From observations to ecosystem analysis

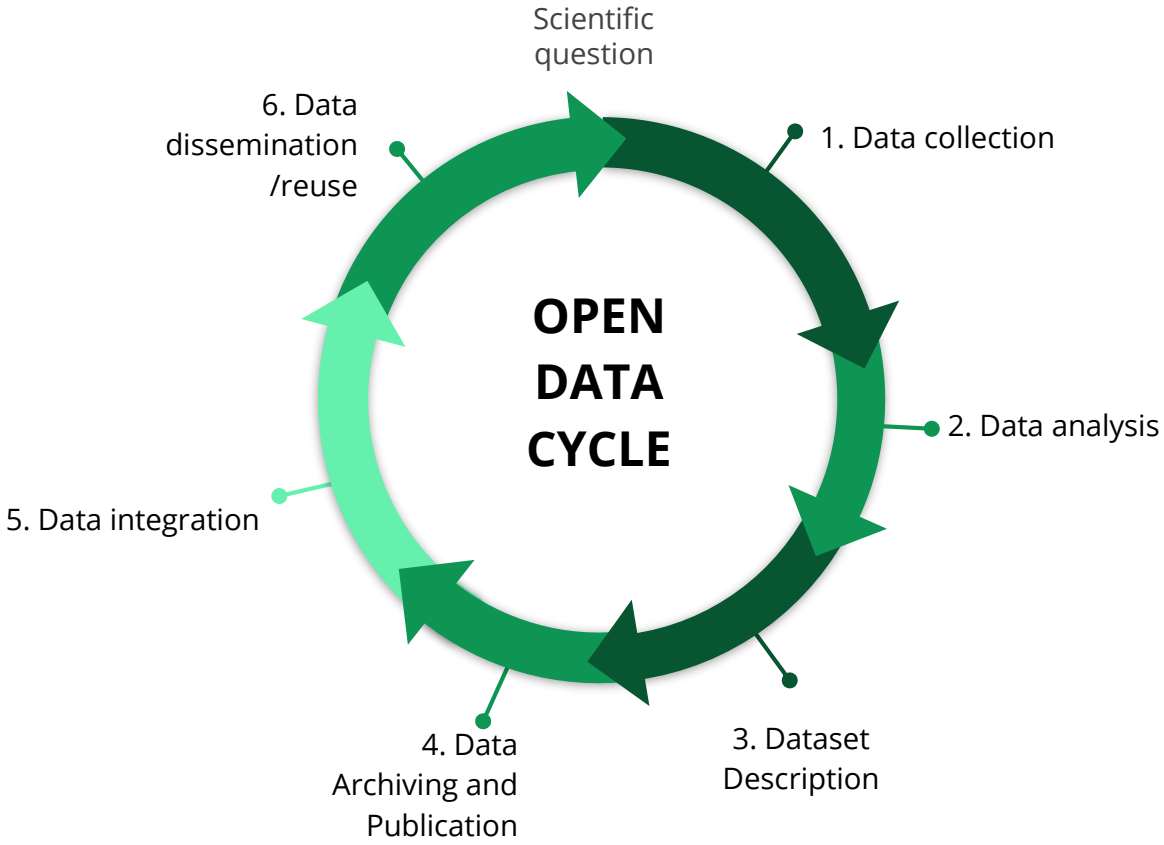
The data flow generating FAIR data

Lennert Schepers

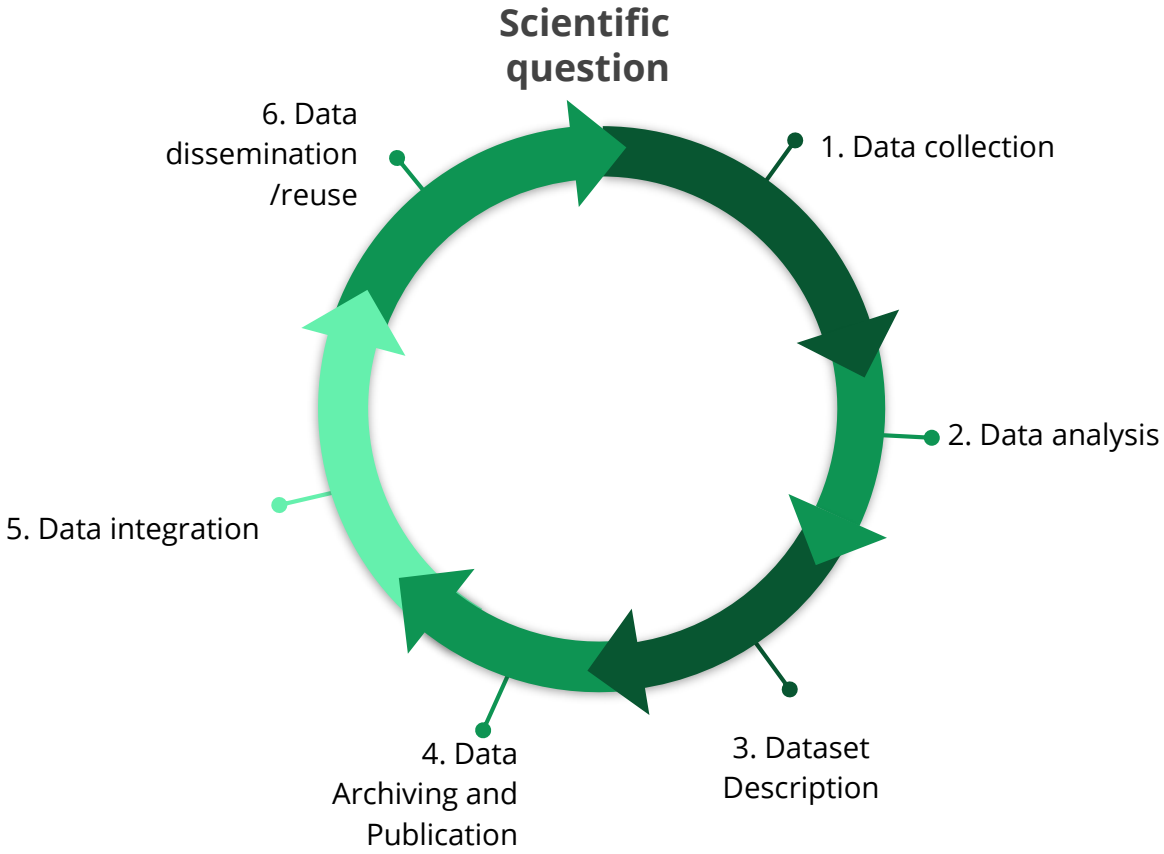
VLIZ

LifeWatch BELGIUM

VLIZ Data management cycle



VLIZ Data management cycle

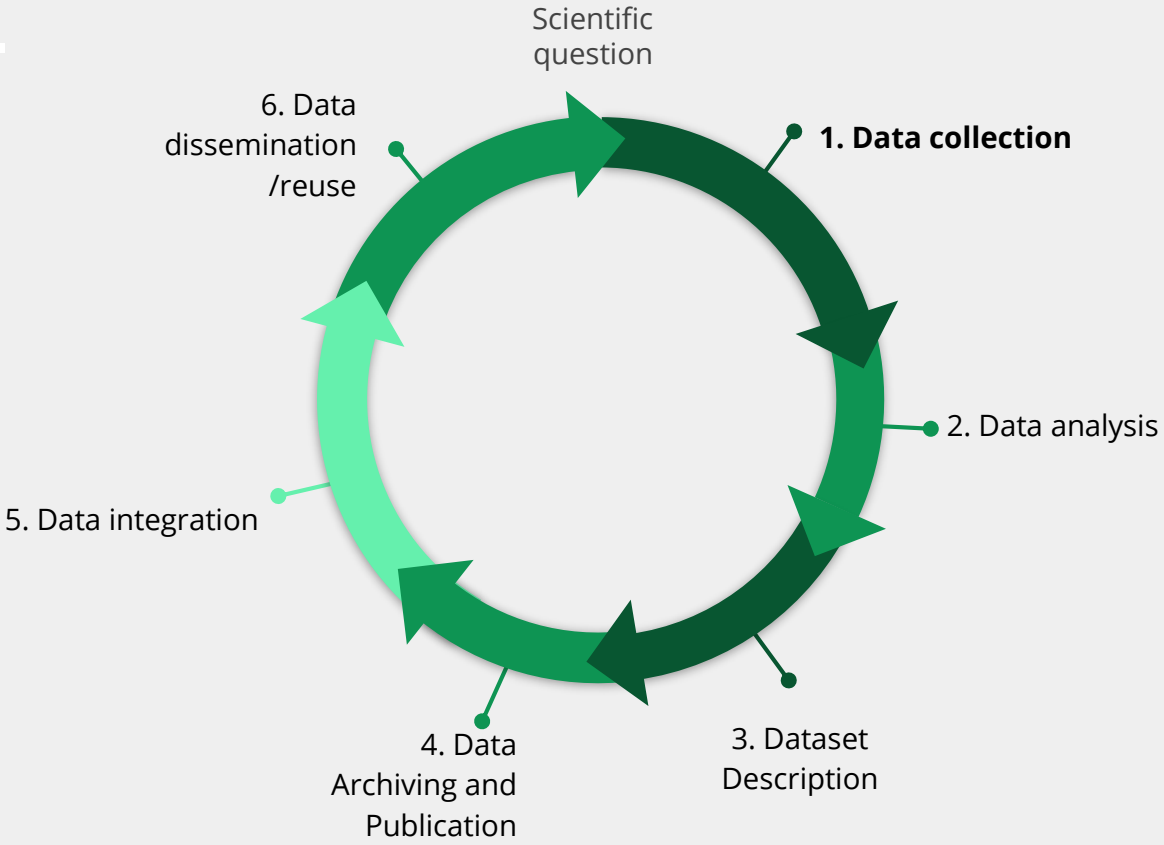


Calanoida

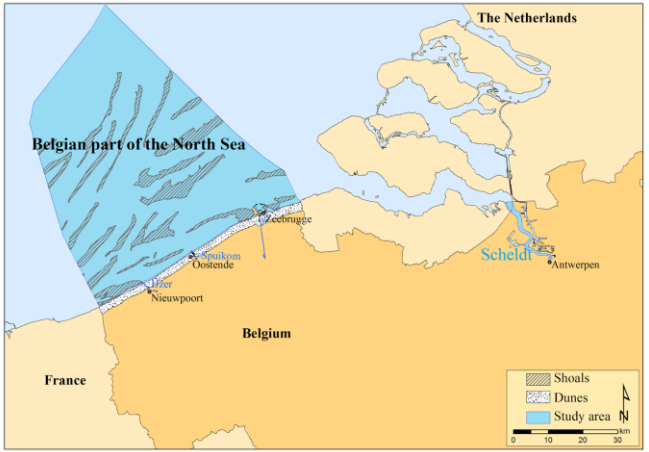
VLIZ LifeWatch BELGIUM

1. Data collection

VLIZ Data management cycle



RV Simon Stevin



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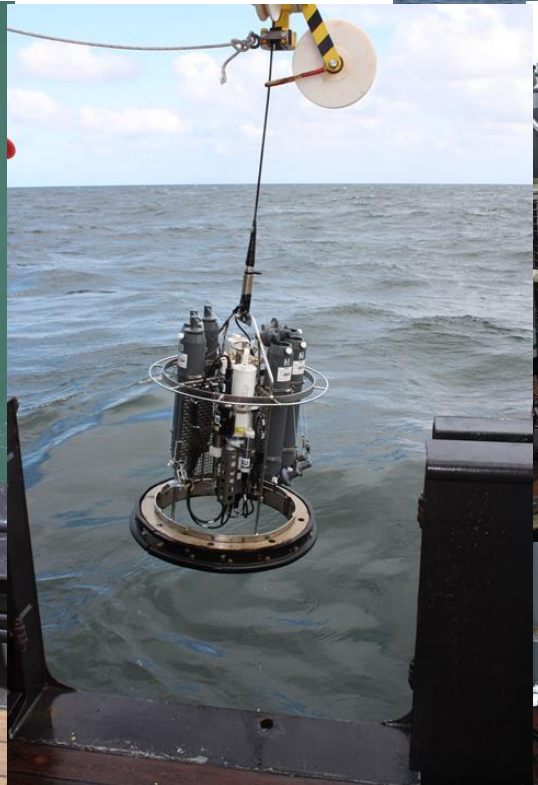
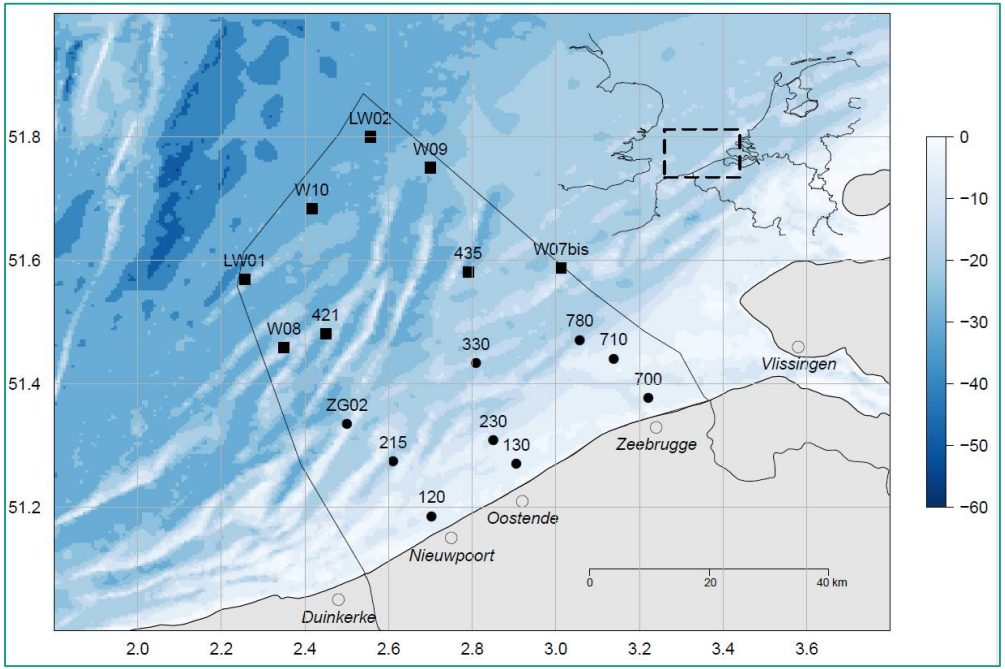


Long term sampling stations



Monthly sampling campaigns

Nieuwpoort: 120 – 215 – ZG02

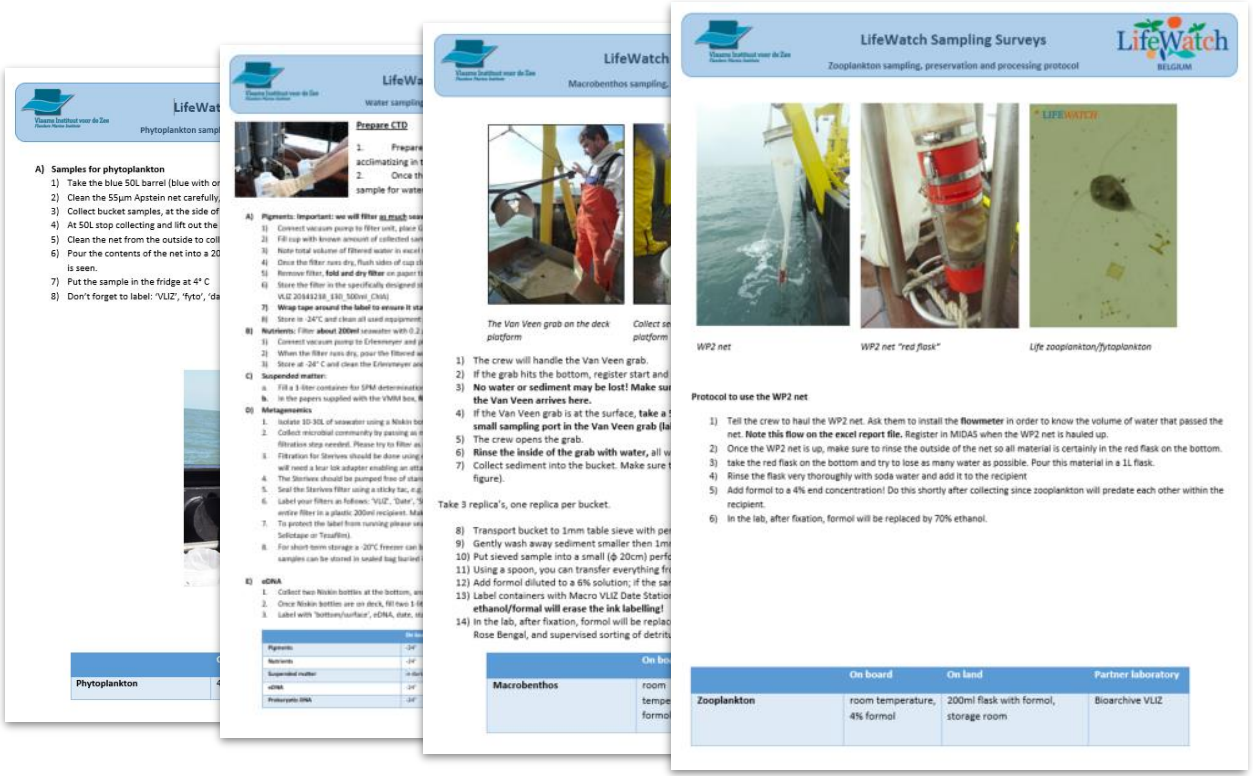
Oostende: 130 – 230 – 330

Zeebrugge: 700 – 710 - 780

Seasonal sampling campaigns

Additional stations: 421 - W08 - LW01 - W10 - LW02 - W09 – 435 - W07bis

QA: Standard Operating Procedure



LifeWatch Sampling Surveys

Zooplankton sampling, preservation and processing protocol

LifeWatch BELGIUM

WP2 net | WP2 net "red flask" | Life zooplankton/fytoplankton

Protocol to use the WP2 net

1) Tell the crew to haul the WP2 net. Ask them to install the **flowmeter** in order to know the volume of water that passed the net. **Note this flow on the excel report file.** Register in MIDAS when the WP2 net is hauled up.
2) Once the WP2 net is up, make sure to rinse the outside of the net so all material is certainly in the red flask on the bottom.
3) take the red flask on the bottom and try to lose as many water as possible. Pour this material in a 1L flask.
4) Rinse the flask very thoroughly with soda water and add it to the recipient
5) Add formol to a 4% end concentration! Do this shortly after collecting since zooplankton will predate each other within the recipient.
6) In the lab, after fixation, formol will be replaced by 70% ethanol.

	On board	On land	Partner laboratory
Zooplankton	room temperature, 4% formol	200ml flask with formol, storage room	Bioarchive VLIZ

Macrobenthos sampling, preservation and processing protocol

The Van Veen grab on the deck platform | Collect se... platform

1) The crew will handle the Van Veen grab.
2) If the grab hits the bottom, register start and
3) **No water or sediment may be lost! Make su... the Van Veen arrives here.**
4) If the Van Veen grab is at the surface, **take a ... small sampling port in the Van Veen grab (la...**
5) The crew opens the grab.
