Introduction to web services and LifeWatch virtual labs

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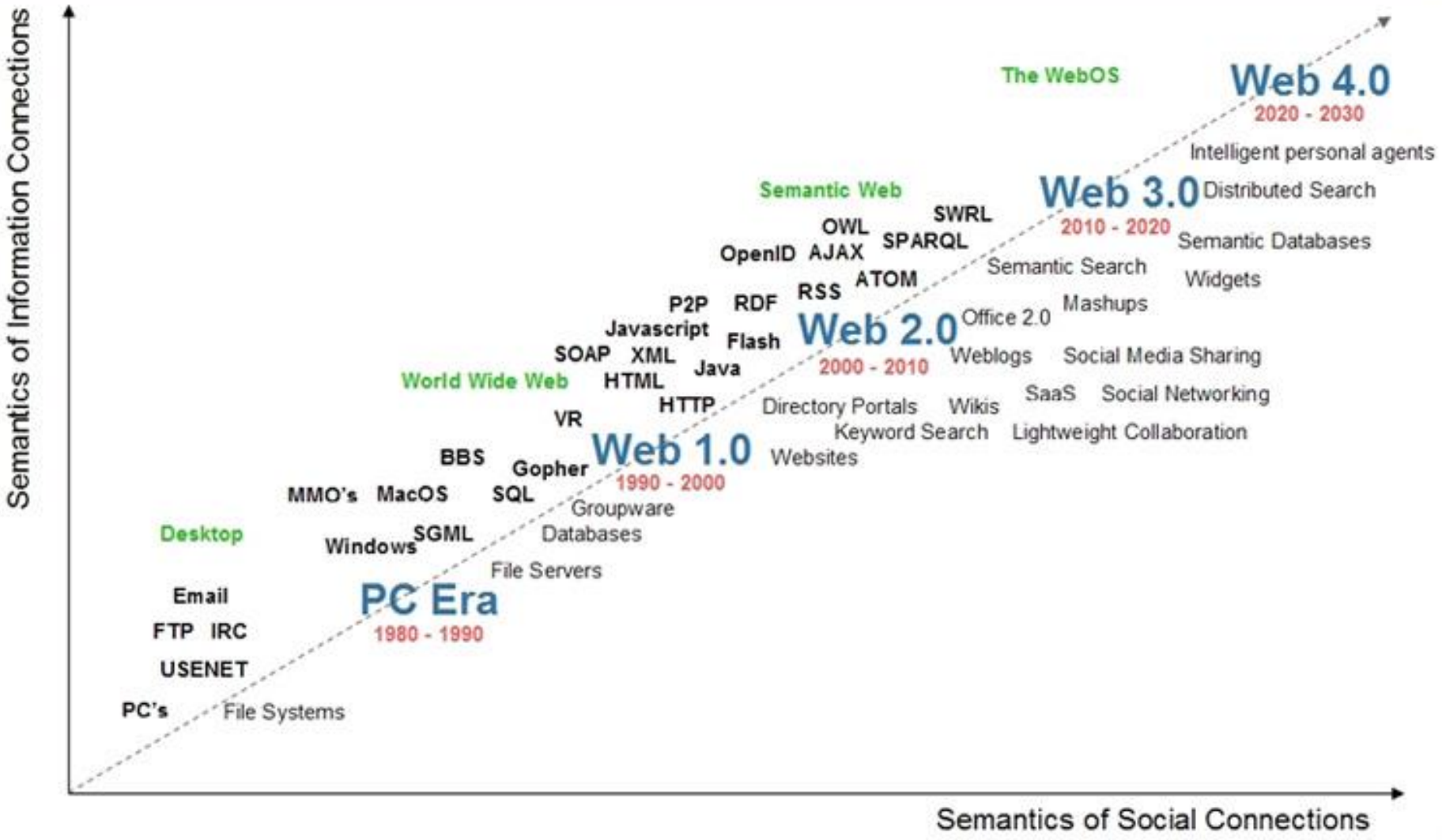
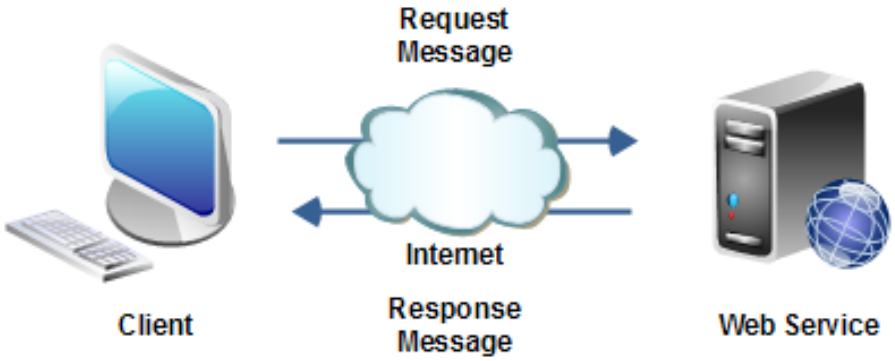
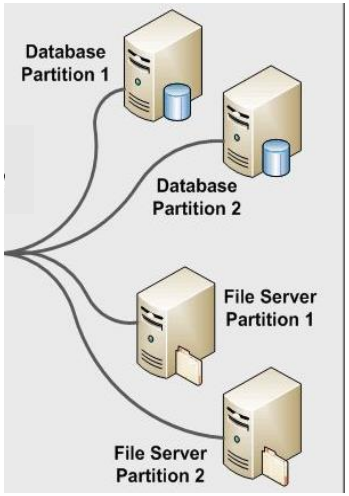


Source:Radar Networks & Nova Spivack, 200

What are web services?

