

DATA INGEST

Publishing and Cross-linking Long tailed Scientific Data

Stéphane PESANT



PANGAEA - Data Publisher
for Earth & Environmental Science



THE DATA GAP

84% wish easy access to data **from other scientists**

36% their data are easily accessible **to other scientists**

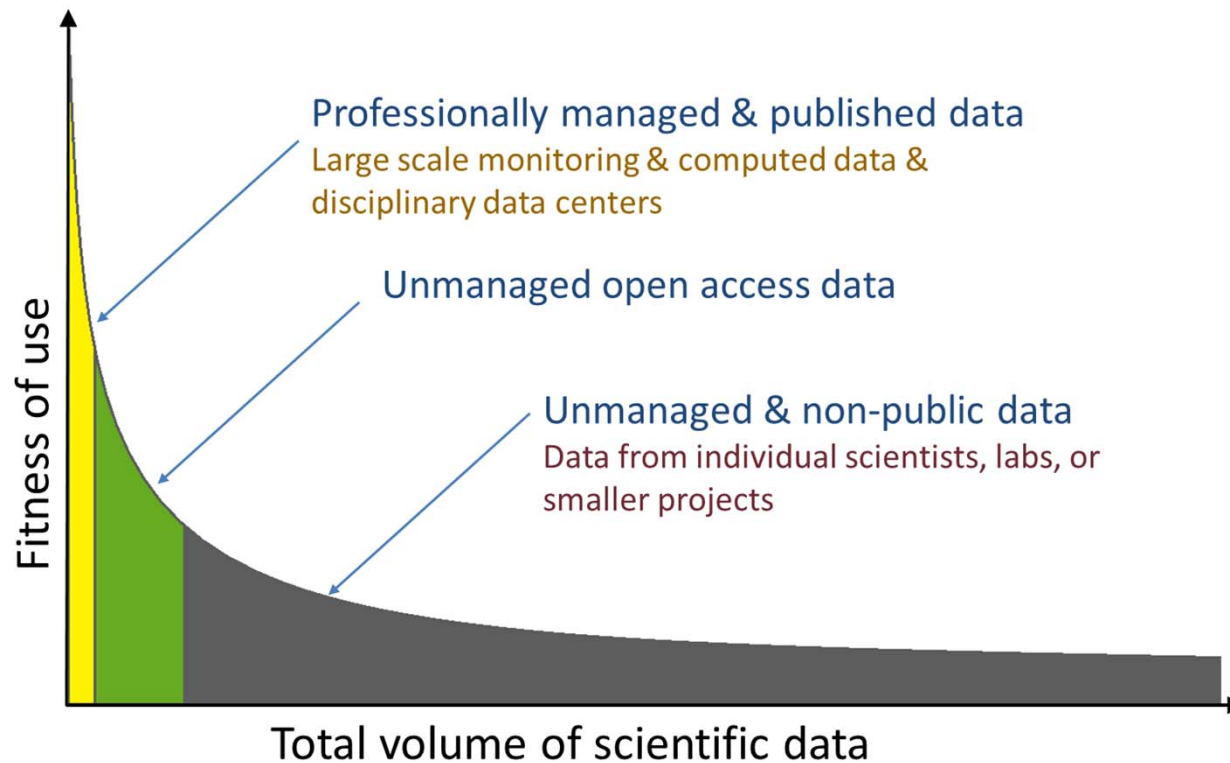
Monastersky, R. (2013). Publishing frontiers: The library reboot. Nature, doi:10.1038/495430a

“At the end of the day, science is a social process. You will never contribute by hiding yourself and your data.”

Van Noorden, R. (2013). Data-sharing: Everything on display. Nature doi:10.1038/nj7461-243a

THE DATA GAP

The Long Tail of Scientific Data



<http://www.pangaea.de/projects/>

“Lots of people are getting into data-hosting, and I think it will be tricky to decide where to put your data.”

Van Noorden, R. (2013). Data-sharing: Everything on display. Nature doi:10.1038/nj7461-243a