6) **Rinse the inside of the grab with water,** all w...
7) Collect sediment into the bucket. Make sure t... figure).

Take 3 replica's, one replica per bucket.

8) Transport bucket to 1mm table sieve with pe...
9) Gently wash away sediment smaller then 1m...
10) Put sieved sample into a small (ϕ 20cm) perfo...
11) Using a spoon, you can transfer everything fr...
12) Add formol diluted to a 6% solution; if the sa...
13) Label containers with Macro VLIZ Date Statio... **ethanol/formol will erase the ink labelling!**
14) In the lab, after fixation, formol will be replac... Rose Bengal, and supervised sorting of detrit...

	On bo...
Macrobenthos	room tempe... formol

Water sampling

Prepare CTD

1. Prepare... acclimatizing in t...
2. Once th... sample for wate...

A) **Pigments: Important: we will filter as much seaw...**
1) Connect vacuum pump to filter unit, place (...
2) Fill cup with known amount of collected sa...
3) Note total volume of filtered water in excel...
4) Once the filter runs dry, flush sides of cup cl...
5) Remove filter, **fold and dry filter** on paper t...
6) Store the filter in the specifically designed st... VLIZ 20141218_ 180_ 500ml_ ChlA)
7) **Wrap tape around the label to ensure it sta...**
8) Store in -24°C and clean all used equipment...

B) **Nutrients:** Filter **about 200ml** seawater with 0.2 ...
1) Connect vacuum pump to Erlenmeyer and p...
2) When the filter runs dry, pour the filtered w...
3) Store at -24° C and clean the Erlenmeyer and...

C) **Suspended matter:**
a. Fill a 3-liter container for SPM determinatio...
b. In the papers supplied with the VMM box, f...

D) **Metagenomics**
1. Isolate 10-30L of seawater using a Niskin bo...
2. Collect microbial community by passing as m... filtration step needed. Please try to filter as...
3. Filtration for Sterivex should be done using ... will need a lear lok adapter enabling an atta...
4. The Sterivex should be pumped free of stora...
5. Seal the Sterivex filter using a sticky tac, e.g...
6. Label your filters as follows: 'VLIZ', 'Date', 'S... entire filter in a plastic 200ml recipient. Mak...
7. To protect the label from running please se... Sellotape or Tesafilm).
8. For short-term storage a -20°C freezer can b... samples can be stored in sealed bag buried ...

E) **eDNA**
1. Collect two Niskin bottles at the bottom, ar...
2. Once Niskin bottles are on deck, fill two 1-li...
3. Label with 'bottom/surface', eDNA, date, ti...