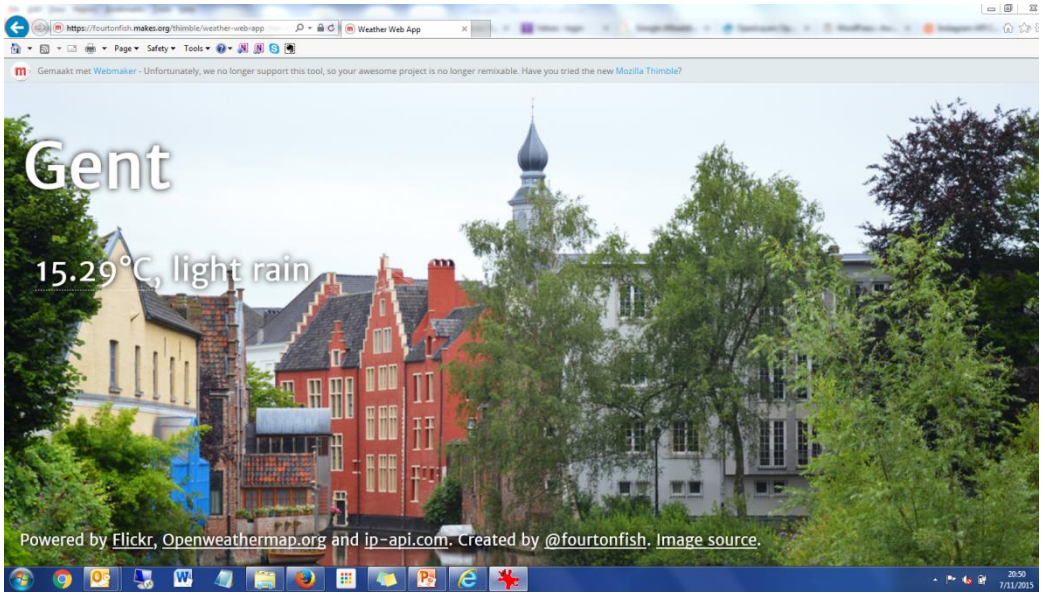
Web services are systems that allow communication between several computers over the web, and allow the user to access information directly from within other applications.



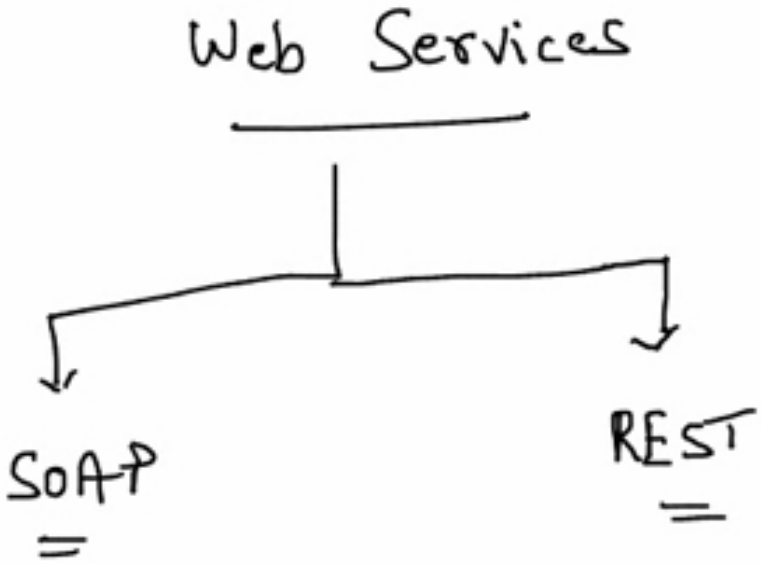



WeatherApp
Roma,IT
23°
Current condition
Temp Min:23°
Temp Max:24°
Press:1017mbar
Hum:53.0%
Wind speed:1 KMH
Wind deg:WSW 251.0°
Clear(Sky is Clear)
Forecast
Wed 11/27
Thu 11/25
Fri 12/26
Sat 15/25
Sun 20/22
Data from openweathermap.org
Last update:24-09-2013


Paris
Humidity: 71%
Pressure: 1015mb
Wind: WSW, 9mph
Tue Wed Thu
Max: 28°C 19°C 21°C
Min: 17°C 14°C 10°C
Wind: 13mph 19mph 12mph
Dir: W W NW
Clear Sky, 14°C
Data from openweathermap.org


Weather Web App
Gemaakt met Webmaker - Unfortunately, we no longer support this tool, so your awesome project is no longer remixable. Have you tried the new Mozilla Thimble?
Gent
15.29°C, light rain
Powered by Flickr, Openweathermap.org and ip-api.com. Created by @fourtonfish. Image source.

What are web services?



Simple Object Access Protocol

protocol

only XML

WSDL (web service description language)

HTTP, SMTP, ...

additional features on security,

transaction,

Representation State Transfer

architectural style

XML, JSON, etc...

only over HTTP

What are web services?