Data Publishers



Visuals Repository



Journals dedicated to data

Copernicus: *Earth System Science Data*

BioMed Central: *GigaScience*

Nature: *Scientific Data*



European Commission's Open Access Portal





OUTLINE OF PRESENTATION

1. Data ingest @ PANGAEA

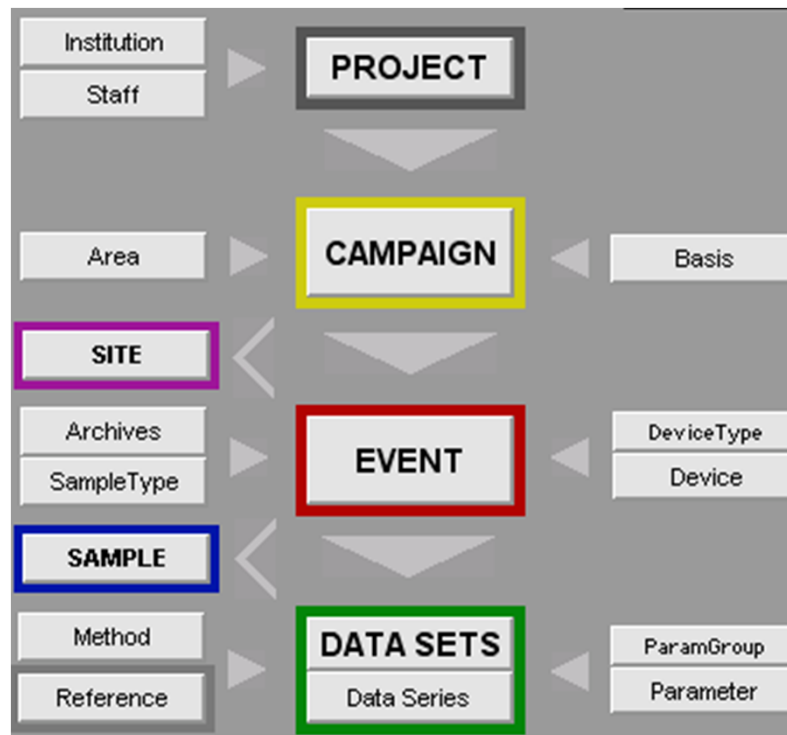
2. Cross-linking with Controlled Vocabularies/Ontologies
3. Cross-linking with Journals
4. Data re-use

DATA INGEST @ PANGAEA

1. Client System (): Curator-Author communications
2. Editorial System (): Online curation for curators distributed worldwide, i.e. sitting close to scientists
3. Relational Database (**SYBASE**): Extensive and Flexible data model
4. Web-services: Serving metadata and data (ICSU's WDS, OBIS, EMODNet, SeaDataNet, ENA, OpenAire, Elsevier...)

DATA INGEST @ PANGAEA

3. Relational Database (**SYBASE**): Extensive and Flexible data model



DATA INGEST STEP 1. Online data submission



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Data Publisher for Earth & Environmental Science

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Submit Data to PANGAEA

Welcome to the PANGAEA data submission system. Any data from earth and life sciences are accepted. We highly appreciate you archiving and publishing your data with PANGAEA.



Benefits. Published data are fully citable and can be cross-referenced with journal articles – [read more...](#)



Data preparation and quality control. We will be in direct contact with you during preparation and archiving of your data – [read more...](#)



Costs. PANGAEA can be used free of charge. Nevertheless, we appreciate any possible financial support – [read more...](#)

When you start the data submission process below, you will be redirected to the PANGAEA issue tracker that will assist you in providing metadata and uploading data files. Any communication with our editors will go through this issue tracker.



SUBMIT YOUR DATA

<http://www.pangaea.de/submit/>

DATA INGEST STEP 1. Online data submission

Create Issue

Project **PANGAEA Data Archiving & Publication**

Issue Type **Data Submission**

Summary*

The summary (subject) is used as identifier in the further communication.

Author(s)*

Please, enter the author(s) (the principal investigators) for the data set(s) you want to submit.
One author per line; example: *Smith, Joe Peter*

Title

The title should ideally reflect what has been measured, observed, or calculated, when, where, and how.

Description

SCROLL
DOWN

<http://www.pangaea.de/submit/>

DATA INGEST STEP 1. Online data submission

Create Issue

Attachment Aucun fichier choisi

The maximum file upload size is 100.00 MB.
For larger files leave a corresponding note in the description – **DATA FILE(S) ARE REQUIRED!**
For data submissions, read our [format guide](#).

License*


General information on used licences can be found on the [Creative Commons](#) license pages. If you need help to choose the correct license for your dataset, you can use the [following page](#).

Labels

Begin typing to find and create labels or press down to select a suggested label.
Context of the data submission, e.g. **PROJECT, institute**, etc.
Labels have to be one word!


Data used/published in the following article/manuscript

Please, specify any references to articles or submitted manuscripts related to this data submission.
Copy/paste the full citation, preferably with a [Digital Object Identifier \(DOI name\)](#).