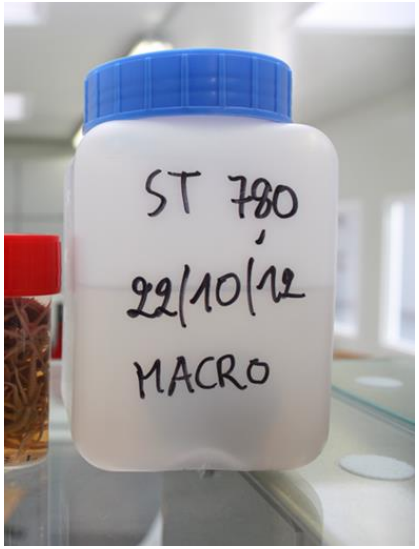
Pigments	-24°
Nutrients	-24°
Suspended matter	in dark
eDNA	-24°
Prokaryotic DNA	-24°

Phytoplankton sampl...

A) **Samples for phytoplankton**
1) Take the blue 50L barrel (blue with or...
2) Clean the 55µm Apstein net carefully, ...
3) Collect bucket samples, at the side of ...
4) At 50L stop collecting and lift out the ...
5) Clean the net from the outside to coll...
6) Pour the contents of the net into a 20... is seen.
7) Put the sample in the fridge at 4° C
8) Don't forget to label: 'VLIZ', 'fyto', 'da...

Phytoplankton	4...

1. Data collection - result

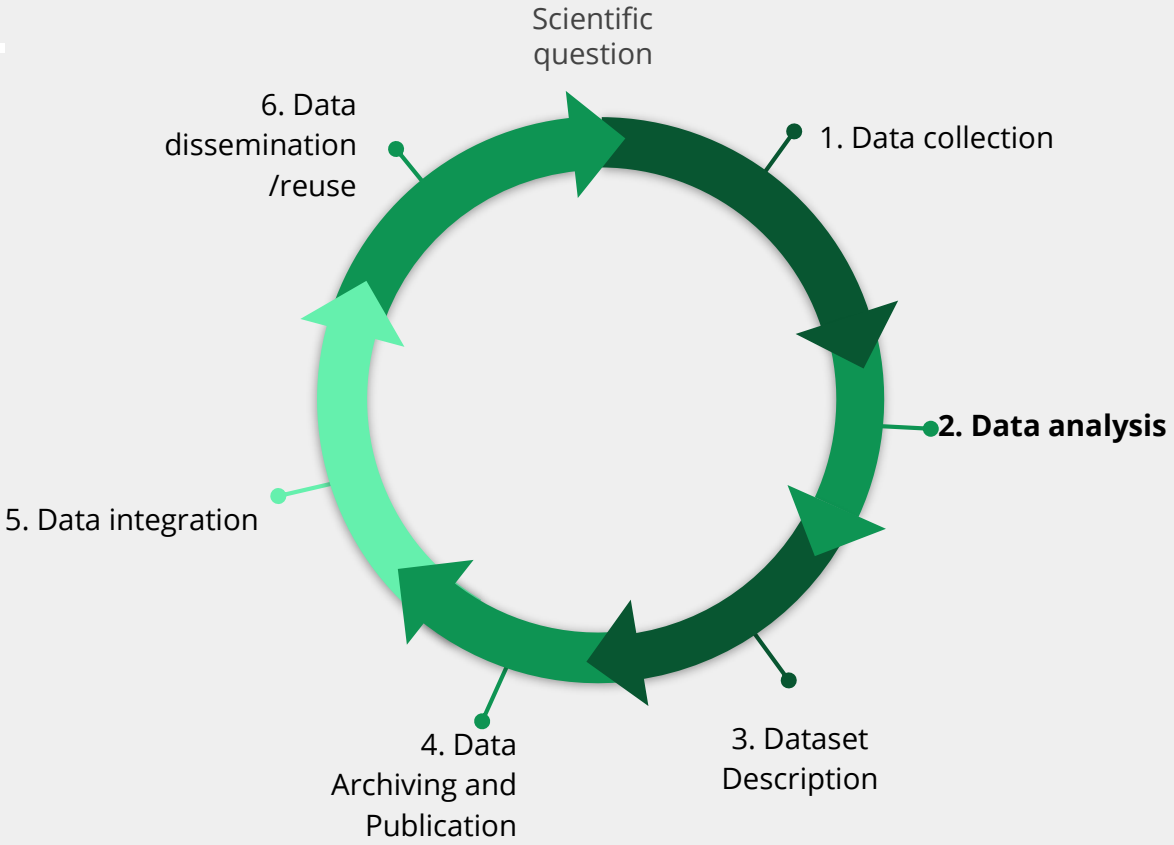


Result:

- sample taken according to well-defined protocol
- Water quality parameters in database

2. Data analysis

VLIZ Data management cycle



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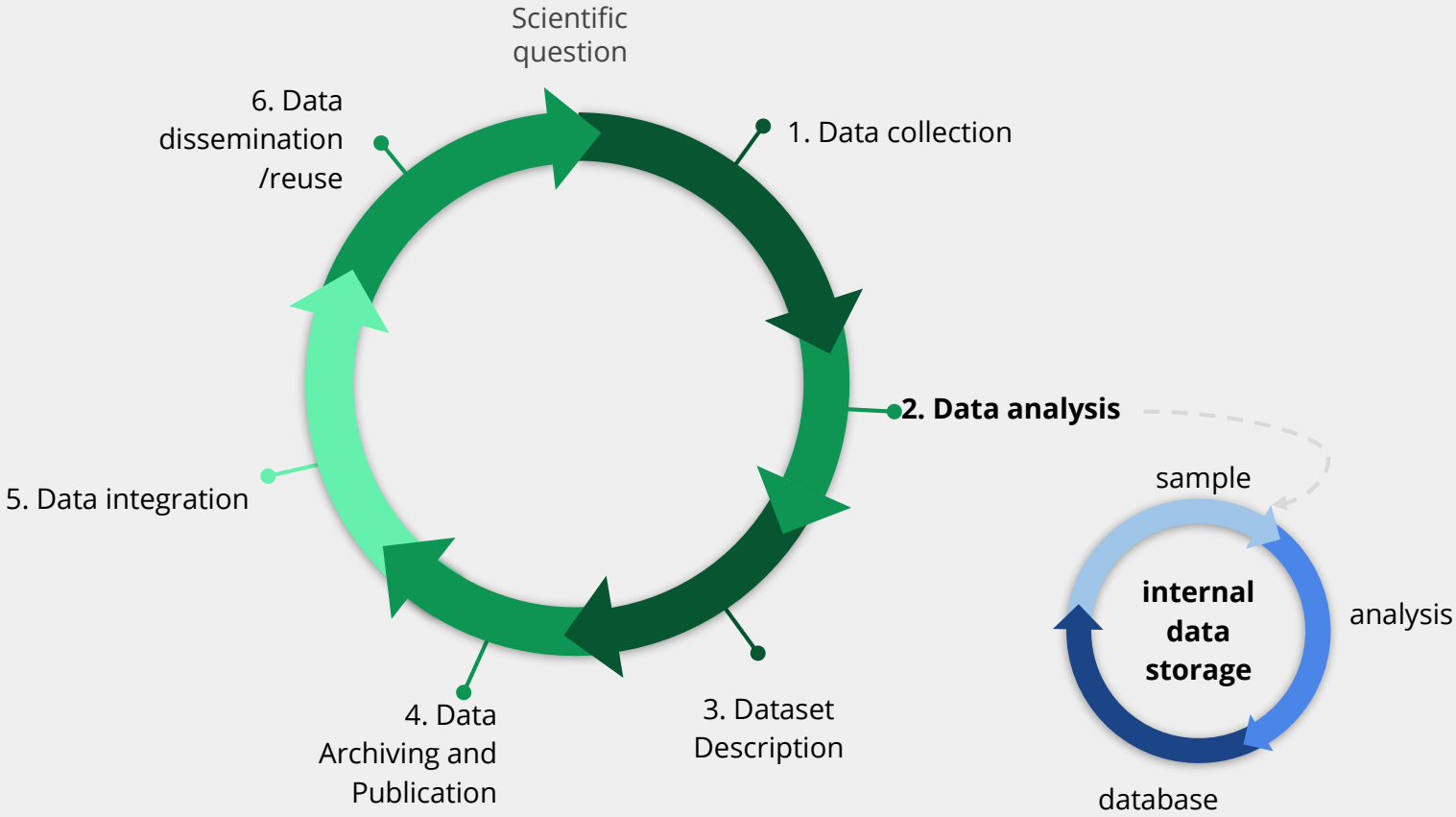
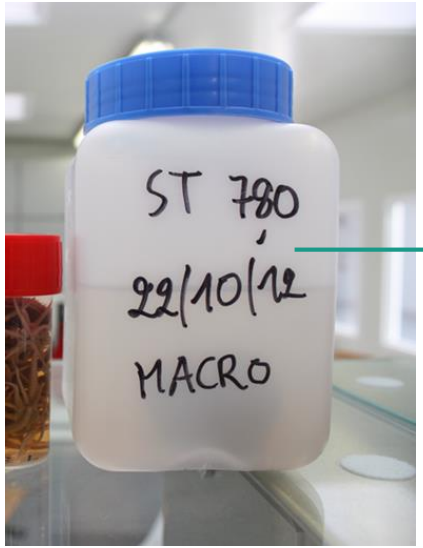
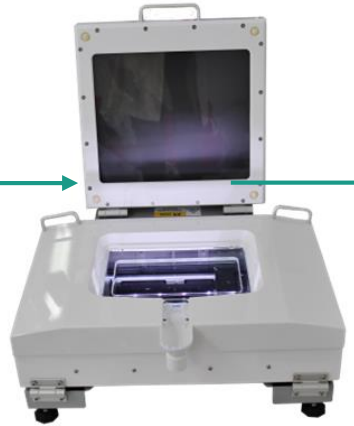
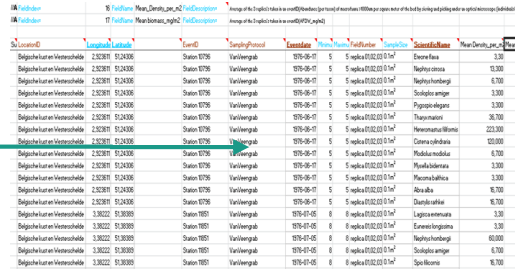