Examples from everyday live:

- Google Maps

http://maps.googleapis.com/maps/api/geocode/json?address=oostende

- Openweathermap

http://api.openweathermap.org/data/2.5/weather?q=Oostende&mode=xml&appid=2de143494c0b295cca9337e1e96b00e0

- Twitter

https://api.twitter.com/1.1

- Google

https://developers.google.com/apis-explorer/#p/

- Facebook

Geospatial web services

- **OGC: Open Geospatial Consortium**

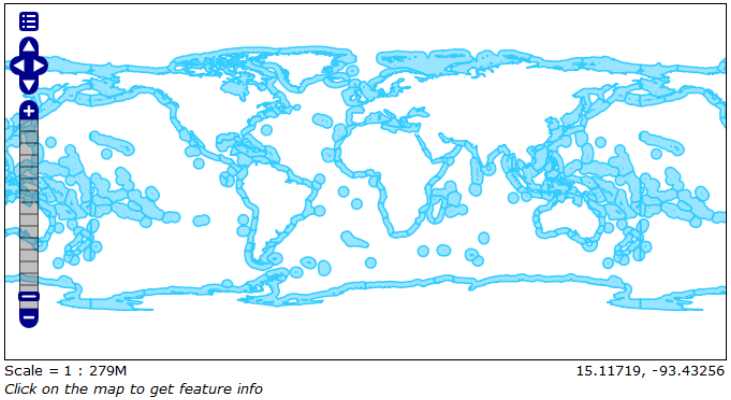
- Standards for:
  - Data Discovery:
    - CSW = Catalog Services for the Web
  - Data Visualization:
    - WMS= Web Mapping Services
  - Data Access:
    - WMS= Web Feature Services

VLIZ

Geospatial web services: WMS

- **WMS = Web Mapping Services**
  - Request to a web service for an image of a map

http://geo.vliz.be/geoserver/Ecoregions/wms?service=WMS
&**version**=1.1.0
&**request**=GetMap
&**layers**=Ecoregions:ecoregions
&**styles**=
&**bbox**=-180.0,-89.9,180.0,86.919
&**width**=671
&**height**=330
&**srs**=EPSG:4326
&**format**=application/openlayers



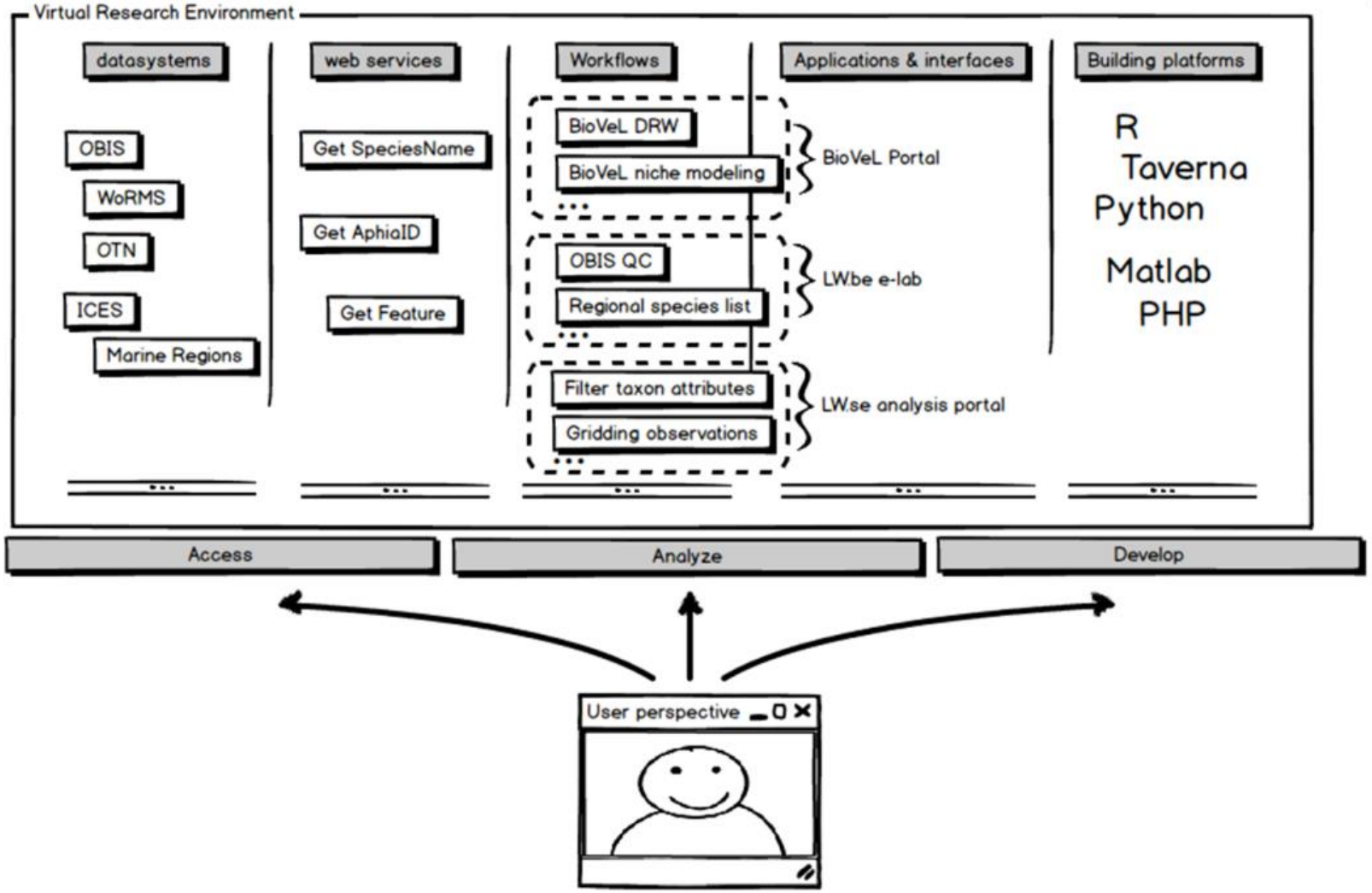
Geospatial web services: WMS

- **WFS = Web Feature Services**
  - Request to a web service for attribute information (GetCapabilities, DescribeFeatureType, GetFeature, GetGMLObject)

http://geo.vliz.be/geoserver/wfsrequest=**getfeature**
&**service**=WFS
&**version**=1.1.0
&**typeName**=
Ecoregions:ecoregions
&**outputFormat**=kml
&**filter**=

```
<PropertyIsEqualTo>
  <PropertyName>Mrgid
  </PropertyName>
    <Literal>21912</Literal>
  </PropertyIsEqualTo>
```

Why do we need web services in LW?