<http://www.pangaea.de/submit/>

DATA INGEST STEP 2. Communication Curator-Author

 PANGAEA Data Archiving & Publication / PDI-916
Data submission 2011-12-08T15:39:49Z (Dr Chris Yesson, Zoological Society of London)



[Edit](#) [Comment](#) [Assign](#) [More ▾](#) [Reopen Issue](#) [Share](#)

Details

Type: + Data Submission Status: CLOSED
Priority: ↑ Major Resolution: Done
Labels: CoralFISH
Author(s): Yesson, C
Taylor, ML
Tittensor, DP
Davies, AJ,
Guinotte, J
Baco, A
Black, J
Hall-Spencer, JM
Rogers, AD

Title: Global habitat suitability of cold water octocorals
Keywords: Project CoralFISH (Stéphane PESANT)
License: CC-BY: Creative Commons Attribution 3.0 Unported
Data used/published in the following article/manuscript: Yesson C, Taylor ML, Tittensor DP, Davies AJ, Guinotte J, Baco A, Black J, Hall-Spencer JM, Rogers AD. In press. Global habitat suitability of cold water octocorals. Journal of Biogeography.

People

Assignee:  Stephane Pesant
Reporter:  Dr Chris Yesson
Watchers: 1 [Start watching this i](#)

Dates

Created: 2011-12-08 18:01
Updated: a minute ago
Resolved: a minute ago



<http://issues.pangaea.de/browse/PDI-916>

DATA INGEST STEP 2. Communication Curator-Author



PANGAEA Data Archiving & Publication / PDI-916

Data submission 2011-12-08T15:39:49Z (Dr Chris Yesson, Zoological Society of London)

Edit Comment Assign More Reopen Issue



▼ Stéphane Pesant added a comment - 2012-01-31 11:29

Hi Chris,

The dataset can now be found at: <http://doi.pangaea.de/10.1594/PANGAEA.775081>

It currently is not in our system, but we will upload the raster files and replace that link.

Cheer
Stéphane

CLICK HERE

▼ Dr Chris Yesson added a comment - 2012-01-31 11:56

Thanks Stéphane

▪ Chris

▼ Stéphane Pesant added a comment - 2012-01-31 12:12

Hi Chris,

Is it still time to insert the dataset citation in the paper?

Also, I see in the paper that you gathered observations from different sources to produce the maps (evidently!)... we could archive these datasets, giving credits to their authors and adding these datasets as reference for your dataset.

Stéphane

<http://issues.pangaea.de/browse/PDI-916>

DATA INGEST STEP 3. Publication

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Always quote citation when using data!

Data Description

RIS BibTeX

- Citation:** Yesson, C et al. (2012): Global raster maps indicating the habitat suitability for 7 suborders of cold water octocorals (Octocorallia found deeper than 50m). doi:10.1594/PANGAEA.775081,
Supplement to: **Yesson, Chris; Tittensor, Derek P; Davies, Andrew; Guinotte, John M; Baco, Amy; Black, Julie; Hall-Spencer, Jason M; Rogers, Alex David (2012):** Global habitat suitability of cold-water octocorals. *Journal of Biogeography*, 2012, doi:10.1111/j.1365-2699.2011.02681.x
- Abstract:** This dataset consists of global raster maps indicating habitat suitability for 7 suborders of cold water octocorals (Octocorallia found deeper than 50m). Maps present a relative habitat suitability index ranging from 0 (unsuitable) to 100 (highly suitable). Two maps are provided for each suborder (Alcyoniina, Calcaxonia, Holaxonia, Scleraxonia, Sessiliflorae, Stolonifera, and Subselliflorae). A publicly accessible low resolution map (grid size 10x10 arc-minutes) and a restricted access high resolution map (grid size 30x30 arc-seconds). Maps are geotiff format incorporating LZW compression to reduce file size.
- Please contact the corresponding author (Chris Yesson) for access to the high resolution data.
- Project(s):** [Ecosystem based management of corals, fish and fisheries in the deep waters of Europe and beyond](#) (CoralFISH) 🔍
- License:**  Creative Commons Attribution 3.0 Unported
- Size:** unknown

Download Data (login required)

DOWNLOAD
DATA

OUTLINE OF PRESENTATION

1. Data ingest @ PANGAEA
2. Cross-linking with Controlled Vocabularies/Ontologies
3. Cross-linking with Journals
4. Data re-use

Infrastructures, devices & parameters

The screenshot displays the SeaDataNet website interface. At the top, the logo features the European Union flag and the text "PAN-EUROPEAN INFRASTRUCTURE FOR OCEAN & MARINE DATA MANAGEMENT" and "SeaDataNet". A navigation menu includes "Overview", "Metadata", "Data Access", "Standards & Software", and "Products". The main content area is titled "METADATA SERVICES" and includes a breadcrumb "SeaDataNet2 > Metadata". A sidebar on the left lists "EDMO", "EDMED", "EDMERP", "CSR", "EDIOS", "How to contribute?", and "News" (with a sub-item "New release of MIKADO Version 2.5 available"). The main content is organized into three columns: "Observations" (with a sub-section "Cruise Summary Reports CSR" and an image of a ship), "Data management" (with a sub-section "Marine Research Organizations EDMO" and a search interface), and "Data" (with a world map visualization). A footer banner at the bottom reads "PAN-EUROPEAN INFRASTRUCTURE FOR OCEAN & MARINE DATA MANAGEMENT" and "European Directory of Marine Environmental Research Projects (EDMERP)".