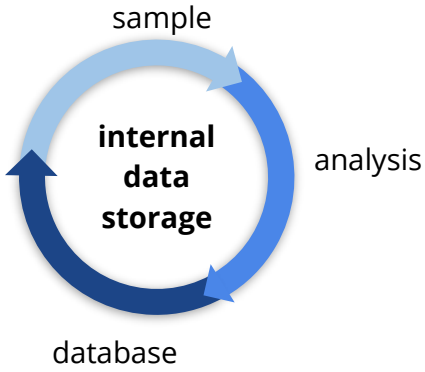
2. Data analysis

From sample to image to observation



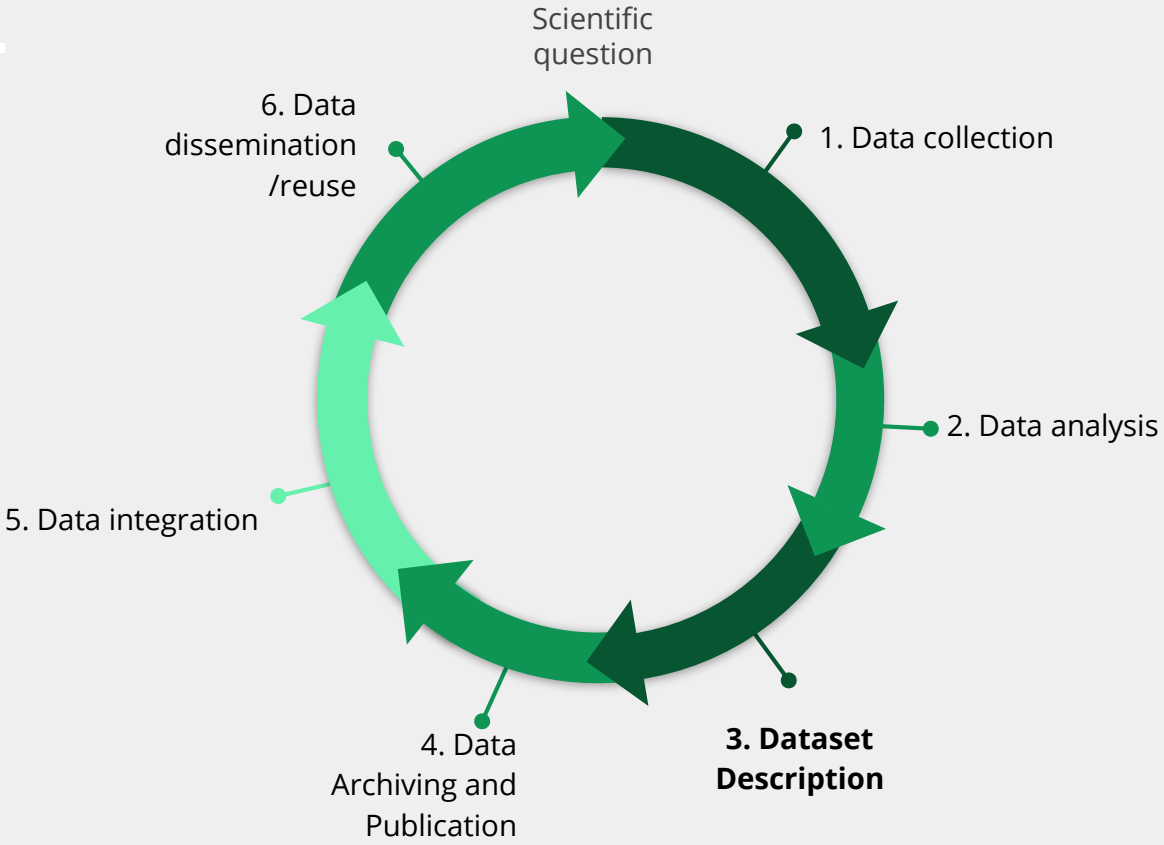






3. Dataset description

VLIZ Data management cycle



3. Data set description

FAIR - Findable

IMIS

Publications | Institutes | Persons | Datasets | Projects |

19 records found with search conditions : Title = 'lifewatch'

Expand all Collapse all

- ETN data: fish acoustic receiver network, more
  - LifeWatch observatory - Permanent acoustic receiver network in the Belgian Part of the North Sea,
  - LifeWatch observatory - Permanent acoustic receiver network in the Western Scheldt, Array 2: Bet
  - LifeWatch observatory - Permanent acoustic receiver network in the Western Scheldt; Array 1: Bet
- **BVMtool**: LifeWatch computational tool for marine Biological Valuation Mapping, more
- LifeWatch observatory data: CTD temperature and salinity measurements in the Belgian Part of the N
- LifeWatch observatory data: GPS tracking network for large birds, more
- LifeWatch observatory data: buoy data, more
- LifeWatch observatory data: fish acoustic receiver network, more
  - LifeWatch observatory - Acoustic telemetry range-test dataset, performed in the C-Power wind farm
  - LifeWatch observatory - Permanent acoustic receiver network in the Belgian Part of the North Sea,
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  - LifeWatch observatory - Permanent acoustic receiver network in the Western Scheldt; Array 1: Bet
  - LifeWatch observatory - Temporarily acoustic receiver network for range testing, performed in the C
- LifeWatch observatory data: genetic data in the Belgian Part of the North Sea, more
- LifeWatch observatory data: long term collections of macrobenthos in the Belgian Part of the North Se
- LifeWatch observatory data: nutrient, pigment, suspended matter and secchi measurements in the Bel
- LifeWatch observatory data: passive accoustic network (CPOD) for Cetacean detection, more
- LifeWatch observatory data: phytoplankton observations by imaging flow cytometry (CytoSense) in the
- LifeWatch observatory data: phytoplankton observations by imaging flow cytometry (FlowCam) in the E
- LifeWatch observatory data: reference collection of unique observations in the Belgian Part of the Nort
- LifeWatch observatory data: sensor network for bat detection, more
- LifeWatch observatory data: zooplankton observations in the Belgian Part of the North Sea, more

LifeWatch observatory data: zooplankton observations in the Belgian Part of the North Sea

Citable as data publication

Flanders Marine Institute (VLIZ), Belgium (2019): LifeWatch observatory data: zooplankton observations in the Belgian Part of the North Sea. https://doi.org/10.14284/329

Download Data

Previous versions (2) view

Contact: data@vliz.be

Availability: This dataset is licensed under a Creative Commons Attribution 4.0 International License.

Special collections:

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Belgian marine, coastal & estuarine areas
Diversiteit soorten
Diversiteit soorten: Plankton
EMBRC
IMIS themes
Lifewatch acknowledged
LifeWatch Observatory

Description

In the framework of the Lifewatch marine observatory a number of fixed stations on the Belgian Part of the North Sea (BPNS) are visited on a monthly or seasonal basis using the RV Simon Stevin. A grid of nine stations covers the coastal zone and are sampled monthly. Eight additional stations, located further at sea, are sampled on a seasonal basis. This dataset contains zooplankton observations in the Belgian Part of the North Sea (BPNS) since 2012.

Scope

Themes: Biology > Zooplankton
Keywords: Marine, Zooplankton, ANE, Belgium, Belgian Continental Shelf (BCS)

Geographical coverage

ANE, Belgium, Belgian Continental Shelf (BCS) Stations [Marine Regions]

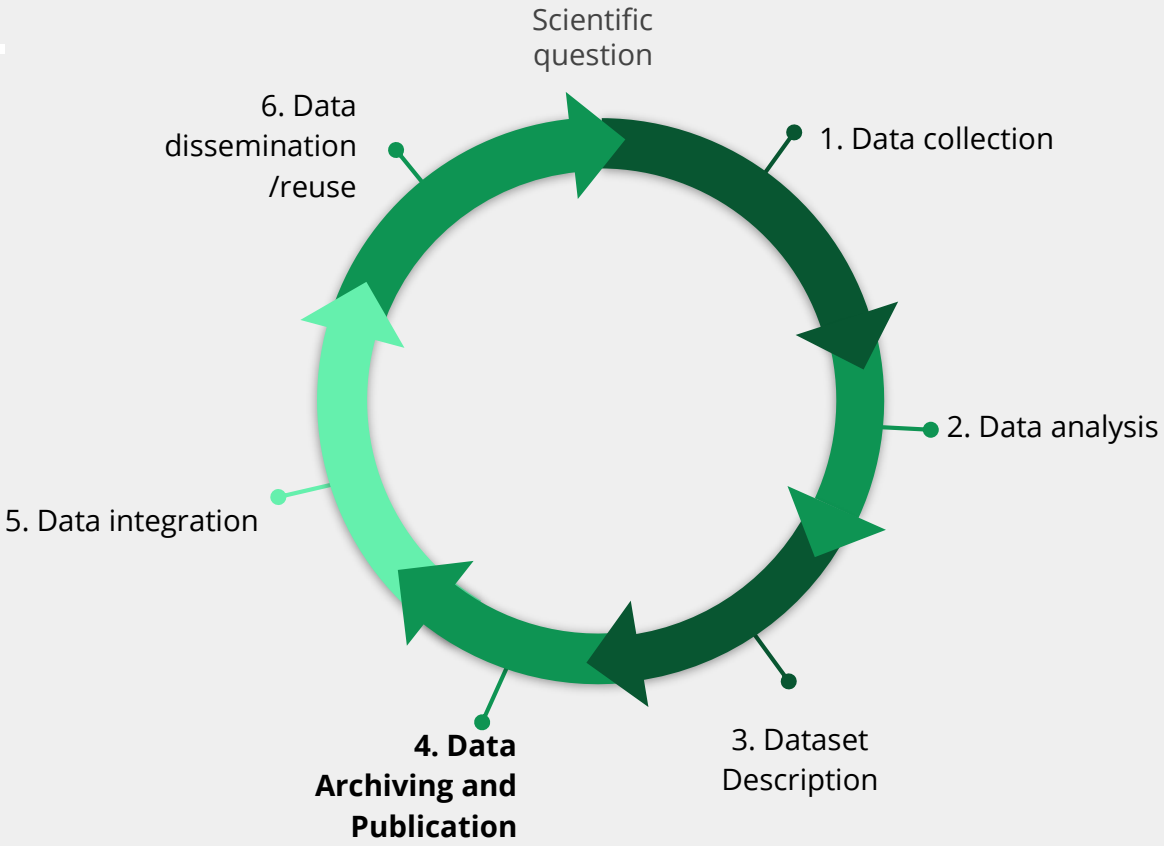
Temporal coverage

From 24 July 2012 on [In Progress]