Why do we need web services in LW?

Say, a certain scientist has a certain question:

What is the maximum and minimum salinity where organisms with DNA seq homology above x% with this DNA seq. have been found?

To solve this question you need:

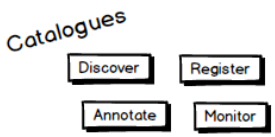
Genomic, taxonomic, biogeographic & environmental data

? Where is this data available? → distributed repositories

? Do you have access to the data? → sometimes poor

? How to piece all data together to form a coherent answer?

Where to find web services?

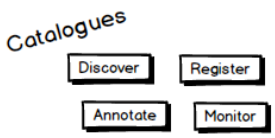


Catalogues with relevant web services:

- **BiodiversityCatalogue**
  - Focus on biodiversity science web services
  - https://www.biodiversitycatalogue.org/
- **BioCatalogue**
  - Focus on life science web services
  - https://www.biocatalogue.org/

Both catalogues are **community-oriented** websites where service providers and community experts can **register** and **curate** services, and where users can **discover** them.

Where to find web services?



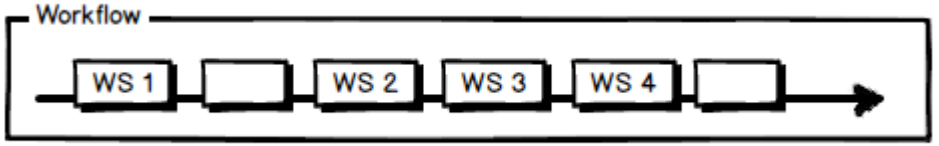
Geographic web services are listed in numerous spatial data catalogues, often with a specific contextual scope.

- **GeoNetwerk Opensource**
  - Offers catalogue applications for managing spatially referenced resources and documenting their web service parameters.
  - Example: http://geonetwork.vliz.be

Specifications of the geographic web services are specified by the **OGC standards** (http://www.opengeospatial.org/).

How to connect web services into workflows?

- **myExperiment**
  - find, use and share scientific workflows
  - http://www.myexperiment.org/home
- **BioVeL Portal**
  - run scientific workflows
  - https://portal.biovel.eu/
- **Taverna Workbench**
  - design and execute scientific workflows
  - http://www.taverna.org.uk/



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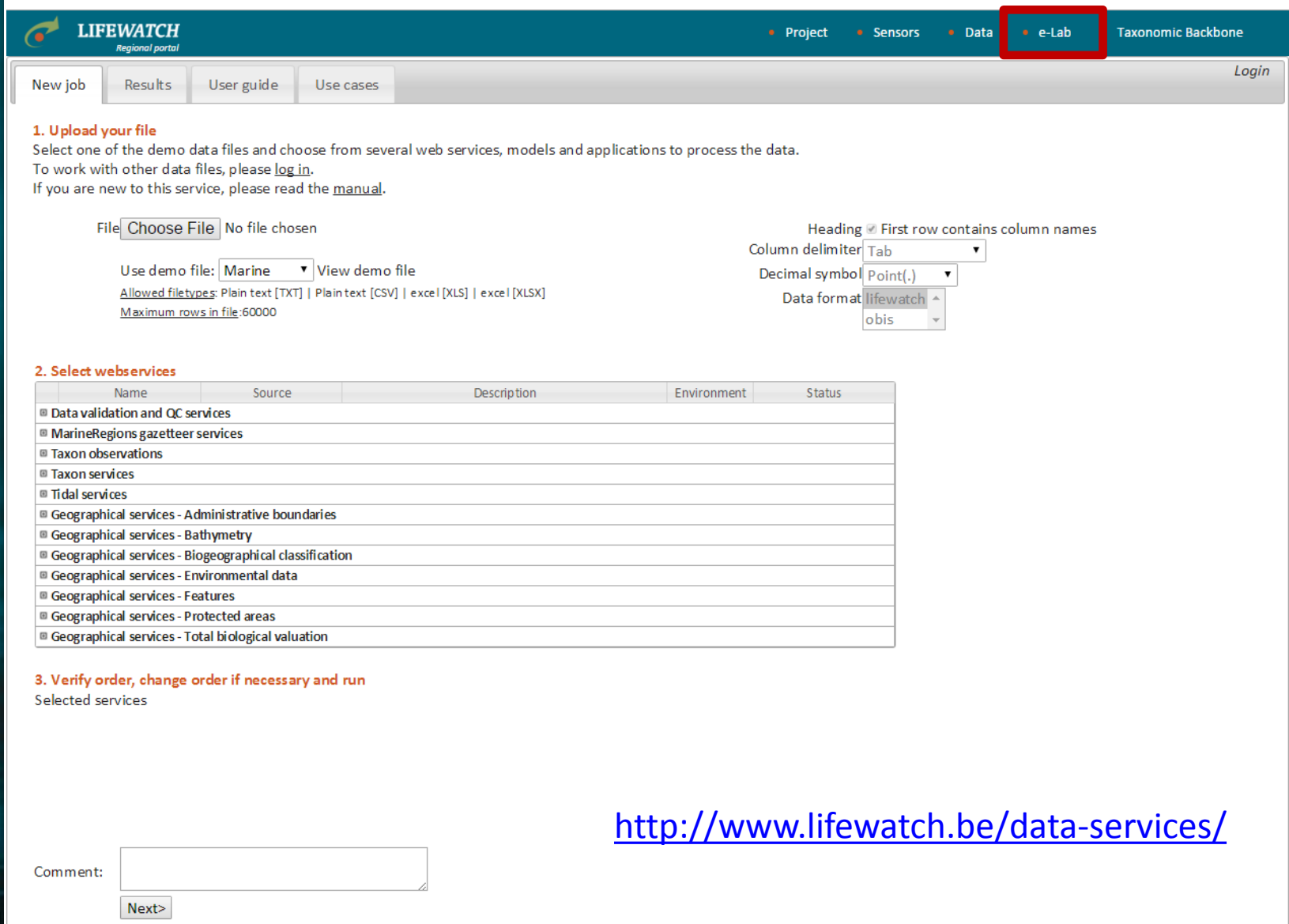