SeaDataNet
PAN-EUROPEAN INFRASTRUCTURE FOR OCEAN & MARINE DATA MANAGEMENT

Overview **Metadata** Data Access Standards & Software Products

SeaDataNet2 > Metadata

METADATA SERVICES

Marine Data Centres
(in situ NODCs and satellite DC providing Transnational acces)

Observations
Cruise Summary Reports
CSR

Data management
Marine Research Organizations
EDMO

Data

EDMO
EDMED
EDMERP
CSR
EDIOS
How to contribute?
News
New release of MIKADO
Version 2.5 available

PAN-EUROPEAN INFRASTRUCTURE FOR OCEAN & MARINE DATA MANAGEMENT
European Directory of Marine Environmental Research Projects (EDMERP)

Geographic, political & ecological regions



Marineregions.org

towards a standard for georeferenced marine names

About

Marine Gazetteer

EEZ boundaries

Sources

Statistics

Downloads

About Marine Regions

Marine Regions is a standard list of marine georeferenced place names and areas. It integrates and serves geographic information from the VLIMAR Gazetteer and the MARBOUND database and proposes a standard of marine georeferenced locations, boundaries and regions.


[Read more...](#)

Statistics

25,546 marine georeferenced places
32,675 marine place names
5,596 polygons of geographic places
12 marine geographic regional/global classifications
Maritime Boundaries (EEZ) of the world

<http://www.marineregions.org/>

Taxonomy of marine organisms

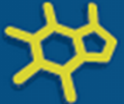


WoRMS
World Register of Marine Species

Home	<h2>WoRMS taxon details</h2> <h3><i>Calanus finmarchicus</i> (Gunnerus, 1770)</h3> <p>AphiaID: 104464</p> <p>Classification: Biota > Animalia (Kingdom) > Arthropoda (Phylum) > Crustacea (Subphylum) > Maxillopoda (Class) > Copepoda (Subclass) > Gymnoplea (Superorder) > Calanoida (Order) > Calanidae (Family) > Calanus (Genus)</p> <table><tr><td>Status</td><td>accepted</td></tr><tr><td>Record status</td><td>Checked by Taxonomic Editor</td></tr><tr><td>Rank</td><td>Species</td></tr><tr><td>Parent</td><td>Calanus Leach, 1816</td></tr><tr><td>Synonymised taxa</td><td>Calanus arietis Templeton, 1836 Calanus borealis Lubbock, 1854 Calanus elegans Lubbock, 1854 Calanus finmarchicus helgolandicus Tanaka, 1956 Calanus finmarchicus telezkensis Stalberg, 1931 Calanus mundus Dana, 1849 (Giesbrecht, 1893:89)</td></tr></table>	Status	accepted	Record status	Checked by Taxonomic Editor	Rank	Species	Parent	Calanus Leach, 1816	Synonymised taxa	Calanus arietis Templeton, 1836 Calanus borealis Lubbock, 1854 Calanus elegans Lubbock, 1854 Calanus finmarchicus helgolandicus Tanaka, 1956 Calanus finmarchicus telezkensis Stalberg, 1931 Calanus mundus Dana, 1849 (Giesbrecht, 1893:89)
Status		accepted									
Record status		Checked by Taxonomic Editor									
Rank		Species									
Parent		Calanus Leach, 1816									
Synonymised taxa		Calanus arietis Templeton, 1836 Calanus borealis Lubbock, 1854 Calanus elegans Lubbock, 1854 Calanus finmarchicus helgolandicus Tanaka, 1956 Calanus finmarchicus telezkensis Stalberg, 1931 Calanus mundus Dana, 1849 (Giesbrecht, 1893:89)									
About											
Search taxa											
Taxon tree											
Literature											
Distribution											
Specimens											
Match taxa											
Editors											
Statistics											
Users											
Webservice											
Photogallery											
Info downloads											
Sponsors											

<http://www.marinespecies.org/>

Chemical substances



ChEBI

The database and ontology of Chemical Entities of Biological Interest

- Page d'Accueil
- Recherche avancée
- Parcourir
- Submit
- Téléchargements
- Documentation
- Coin des Développeurs
- Tools
- Preferences
- Contacteur ChEBI
- Version 'imprimable'

EBI > Databases > Small Molecules > ChEBI > Main

chlorophyll a (CHEBI:18230)