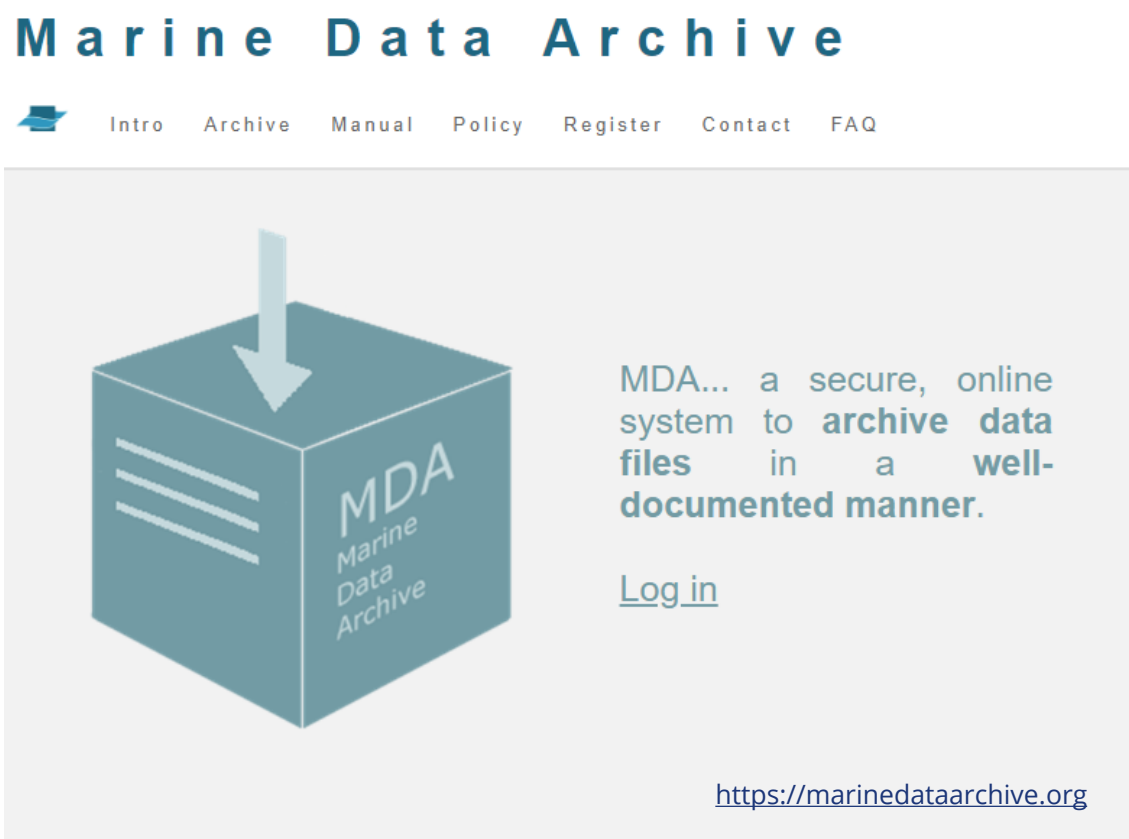
http://www.vliz.be/imis?module=dataset&dasid=4687

4. Data Archiving and Publication

VLIZ Data management cycle



4. Archiving: Marine Data Archive



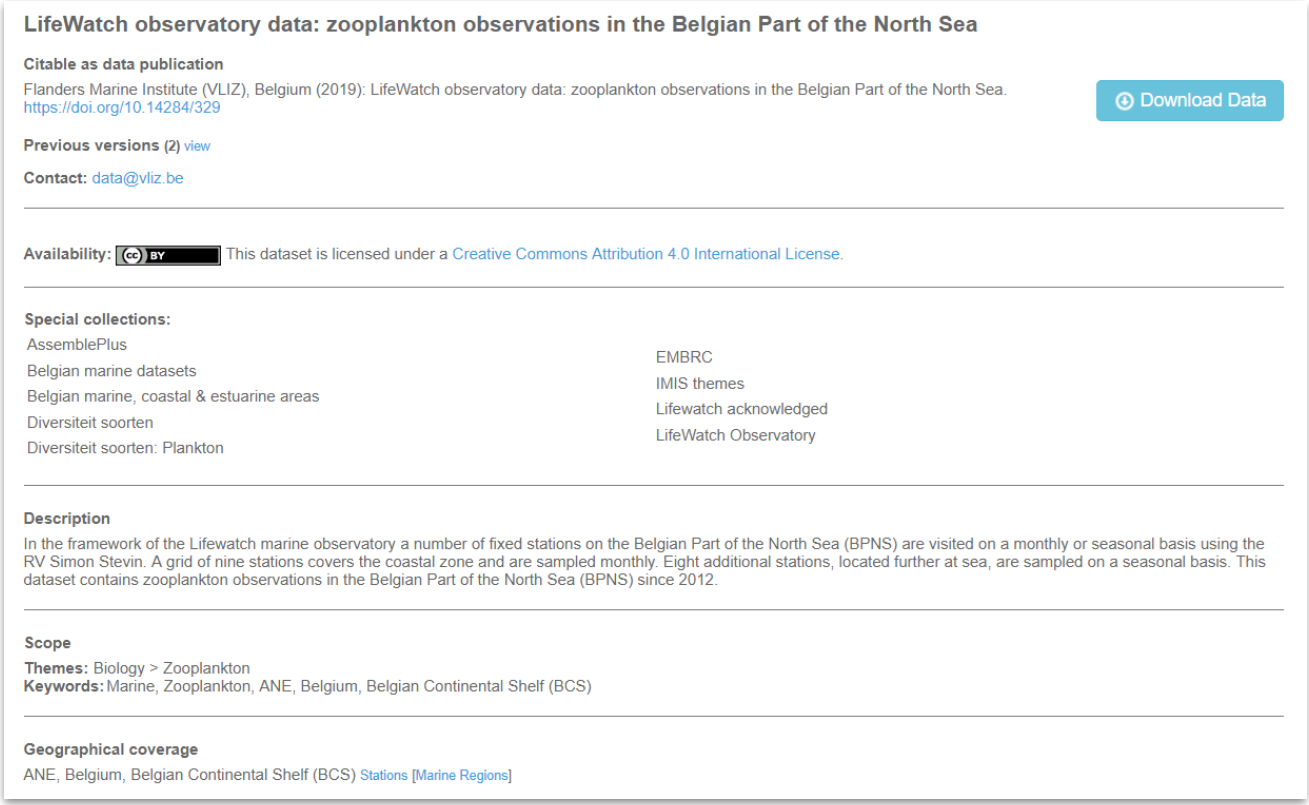
https://marinedataarchive.org

Data publication

FAIR - Accessible

http://www.vliz.be/imis?module=dataset&dasid=4687

https://doi.org/10.14284/394



LifeWatch observatory data: zooplankton observations in the Belgian Part of the North Sea

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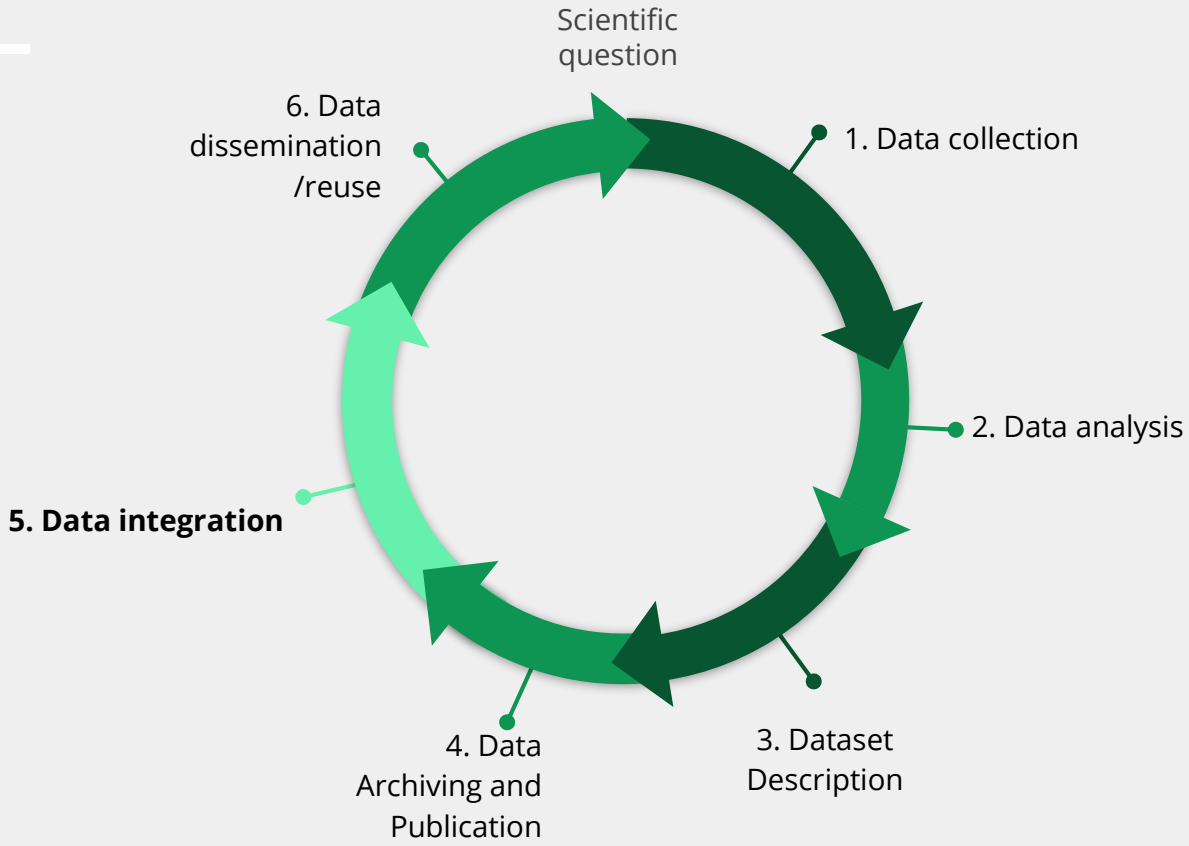
5. Data Integration

VLIZ Data management cycle



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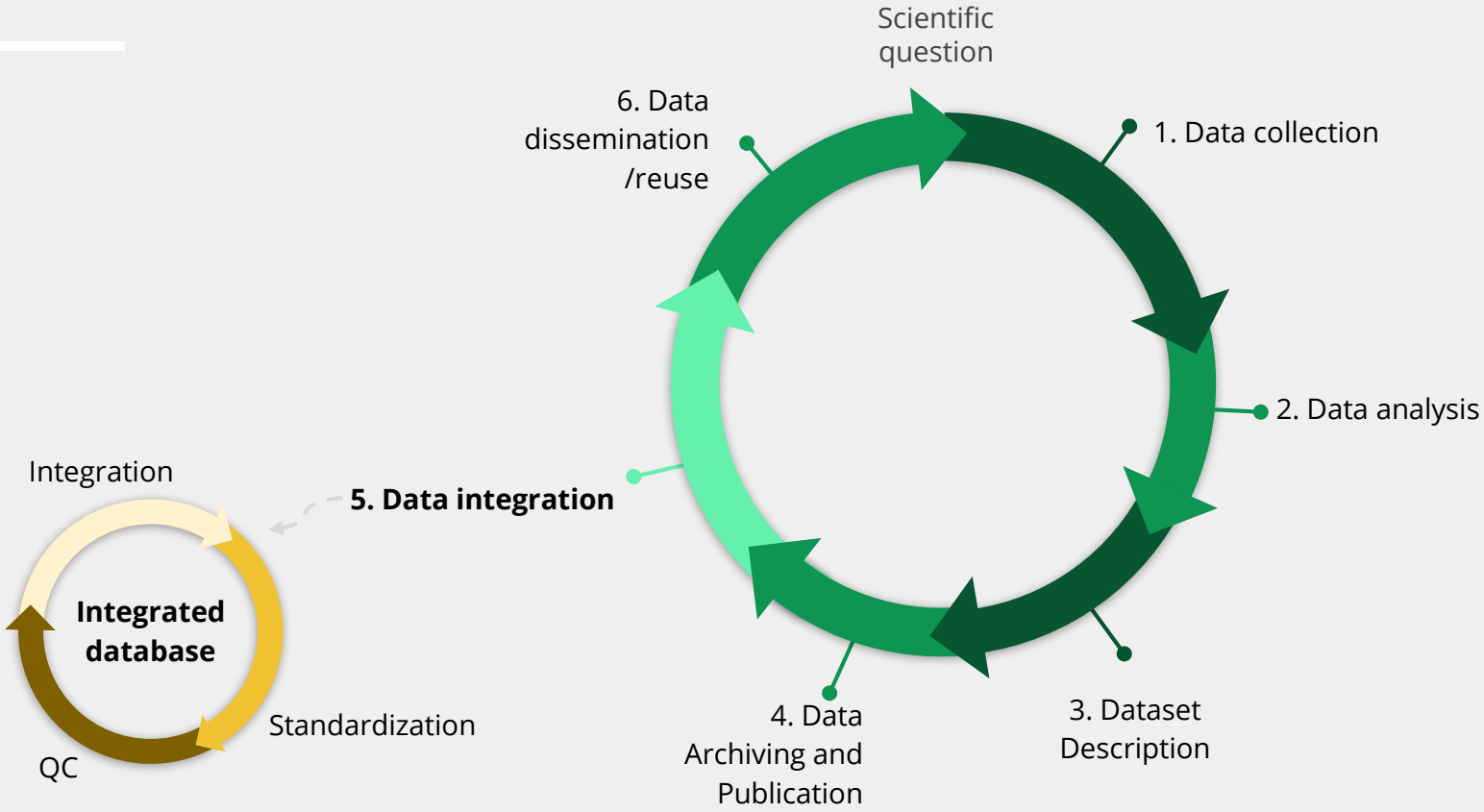
VLIZ Data management cycle



