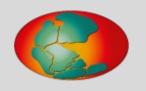
## **Data Re-Use**



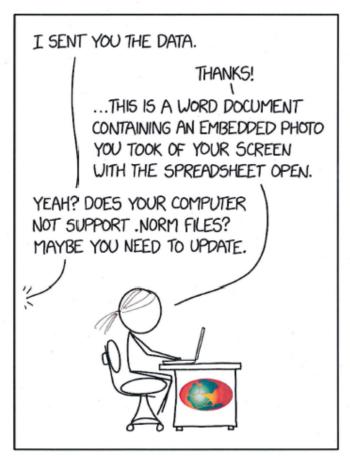




## **Data Submission – Preparation**



...to minimize the preparatory work prior to upload

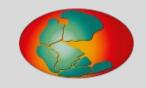


SINCE EVERYONE SENDS STUFF THIS WAY ANYWAY, WE SHOULD JUST FORMALIZE IT AS A STANDARD.

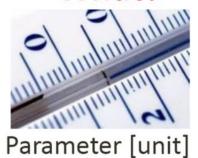
Altered from xkcd: .NORM Normal File Format



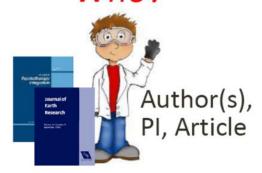
#### **Data Submission – Metadata**



#### What?



#### Who?



#### Where?



Latitude/Longitude

Depth in ice/water/ sediment; Altitude...