Main | ChEBI Ontology | Automatic Xrefs

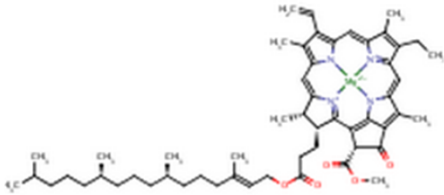
ChEBI Name	chlorophyll a
ChEBI ID	CHEBI:18230
ChEBI ASCII Name	chlorophyll a
Stars	☆☆☆ This entity has been manually annotated by the ChEB
Secondary ChEBI IDs	CHEBI:13974, CHEBI:3631, CHEBI:23157, CHEBI:48807
Supplier Information	eMolecules:29479434, eMolecules:26750366

See structure as: Image Applet

[Download Molfile](#)

- [Find compounds which contain this structure](#)
- [Find compounds which resemble this structure](#)

[more structures >>](#)



<http://www.ebi.ac.uk/chebi/>

Environmental features

BioPortal Browse Search Mappings Recommender Annotator Resource Index Projects

Environment Ontology

Summary Classes Notes Mappings Widgets

Details

ACRONYM	ENVO
VISIBILITY	Public
BIOPORTAL PURL	http://purl.bioontology.org/ontology/ENVO
DESCRIPTION	Ontology of environmental features and habitats
STATUS	Production
FORMAT	OBO
CONTACT	Envo Administrators, obo-envo@lists.sourceforge.net
HOME PAGE	http://environmentontology.org/
PUBLICATIONS PAGE	
DOCUMENTATION PAGE	http://environmentontology.org/
CATEGORIES	
GROUPS	Biodiversity Information Standards

<http://bioportal.bioontology.org/ontologies/ENVO>

OUTLINE OF PRESENTATION

1. Data ingest @ PANGAEA
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3. Cross-linking with Journals

4. Data re-use

PANGAEA links to Elsevier publications

Logg



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Always

Data Description

Citation: Bauerfeind, E et al. (2009): Flux of biomarkers at AWI HAUSGARTEN from mooring FEVI4. doi:10.1594/PANGAEA.690894,
In Supplement to: **Bauerfeind, Eduard; Nöthig, Eva-Maria; Beszczynska, Agnieszka; Fahl, Kirsten; Kaleschke, Lars; Kreker, Kathrin; Klages, Michael; Soltwedel, Thomas; Lorenzen, Christiane; Wegner, Jan (2009):** Particle sedimentation patterns in the eastern Fram Strait during 2000-2005: Results from the Arctic long-term observatory HAUSGARTEN. *Deep Sea Research Part I: Oceanographic Research Papers*, **56(9)**, 1471-1487, doi:10.1016/j.dsr.2009.04.011



Project(s): [Paleoenvironmental Reconstructions from Marine Sediments @ AWI \(AWI_Paleo\)](#) 🔍

Coverage: *Latitude:* 78.999167 * *Longitude:* 4.457333

Date/Time Start: 2003-06-08T00:00:00 * *Date/Time End:* 2003-07-02T00:00:00

Minimum DEPTH, water: 340.0 m * *Maximum DEPTH, water:* 340.0 m

Event(s): [FEVI4](#) 🔍 * *Latitude:* 78.999167 * *Longitude:* 4.457333 * *Date/Time Start:* 2003-06-08T00:00:00 * *Date/Time End:* 2003-06-20T00:00:00 * *Elevation:* -2568.0 m * *Location:* [North Greenland Sea](#) 🔍 * *Device:* [Trap](#) 🔍



Parameter(s):

#	Name	Short Name	Unit	Principal Investigator	Method	Comment
1	DEPTH, water 🔍	Depth water	m			Geocode
2	DATE/TIME 🔍	Date/Time				Geocode
3	Date/time end 🔍	Date/time end		Fahl, Kirsten 🔍		
4	Duration, number of days 🔍	Duration	days	Fahl, Kirsten 🔍		
5	Sample code/label 🔍	Label		Fahl, Kirsten 🔍		
6	cis-9-hexadecenoic acid flux 🔍	16:1(n-7) flux	µg/m ² /day	Fahl, Kirsten 🔍	Gas chromatography - Mass spectrometry (GC-MS) 🔍	
7	cis-11-hexadecenoic acid flux 🔍	16:1(n-5) flux	µg/m ² /day	Fahl, Kirsten 🔍	Gas chromatography - Mass spectrometry (GC-MS) 🔍	

<http://doi.pangaea.de/10.1594/PANGAEA.690894>

Elsevier links to PANGAEA publications

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**ELSEVIER**

Deep Sea Research Part I: Oceanographic Research Papers

Volume 56, Issue 9, September 2009, Pages 1471–1487



Particle sedimentation patterns in the eastern Fram Strait during 2000–2005: Results from the Arctic long-term observatory HAUSGARTEN