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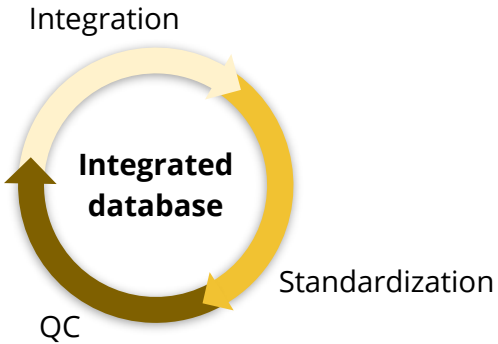


Integrated marine biological database:

- EurOBIS

LifeWatch Species Information Backbone:

- EurOBIS
- World Register of Marine Species
- Marine Regions

Data standardisation

Taxonomic quality control

Dataset	Scientific names	After tax. check
1	*Calanus fimarchicus*	
2	*Calanus finmarchicus*	*Calanus finmarchicus*
3	*Calanus elegans*	
4	*Cetochilus finmarchicus*	

WoRMS
World Register of Marine Species

urn:lsid:marinespecies.org:taxname:104466

Data standardisation

Controlled vocabularies

L
Biomass
0.0911392405
0.000721519
0.0005063291
0.053164557
0.003
0.0835443038
0.0015949367
0.0016075949
0.0000126582
0.0000253165
0.0002531646
0.0005696203

Biomass?

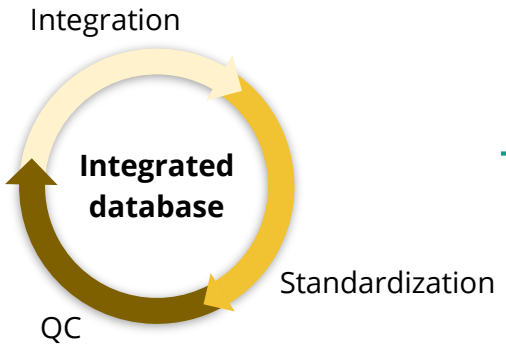
- Dry weight?
- Ash-free?
- Wet weight?
- Units?

Conceptid (12)	Preflabel
ODRYBM01	Dry weight biomass (in assayed sample) of biological entity specified elsewhere
OWETBM01	Wet weight biomass (in assayed sample) of biological entity specified elsewhere
SDBIOL03	Ash-free dry weight biomass of biological entity specified elsewhere per unit area of the bed
SDBIOL04	Wet weight biomass of biological entity specified elsewhere per unit volume of the water body
SDBIOL05	Wet weight biomass of biological entity specified elsewhere per unit area of the bed
SDBIOL07	Ash-free dry weight biomass of biological entity specified elsewhere per unit volume of the water body
SDBIOL08	Dry weight biomass of biological entity specified elsewhere per unit area of the bed

http://vocab.nerc.ac.uk/collection/P01/current/ODRYBM01/

5. Data Integration

FAIR - Findable - Accessible - Interoperable - Reusable



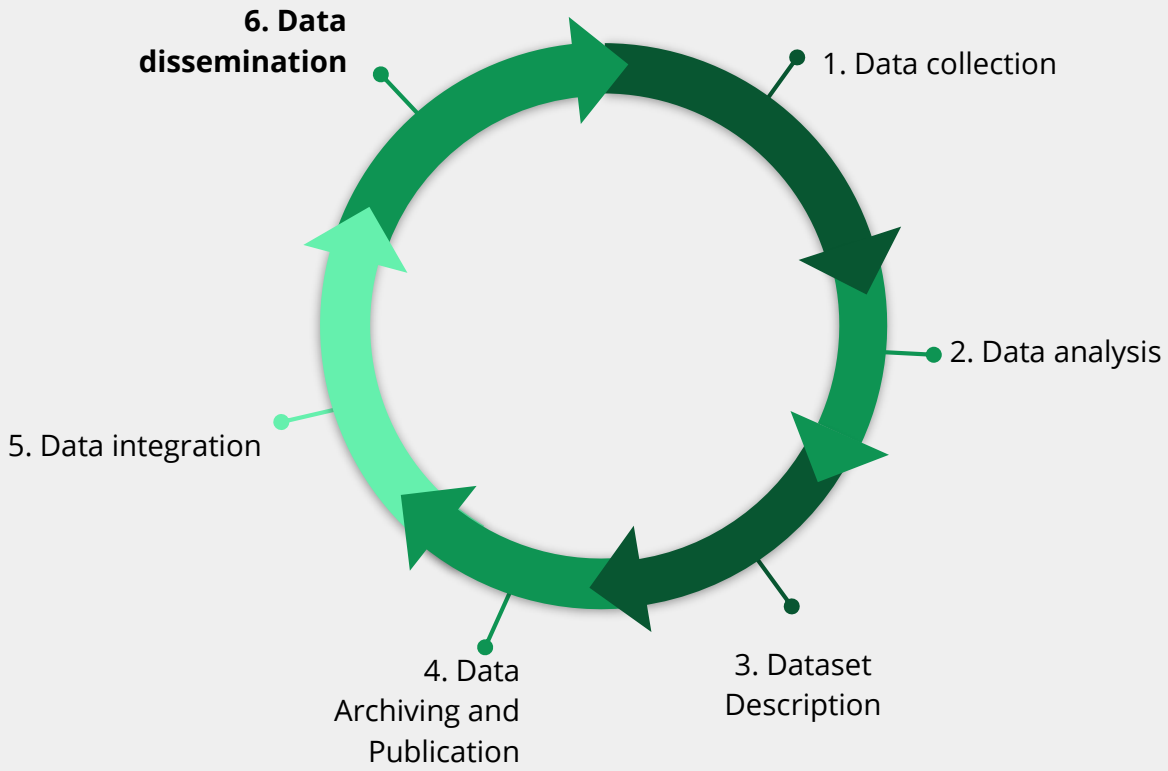
EurOBIS
European Ocean Biogeographic Information System

LifeWatch BELGIUM

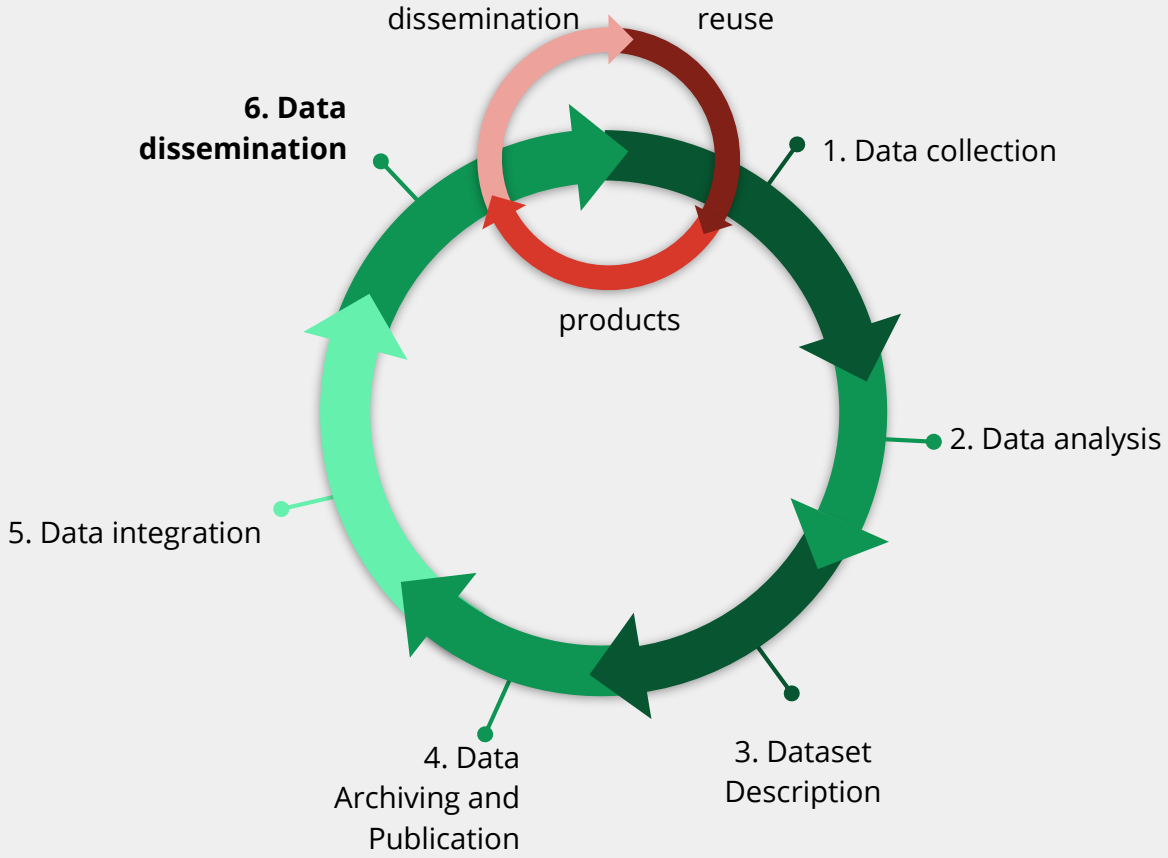
EurOBIS
European Ocean Biogeographic Information System