http://www.lifewatch.be/data-services/

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Increased data access: data systems are interconnected and accessible in one place (both local and global data systems)

WoRMS World Register of Marine Species

EU-NOMEN Pan-European Species directories Infrastructure

ITIS

gni

Catalogue of Life

PaleoBioDB

IPNI

OBIS

EurOBIS

Meetnet Vlaamse Banken

GEBCO General Bathymetric Chart of the Oceans

Marineregions.org towards a standard for georeferenced marine names

Administrative boundaries
Biogeographical classification

MARSPEC
Ocean Climate Layers for Marine Spatial Ecology

Bio-ORACLE

Flemish Ecological Network
Marine and Terrestrial Biological Valuation maps

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Increased data access: data systems are interconnected and accessible in one place (both local and global data systems)

Data standardization

Quality control

Visualization

Data analysis

Retrieval of additional data

Available through an online interactive data portal:

http://www.lifewatch.be/data-services

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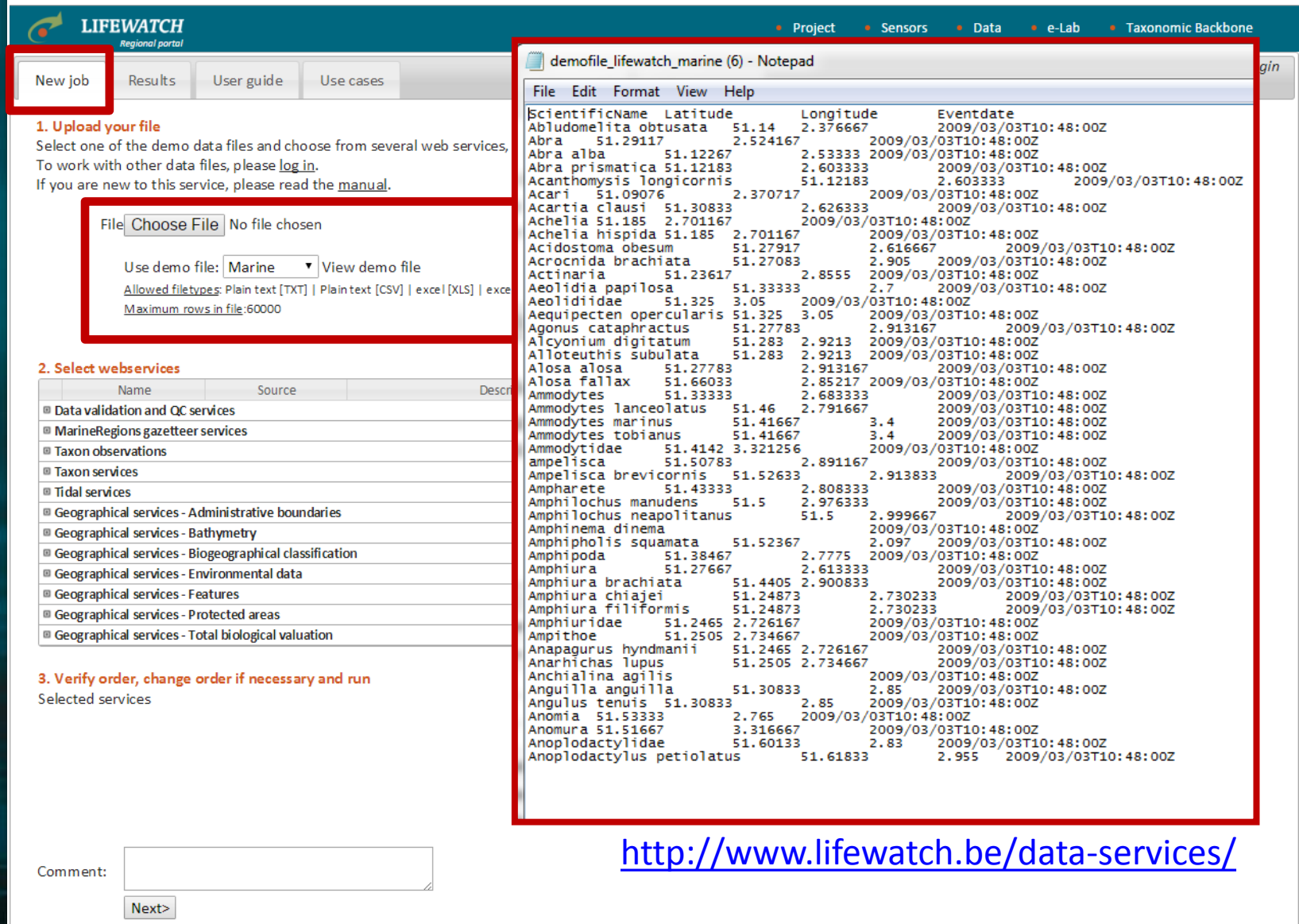