Eduard Bauerfeind^a,  , Eva-Maria Nöthig^a, Agnieszka Beszczynska^a, Kirsten Fahl^a, Lars Kaleschke^b, Kathrin Kreker^a, Michael Klages^a, Thomas Soltwedel^a, Christiane Lorenzen^a, Jan Wegner^a

^a Alfred Wegener Institute for Polar and Marine Research (AWI), Deep-Sea Research Group, Am Handelshafen 12, D-27570 Bremerhaven, Germany

^b University of Hamburg, Center of Marine and Atmospheric Research (ZMAW), Institute of Oceanography (IfM), Bundesstraße 53, D-20146 Hamburg, Germany

<http://dx.doi.org/10.1016/j.dsr.2009.04.011>, How to Cite or Link Using DOI

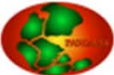
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Bibliographic information +

Citing and related articles +

Applications and tools -

 **PANGAEA® – Related Data**
Biogenic particle and biomarker flux from a mooring time-s... HAUSGARTEN



Hybrid ▾

Greenland Sea

<http://doi.pangaea.de/10.1594/PANGAEA.690894>

PANGAEA links to PubMed publications



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Data Description

[Show Map](#) [Google Earth](#)

Citation: **Lichtschlag, Anna; Boetius, Antje; de Beer, Dirk (2013):** High resolution in situ microsensor measurements of Amon mud volcano sediments measured at station M70/2b_805_PROF-2. doi:10.1594/PANGAEA.809994

Related to: **Felden, Janine; Lichtschlag, Anna; Wenzhöfer, Frank; de Beer, Dirk; Feseker, Tomas; Pop Ristova, Petra; de Lange, Gert Jan; Boetius, Antje (2013):** Limitations of microbial hydrocarbon degradation at the Amon mud volcano (Nile deep-sea fan). *Biogeosciences*, **10**, 3269-3283, doi:10.5194/bg-10-3269-2013

Girnth, Anne-Christin; Grünke, Stefanie; Lichtschlag, Anna; Felden, Janine; Knittel, Katrin; Wenzhöfer, Frank; de Beer, Dirk; Boetius, Antje (2011): A novel, mat-forming Thiomargarita population associated with a sulfidic fluid flow from a deep-sea mud volcano. *Environmental Microbiology*, **13**(2), 495-505, doi:10.1111/j.1462-2920.2010.02353.x

Grünke, Stefanie; Felden, Janine; Lichtschlag, Anna; Girnth, Anne-Christin; de Beer, Dirk; Wenzhöfer, Frank; Boetius, Antje (2011): Niche differentiation among mat-forming, sulfide-oxidizing bacteria at cold seeps of the Nile Deep Sea Fan (Eastern Mediterranean Sea). *Geobiology*, **9**(4), 330-348, doi:10.1111/j.1472-4669.2011.00281.x

Project(s): **Hotspot Ecosystem Research on the Margins of European Seas (HERMES)**

Coverage: *Median Latitude:* 32.367800 * *Median Longitude:* 31.704390 * *South-bound Latitude:* 32.367780 * *West-bound Longitude:* 31.704280 * *North-bound Latitude:* 32.367820 * *East-bound Longitude:* 31.704500

Minimum DEPTH, sediment/rock: -0.1 m * *Maximum DEPTH, sediment/rock:* 0.1 m

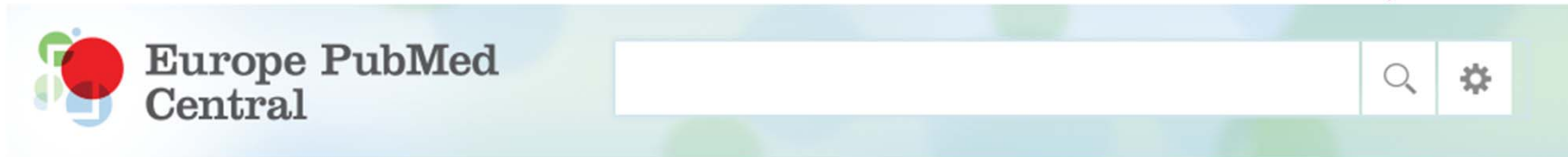
Event(s): **M70/2b_805_PROF-2 (805-2)** * *Latitude Start:* 32.367820 * *Longitude Start:* 31.704280 * *Latitude End:* 32.367780 * *Longitude End:* 31.704500 * *Date/Time Start:* 2006-11-13T01:30:00 * *Date/Time End:* 2006-11-13T10:08:00 * *Elevation Start:* -1158.0 m * *Elevation End:* -1158.0 m * *Location:* Amon Mud Volcano * *Campaign:* M70/2b (BIONIL) * *Basis:* Meteor (1986) * *Device:* Profiler * *Comment:* placed profiler on former mat very flat sediment