6. Data dissemination

VLIZ Data management cycle



6. Data dissemination

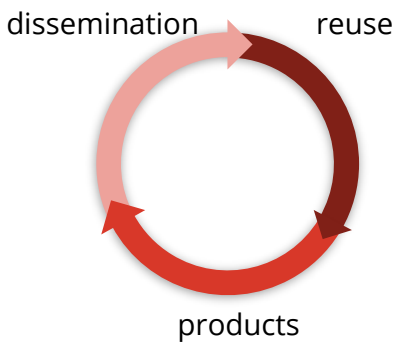


VLIZ Data management cycle

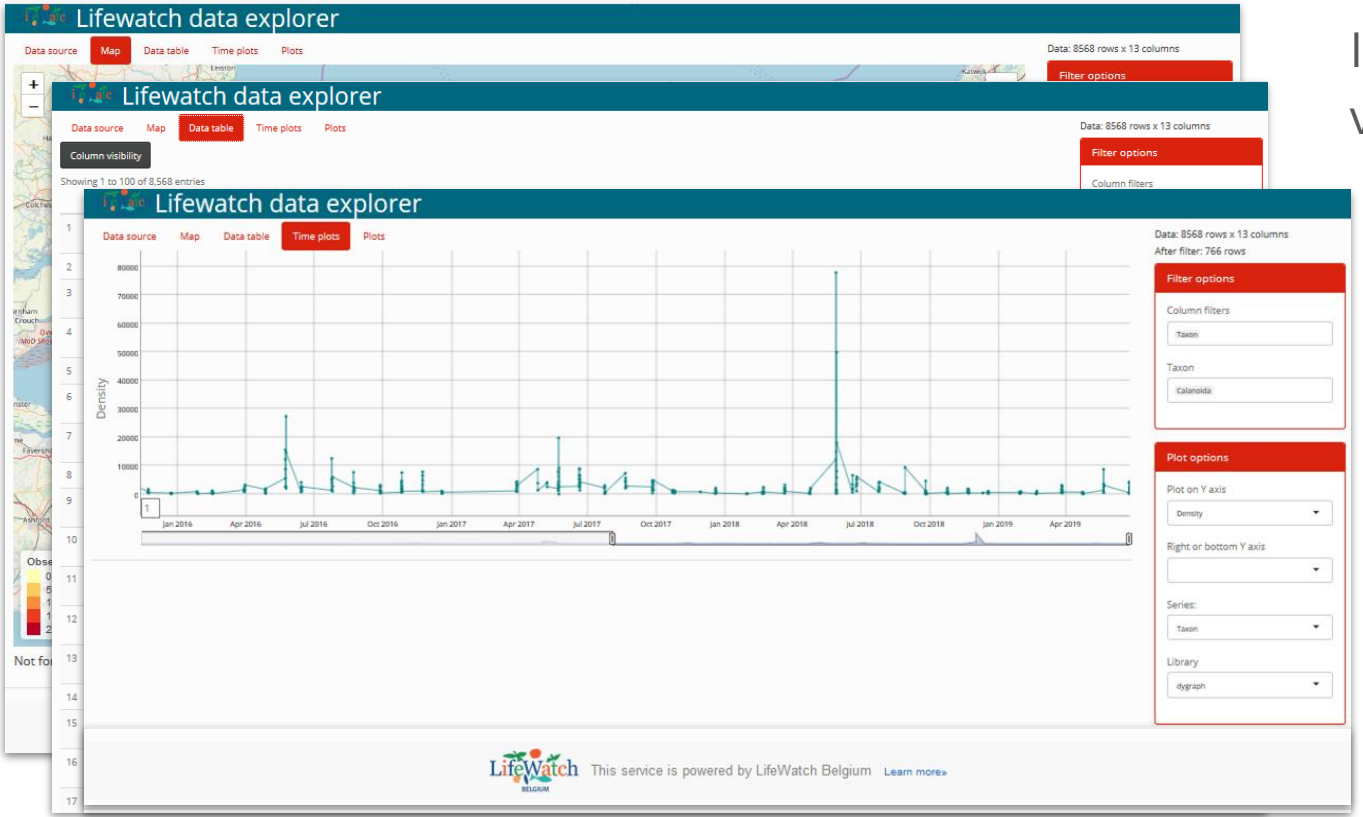
6. Data dissemination

FAIR - Findable - Accessible - Interoperable - Reusable

- LifeWatch Data Explorers
- Kustportaal
- Data paper
- EMODnet Biology



6. Data dissemination: data explorer



Interactive viewer to visualize the data

http://rshiny.lifewatch.be/zooscan-data/

6. Data dissemination: data explorer

LifeWatch Data Explorer - Manual

LifeWatch Data Explorer - Underway data

LifeWatch Data Explorer - Monitoring station data

LifeWatch Data Explorer - Zooplankton data

LifeWatch Data Explorer - Bird GPS tracking data

LifeWatch Data Explorer - Fish telemetry data

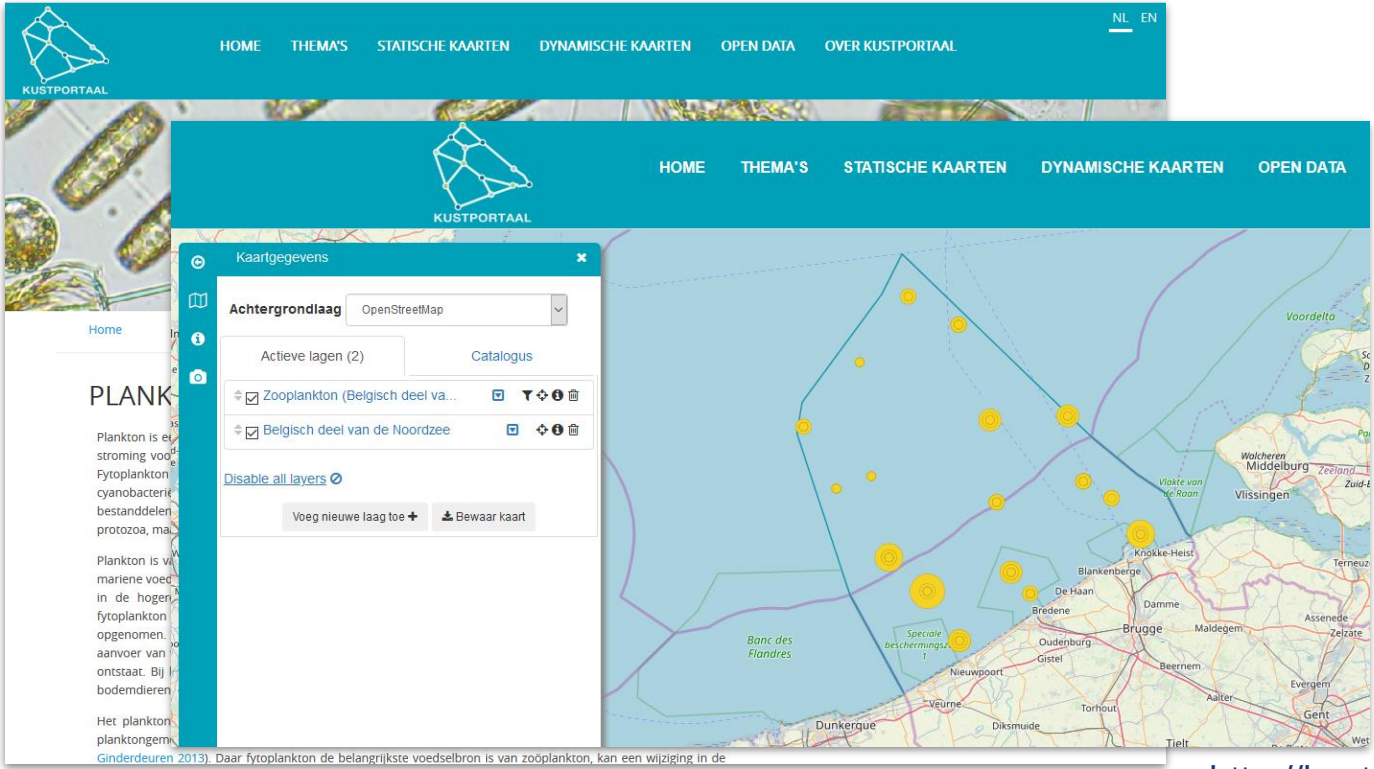
LifeWatch Data Explorer - Batcorder data

LifeWatch Data Explorer - C-POD data

LifeWatch Data Explorer - Phytoplankton data

http://lifewatch.be/en/lifewatch-data-explorer

6. Data dissemination: data portals



http://kustportaal.be/nl/plankton

6. Data dissemination: data papers

Geoscience Data Journal

RMetS

DATA PAPER | Open Access

LifeWatch observatory data: Zooplankton observations in the Belgian part of the North Sea

Jonas Mortelmans, Jolien Goossens, Luz Amadei Martínez, Klaas Deneudt, André Cattrijsse, Francisco Hernandez

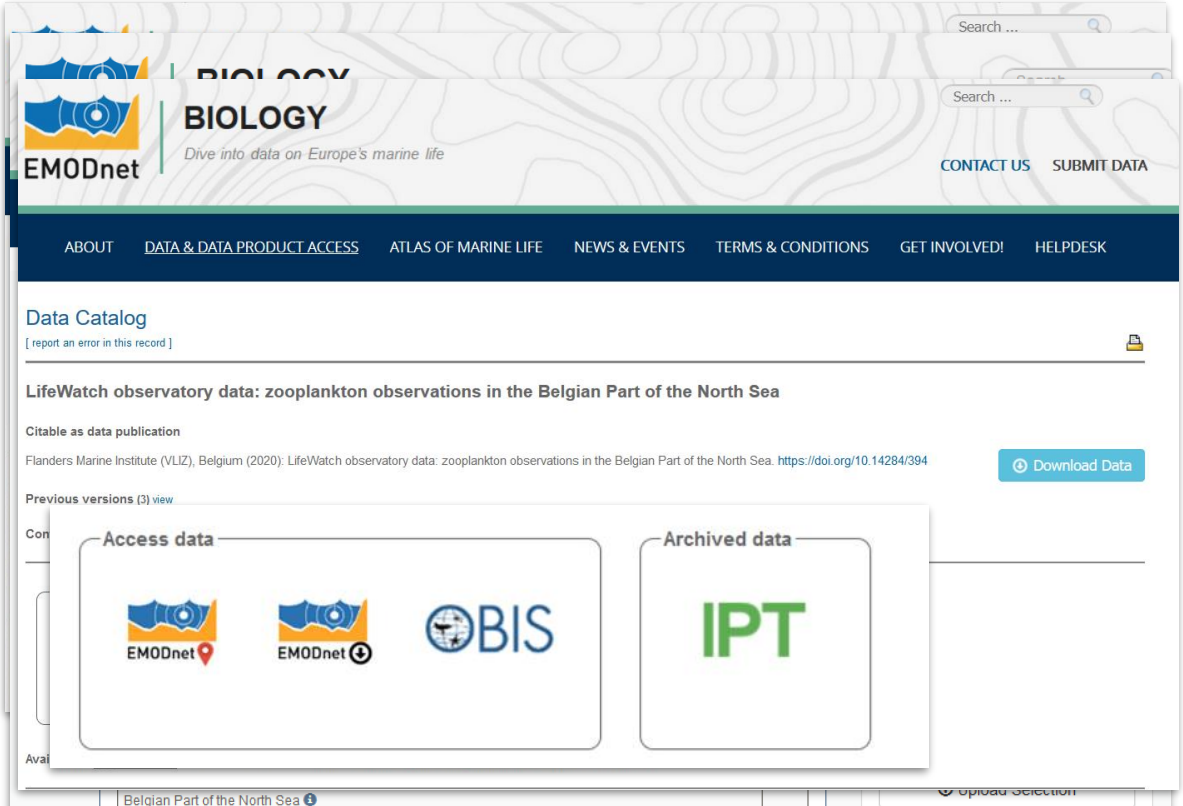
First published:10 April 2019 | https://doi.org/10.1002/gdj3.68

Data paper: much more than data!