http://www.lifewatch.be/data-services/

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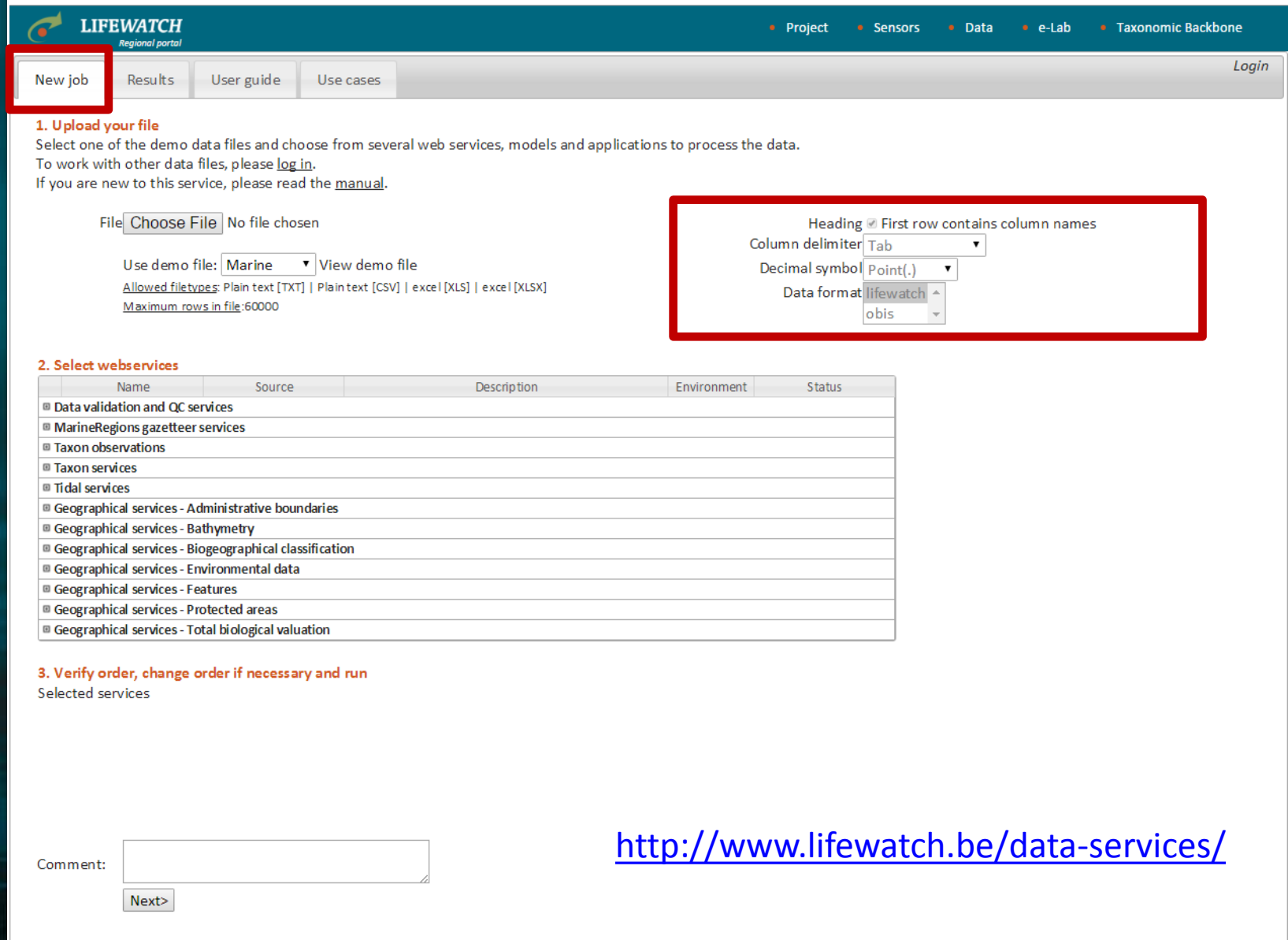