CLICK HERE

<http://doi.pangaea.de/10.1594/PANGAEA.809994>

PubMed links to PANGAEA publications



 A novel, mat-forming Thiomargarita population associated with a sulfidic fluid flow from a deep-sea mud volcano.
(PMID:20946529)

- Abstract
- Citations 
- BioEntities 
- Related Articles 
- External Links 

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- Related to: Lichtschlag, A et al (2013). High resolution in situ microsensor measurements of Amon mud volcano sediments measured at station M70/2b_805_PROF-2. PANGAEA <http://dx.doi.org/10.1594/PANGAEA.809994>
- Related to: Lichtschlag, A et al (2013). High resolution in situ microsensor measurements of Amon mud volcano sediments measured at station M70/2b_805_PROF-1. PANGAEA <http://dx.doi.org/10.1594/PANGAEA.809993>
- Related to: Lichtschlag, A et al (2013). High resolution in situ microsensor measurements of Amon mud volcano sediments measured at station M70/2b_790_MICP-1. PANGAEA <http://dx.doi.org/10.1594/PANGAEA.809984>




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- Geologic Sediments
- Mediterranean Sea
- Phylogeny

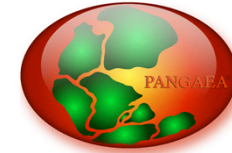
OUTLINE OF PRESENTATION

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3. Cross-linking with Journals
4. Data re-use

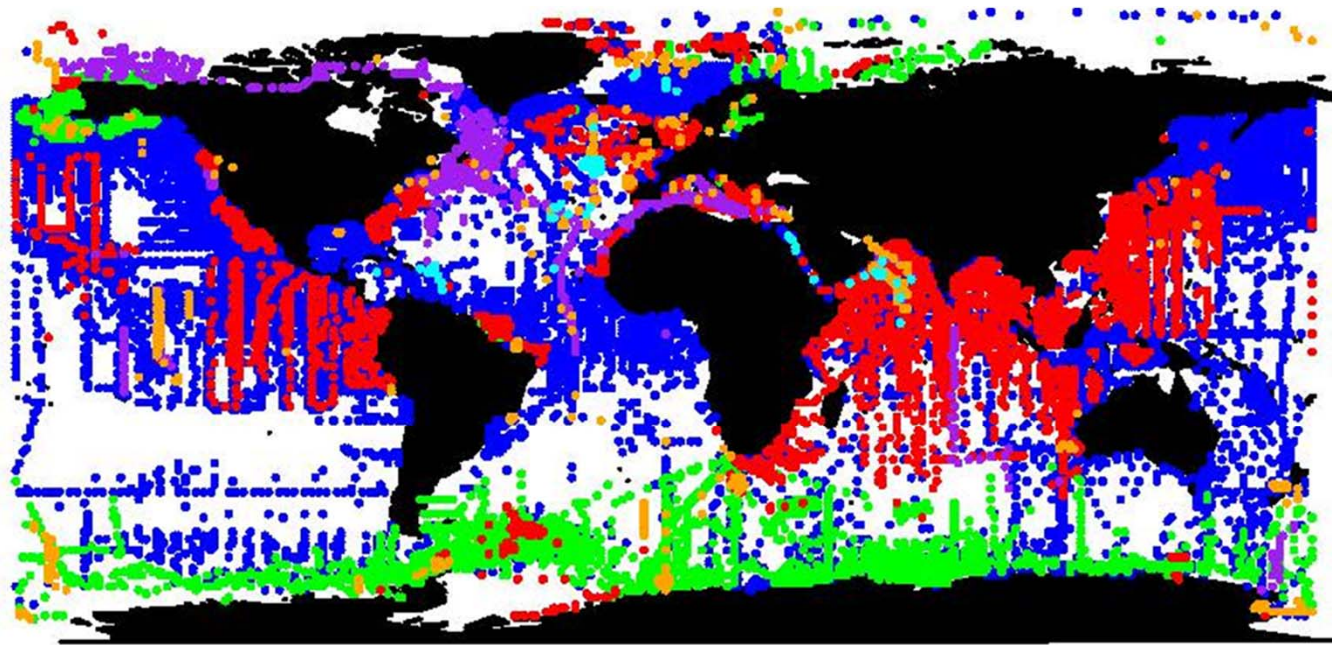
Joint Special Issues ESSD & PANGAEA

Open Access Earth System
Science
Data

MAREDAT: towards a world atlas of MARine Ecosystem DATA

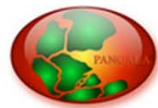


E. T. Buitenhuis¹, M. Vogt², R. Moriarty³, N. Bednaršek⁴, S. C. Doney⁵, K. Leblanc⁶, C. Le Quéré¹,
Y.-W. Luo⁵, C. O'Brien², T. O'Brien⁷, J. Peloquin², R. Schiebel⁸, and C. Swan²