- Detailed description of whole workflow, from sample to data integration
- How to access the data
- ...

https://doi.org/10.1002/gdj3.68

6. Data dissemination: EMODnet Biology



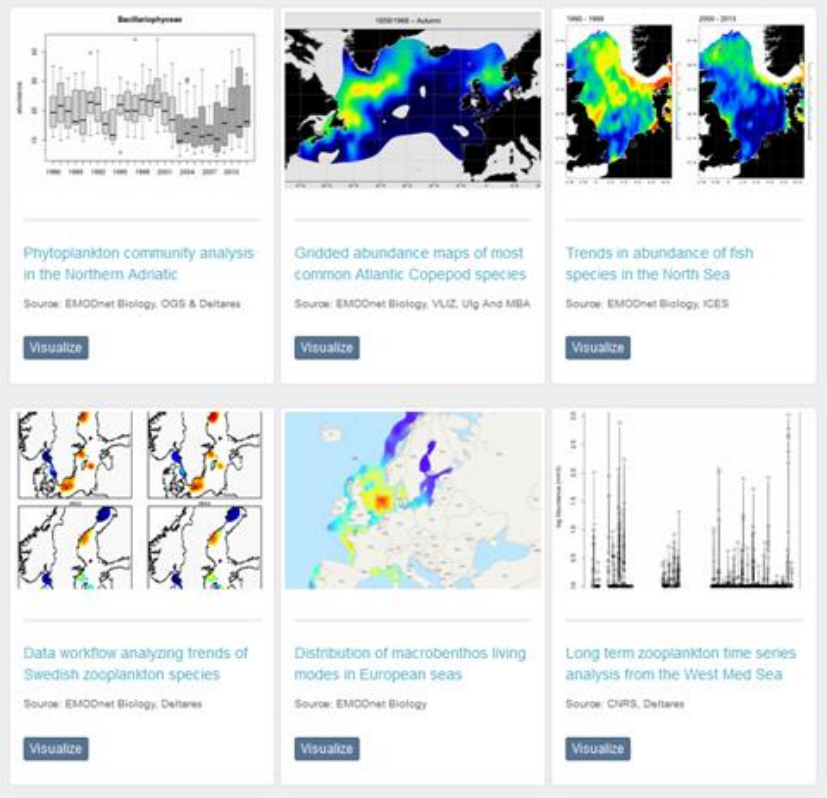
Portal on EurOBIS database

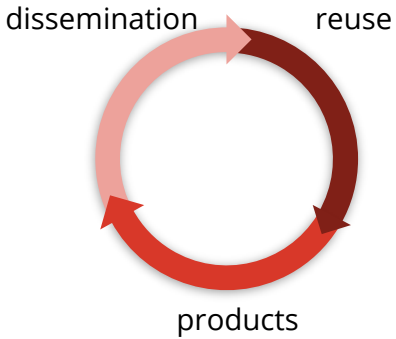
- Download toolbox
- Viewer
- Webservices

Ensures data flow to EurOBIS

www.emodnet-biology.eu

8. Data reuse: from data to data products

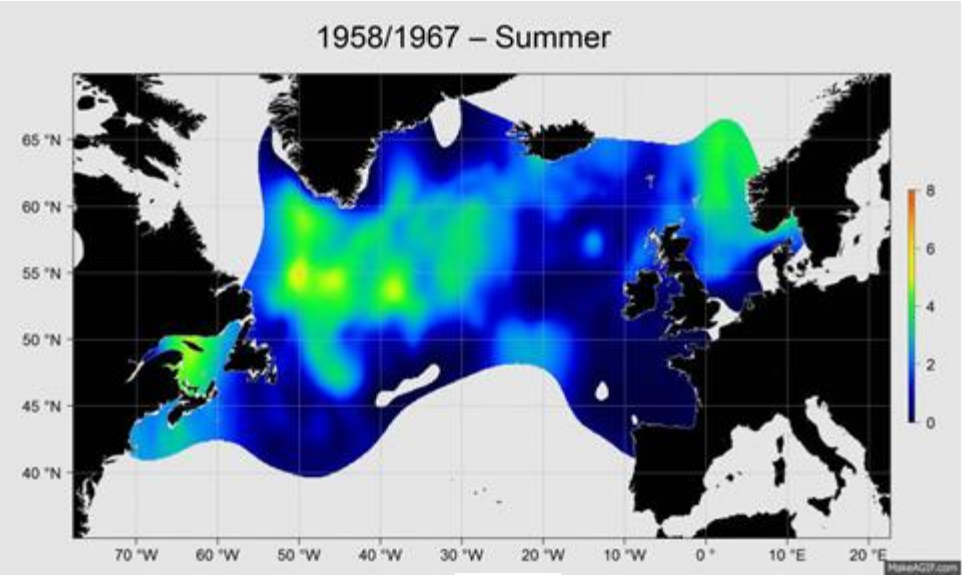




EMODnet | BIOLOGY

Dive into data on Europe's marine life

8. Data reuse: from data to data products



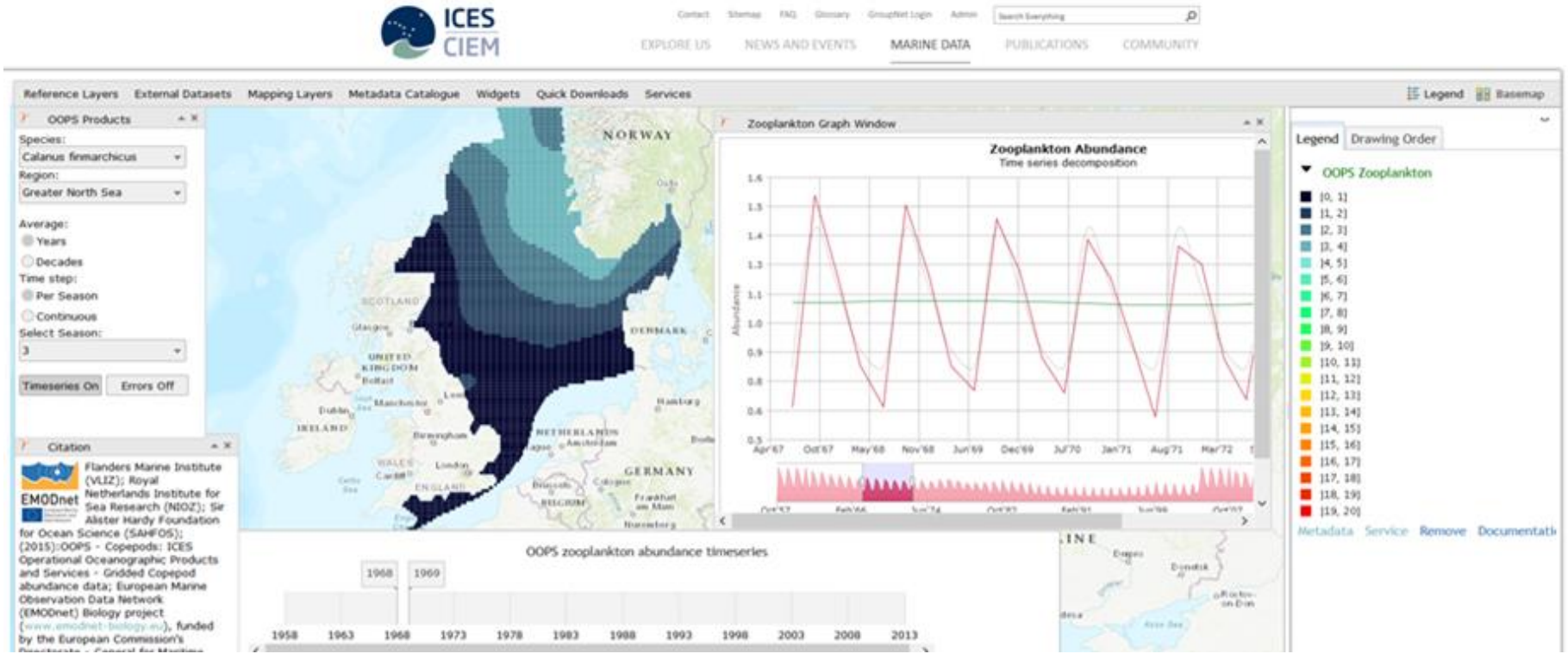
Calanus finmarchicus

EMODnet

BIOLOGY

Dive into data on Europe's marine life

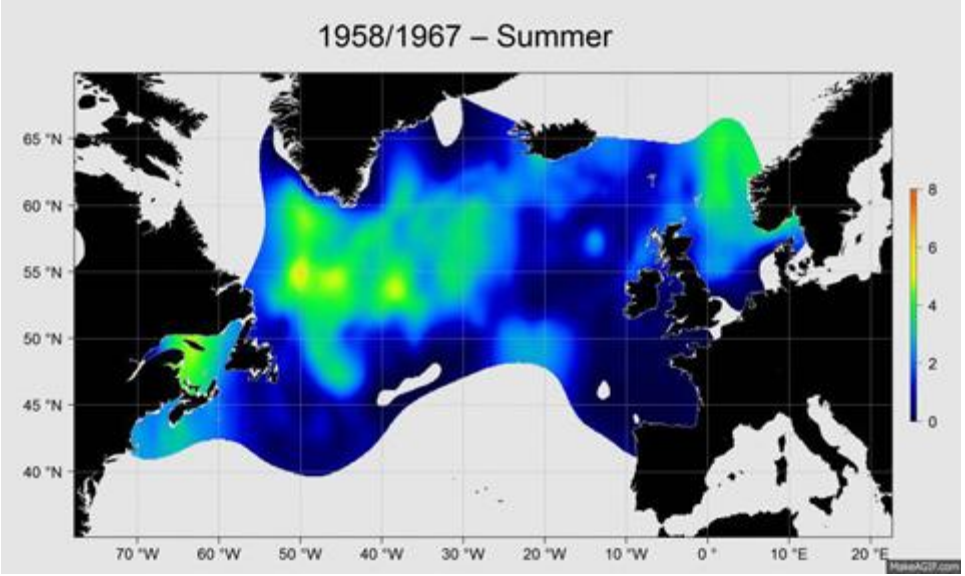
8. Data reuse: from data to data products



ICES' Operational Oceanographic Products and Services (OOPS)

http://gis.ices.dk/sf/index.html?widget=oops-z

8. Data reuse: from data to data products



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Thank you