### When?

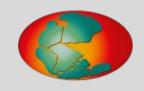


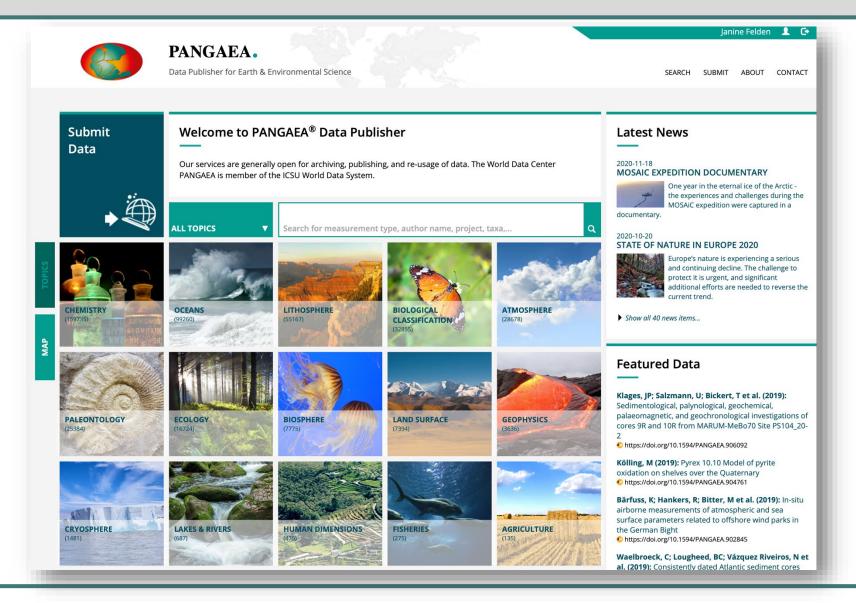




Please Specify Metadata

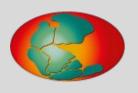
#### **Data Submission**

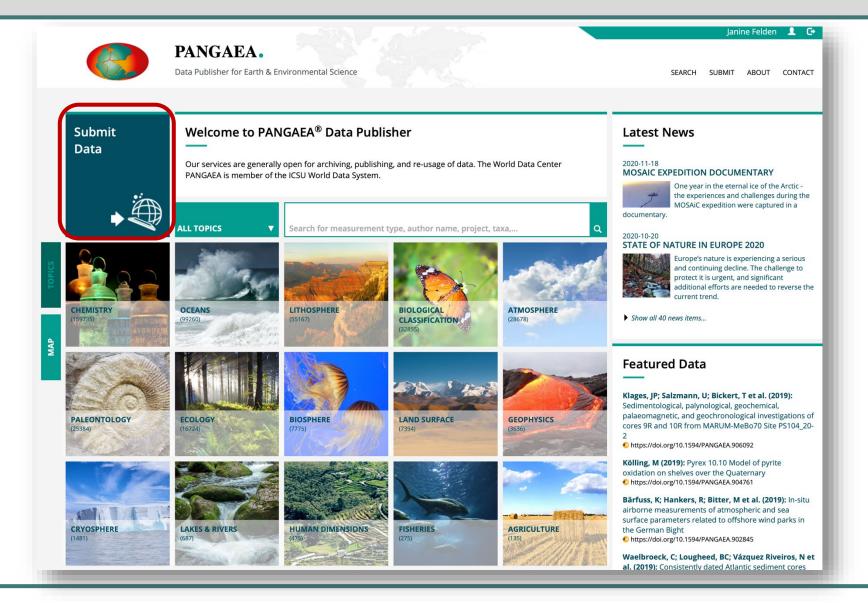






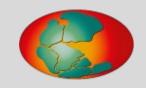
## Data Submission - https://www.pangaea.de/submit/