- Macrozooplankton
- Mesozooplankton
- Microzooplankton
- Pteropods
- Foraminifera
- Bacteria

Data curated & published @ PANGAEA



All Water Sediment Ice Atmosphere
MAREDAT Search
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Always quote citation when using data!

110 datasets found on search for »maredat«

Show Map Google Earth Data Warehouse

<< PREV | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | NEXT >>

- Luo, Y; Doney, SC; Anderson, LA et al. (2013):** Global distributions of diazotrophs abundance and nitrogen fixation rates - Collection of source datasets - Contribution to the MAREDAT World Ocean Atlas of Plankton Functional Types
Related to: Luo, Y; Doney, SC; Anderson, LA et al. (2012): Database of diazotrophs in global ocean: abundance, biomass and nitrogen fixation rates. *Earth System Science Data*
Size: 94 datasets
doi:10.1594/PANGAEA.818214 - Score: 100% - Similar datasets
- Luo, Y; Doney, SC; Anderson, LA et al. (2013):** Global distributions of diazotrophs Gamma-Amino Acids abundance - Depth integrated values computed from a collection of source datasets - Contribution to the MAREDAT World Ocean Atlas of Plankton Functional Types
Supplement to: Luo, Y; Doney, SC; Anderson, LA et al. (2012): Database of diazotrophs in global ocean: abundance, biomass and nitrogen fixation rates. *Earth System Science Data*
Size: 2032 data points
doi:10.1594/PANGAEA.818208 - Score: 84% - Similar datasets
- Luo, Y; Doney, SC; Anderson, LA et al. (2012):** Global distributions of diazotrophs abundance (NetCDF) - Contribution to the MAREDAT World Ocean Atlas of Plankton Functional Types
Supplement to: Luo, Y; Doney, SC; Anderson, LA et al. (2012): Database of diazotrophs in global ocean: abundance, biomass and nitrogen fixation rates. *Earth System Science Data*
Size: 1728.0 kBytes
doi:10.1594/PANGAEA.774851 - Score: 81% - Similar datasets


COLLECTION of SOURCE DATA SETS

HARMONISED DATA SET

DATA PRODUCT (NetCDF)

<http://www.pangaea.de/search?All&q=maredat+>

Data described in papers published @ ESSD



Earth System Science Data
The Data Publishing Journal

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Abstract. Marine N₂ fixing microorganisms, termed diazotrophs, are a key functional group in marine pelagic ecosystems. The biological fixation of dinitrogen (N₂) to bioavailable nitrogen provides an important new source of nitrogen for pelagic marine ecosystems and influences primary productivity and organic matter export to the deep ocean. As one of a series of efforts to collect biomass and rates specific to different phytoplankton functional groups, we have constructed a database on diazotrophic organisms in the global pelagic upper ocean by compiling about 12 000 direct field measurements of cyanobacterial diazotroph abundances (based on microscopic cell counts or qPCR assays targeting the *nifH* genes) and N₂ fixation rates. Biomass conversion factors are estimated based on cell sizes to convert abundance data to diazotrophic biomass. The database is limited spatially, lacking large regions of the ocean especially in the Indian Ocean. The data are approximately log-normal distributed, and large variances exist in most sub-databases with non-zero values differing 5 to 8 orders of magnitude. Lower mean N₂ fixation rate was found in the North Atlantic Ocean than the Pacific Ocean. Reporting the geometric mean and the range of one geometric standard error below and above the geometric mean, the pelagic N₂ fixation rate in the global ocean is estimated to be 62 (53–73) Tg N yr⁻¹ and the pelagic diazotrophic biomass in the global ocean is estimated to be 4.7 (2.3–9.6) Tg C from cell counts and to 89 (40–200) Tg C from *nifH*-based abundances. Uncertainties related to biomass conversion factors can change the estimate of geometric mean pelagic diazotrophic biomass in the global ocean by about ±70%. This evolving database can be used to study spatial and temporal distributions and variations of marine N₂ fixation, to validate geochemical estimates and to parameterize and validate biogeochemical models. The database is stored in PANGAEA (<http://doi.pangaea.de/10.1594/PANGAEA.774851>).



<http://www.earth-syst-sci-data.net/4/47/2012/essd-4-47-2012.html>

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