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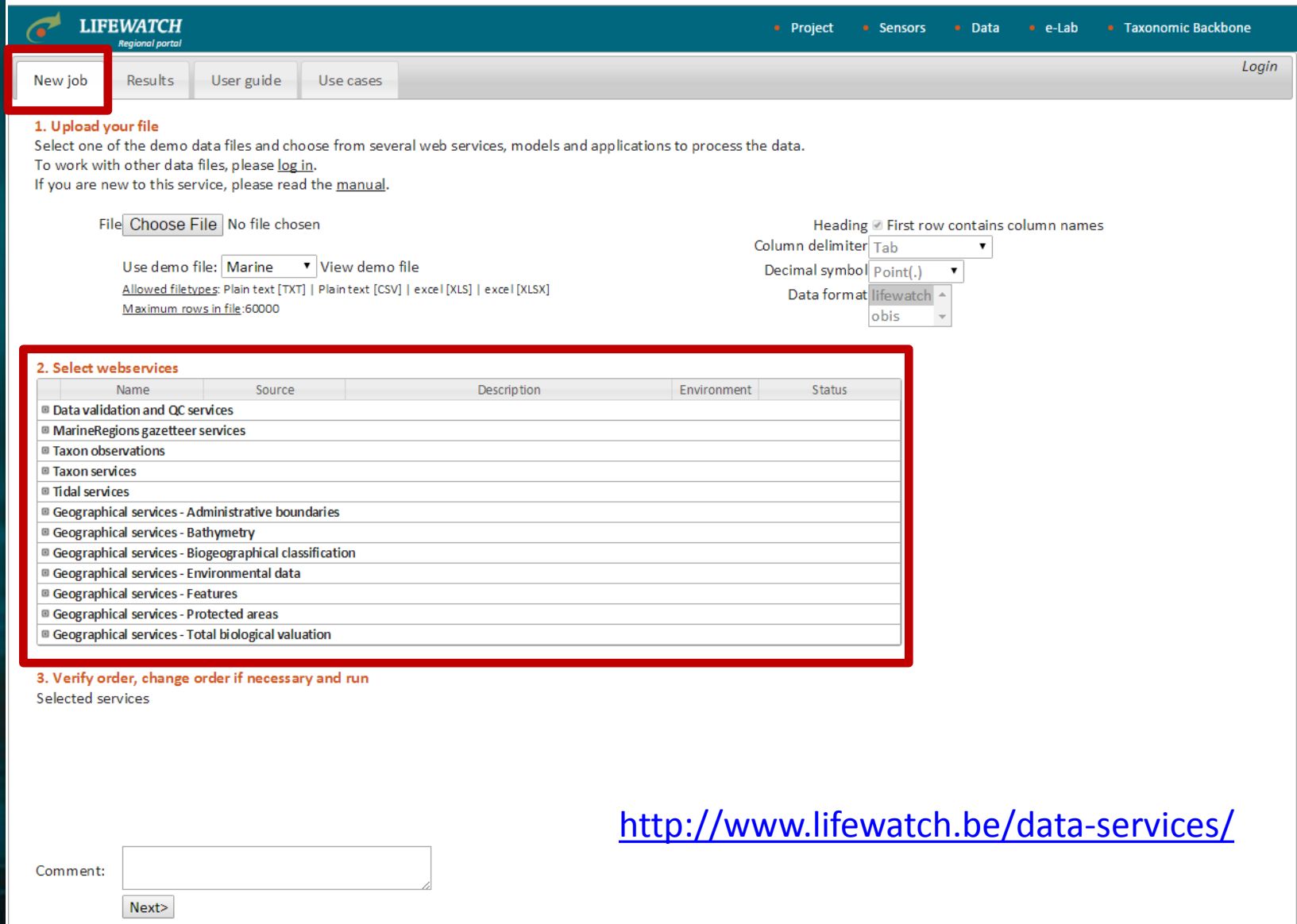

http://www.lifewatch.be/data-services/

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→ **Data validation and QC services**

2. Select webservices

	Name	Source	Description	Environment	Status
⊟ Data validation and QC services					
☐	Show on map	VLIZ	This service generates a map based on the latitude and longitude in the uploaded data file. The resu... Read more	Marine & terrestrial	Good
☐	Data format validation	VLIZ	The LifeWatch portal uses a specific standard data format based on Darwin Core and the OBIS scheme (... Read more	Marine & terrestrial	Good
☐	Check OBIS file	VLIZ	Checks if the uploaded data file matches the OBIS scheme (mandatory and missing fields), checks the ... Read more	marine	Good
⊞ MarineRegions gazetteer services					
⊞ Taxon observations					
⊞ Taxon services					
⊞ Tidal services					
⊞ Geographical services - Administrative boundaries					
⊞ Geographical services - Bathymetry					
⊞ Geographical services - Biogeographical classification					
⊞ Geographical services - Environmental data					
⊞ Geographical services - Features					
⊞ Geographical services - Protected areas					
⊞ Geographical services - Total biological valuation					

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→ **MarineRegions gazetteer services**

2. Select webservices

	Name	Source	Description	Environment	Status
⊞ Data validation and QC services					
⊟ MarineRegions gazetteer services					
☐	Get lat-long by mrgid	MarineRegions	Returns the latitude and longitude of the centroid and the preferred gazetteer name of a Marine Regi... Read more	Marine & terrestrial	Good
☐	Get lat-long by name	MarineRegions	Returns the latitude, longitude, matched name and the Marine Regions ID (MRGID) of a given gazetteer... Read more	Marine & terrestrial	Good
☐	Get gazetteer name by Lat-long	MarineRegions	Returns the Marine Regions place name and the Marine Regions ID (MRGID) of the bounding box (radius ... Read more	Marine & terrestrial	Good
☐	Get lat-long by accepted name	MarineRegions	Returns the latitude, longitude,accepted name and the Marine Regions ID (MRGID) of a given gazetteer... Read more	Marine & terrestrial	Good
⊞ Taxon observations					
⊞ Taxon services					
⊞ Tidal services					
⊞ Geographical services - Administrative boundaries					
⊞ Geographical services - Bathymetry					
⊞ Geographical services - Biogeographical classification					
⊞ Geographical services - Environmental data					
⊞ Geographical services - Features					
⊞ Geographical services - Protected areas					
⊞ Geographical services - Total biological valuation					

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→ **Taxon observations**

2. Select webservices

	Name	Source	Description	Environment	Status
⊞ Data validation and QC services					
⊞ MarineRegions gazetteer services					
⊟ Taxon observations					
☐	Number of observations of a marine taxon	OBIS	Returns all observation points (latitude and longitude) in the Ocean Biogeographic Information Syste... Read more	marine	Good
☐	Number of observations in a 1000m radius around a point	OBIS	Gives the number of observations of a taxon in a radius of 1000 meter around a point.	marine	Good
☐	Taxon list of a certain region	OBIS	Gives a taxon list based on observations from the obis database for a certain region (mrgid as input... Read more	marine	Good
⊞ Taxon services					
⊞ Tidal services					
⊞ Geographical services - Administrative boundaries					
⊞ Geographical services - Bathymetry					
⊞ Geographical services - Biogeographical classification					
⊞ Geographical services - Environmental data					
⊞ Geographical services - Features					
⊞ Geographical services - Protected areas					
⊞ Geographical services - Total biological valuation					