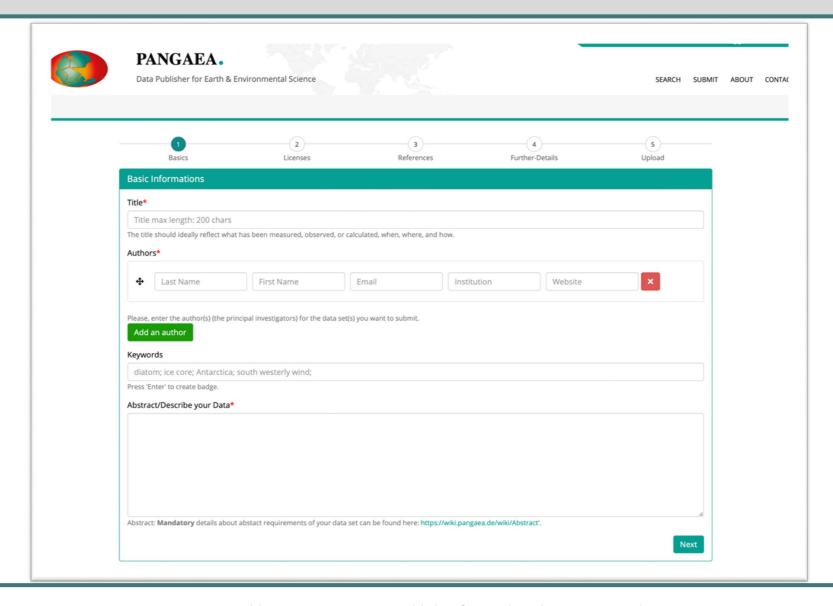






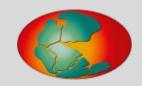
### **Data Submission**







## **Data Curation in PANAGEA**



Author



**Data Submission** 



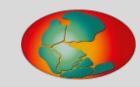
Editorial Review
Acceptance/Rejection



PANGAEA Editor-in-Chief



### **Data Curation in PANAGEA**



Author

Data Submission

Editorial Review
Acceptance/Rejection

2nd Editorial Review/

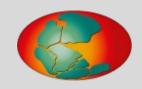
PANGAEA Editor-in-Chief

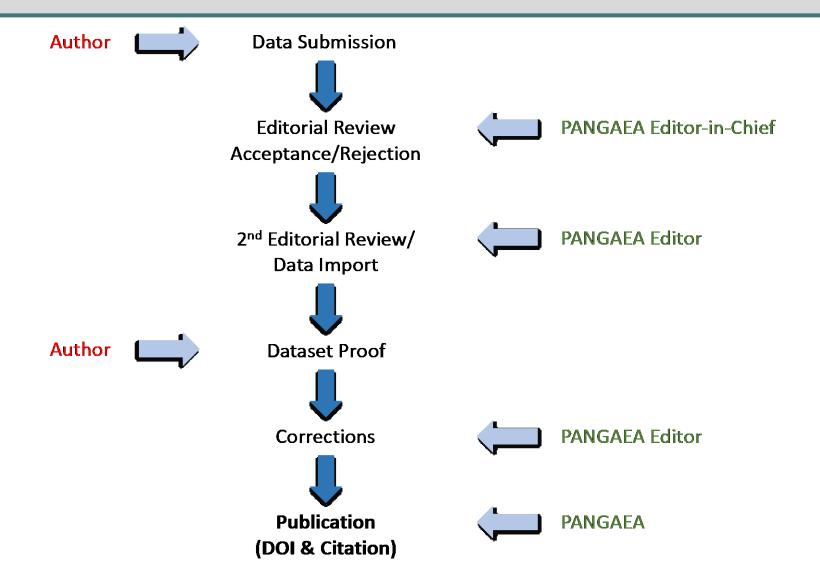
PANGAEA Editor

Data Import



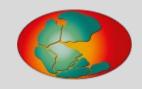
### **Data Curation in PANAGEA**







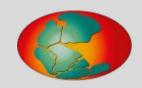
## **Data Submission**

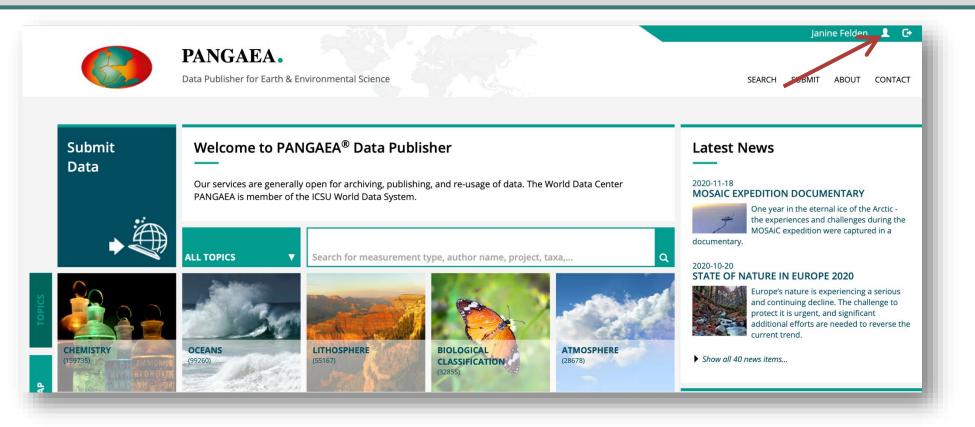






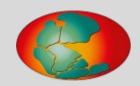
## **PANGAEA – Ticket System**







## **PANGAEA – Ticket System**



Janine Felden 💄 🕒





#### PANGAEA.

Data Publisher for Earth & Environmental Science

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1. Wintersteller, P (2019): Gridded bathymetry from EM120 multibeam echosounder of RV Maria S. Merian cruise MSM13/4 (Eastern Mediterranean Sea)

Size: 12 data points

6 https://doi.org/10.1594/PANGAEA.902448

2. **Wenzhöfer, F; Wintersteller, P; Römer, M (2019):** MSM13/4 raw data of EM120 multibeam echosounder (bathymetry, beam time series & water column)

Size: 600 data point

6 https://doi.org/10.1594/PANGAEA.901859

3. **Rybakova, E; Kremenetskaia, A; Vedenin, A et al. (2018):** OFOS photographic survey transects characteristics, megabenthic communities characteristics, seafloor algae coverage and environmental conditions during POLARSTERN cruise PS80 (ARK-XXVII/3, IceArc)

Related to: Rybakova, E; Kremenetskaia, A; Vedenin, A et al. (2019): Deep-sea megabenthos communities of the Eurasian Central Arctic are influenced by ice-cover and sea-ice algal falls. PLoS ONE Size: 72 data points

6 https://doi.org/10.1594/PANGAEA.896626









**HELMHOLTZ** 