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→ **Taxon services**

2. Select webservices

	Name	Source	Description	Environment	Status
⊞	Data validation and QC services				
⊞	MarineRegions gazetteer services				
⊞	Taxon observations				
⊟	Taxon services				
☐	get AphiaID World Register of Marine Species (WoRMS)	WoRMS	Returns the (first) exact matching AphiaID for a given taxon name, based on ScientificName in the up... Read more	marine	Good
☐	Reverse taxon match by ITIS TSN	WoRMS and ITIS	Returns the AphiaRecord (scientificName, taxonomicStatus, etc...) by providing an *ITIS TSN*	marine	Good
☐	Reverse taxon match by AphiaID	WoRMS	Returns the AphiaRecord (scientificName, taxonomicStatus, etc...) by providing a *WoRMS AphiaID*	marine	Good
☐	Taxon match	WoRMS CoL ITIS PESI IPNI	Matches your taxon list with the World Register of Marine Species (WoRMS), Catalogue of Life (CoL), ... Read more	Marine & terrestrial	The current status of PaleoDB is unconfirmed
⊞	Tidal services				
⊞	Geographical services - Administrative boundaries				
⊞	Geographical services - Bathymetry				
⊞	Geographical services - Biogeographical classification				
⊞	Geographical services - Environmental data				
⊞	Geographical services - Features				
⊞	Geographical services - Protected areas				
⊞	Geographical services - Total biological valuation				

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→ **Tidal services**

2. Select webservices

	Name	Source	Description	Environment	Status
⊞	Data validation and QC services				
⊞	MarineRegions gazetteer services				
⊞	Taxon observations				
⊞	Taxon services				
⊟	Tidal services				
☐	Calculate tidal reduction	MDK Meetnet Vlaamse Banken	Calculates tidal heights in NAP, GLLWS and TAW based on Latitude, Longitude and EventDate in the upl... Read more	marine	Good
⊞	Geographical services - Administrative boundaries				
⊞	Geographical services - Bathymetry				
⊞	Geographical services - Biogeographical classification				
⊞	Geographical services - Environmental data				
⊞	Geographical services - Features				
⊞	Geographical services - Protected areas				
⊞	Geographical services - Total biological valuation				

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→ Geographical services

2. Select webservices

	Name	Source	Description	Environment	Status
⊞	Data validation and QC services				
⊞	MarineRegions gazetteer services				
⊞	Taxon observations				
⊞	Taxon services				
⊞	Tidal services				
⊟	Geographical services - Administrative boundaries				
☐	EMODnet regions	EMODnet regions	Returns the name of the EMODnet regions	marine	Good
☐	Exclusive Economic Zones	Marine Regions	Returns the name of the EEZ where the given coordinate is located.	marine	Good
☐	ICES Ecoregions	The International Council for the Exploration of the Sea (ICES)	Returns the ICES ecoregion code and description based on latitude and longitude.	marine	Good
☐	IHO Sea areas	IHO (International Hydrographic Organization) / Marine Regions	Returns the IHO Sea Areas code and name based on latitude and longitude. This dataset represents the... Read more	marine	Good
☐	Intersect of the EEZ and IHO	MarineRegions	Returns the intersect of EEZ and IHO areas	marine	Good
☐	World countries	ESRI - Environmental Systems Research Institute (GIS-software)	Returns the country based on latitude and longitude.	terrestrial	Good
☐	FAO Fishing areas	VLIZ - Flanders Marine Institute, based on FAO Fishing Areas	Returns the FAO Fishing Area code and name based on latitude and longitude.	marine	Good
⊞	Geographical services - Bathymetry				
⊞	Geographical services - Biogeographical classification				
⊞	Geographical services - Environmental data				
⊞	Geographical services - Features				
⊞	Geographical services - Protected areas				
⊞	Geographical services - Total biological valuation				

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→ Geographical services – Environmental data

2. Select webservices

	Name	Source	Description	Environment	Status
⊞ Data validation and QC services					
⊞ MarineRegions gazetteer services					
⊞ Taxon observations					
⊞ Taxon services					
⊞ Tidal services					
⊞ Geographical services - Administrative boundaries					
⊞ Geographical services - Bathymetry					
⊞ Geographical services - Biogeographical classification					
⊟ Geographical services - Environmental data					
☐	Cloud Cover (maximum)	Bio-ORACLE: a global environmental dataset for marine species distribution modeling.	Returns the Cloud Cover (maximum) based on latitude and longitude.	marine	Good
☐	Chlorophyll A (mean)	Bio-ORACLE: a global environmental dataset for marine species distribution modeling.	Returns the Chlorophyll A (mean) based on latitude and longitude.	marine	Good
☐	Chlorophyll A (maximum)	Bio-ORACLE: a global environmental dataset for marine species distribution modeling.	Returns the Chlorophyll A (maximum) based on latitude and longitude.	marine	Good
☐	Sea Surface Temperature (maximum)	Bio-ORACLE: a global environmental dataset for marine species distribution modeling.	Returns the Sea Surface Temperature (maximum) based on latitude and longitude.	marine	Good
☐	Silicate (mean)	Bio-ORACLE: a global environmental dataset for marine species distribution modeling.	Returns the Silicate (mean) based on latitude and longitude.	marine	Good
☐	Diffuse Attenuation (maximum)	Bio-ORACLE: a global environmental dataset for marine species	Returns the Diffuse Attenuation (maximum) based on latitude and longitude.	marine	Good

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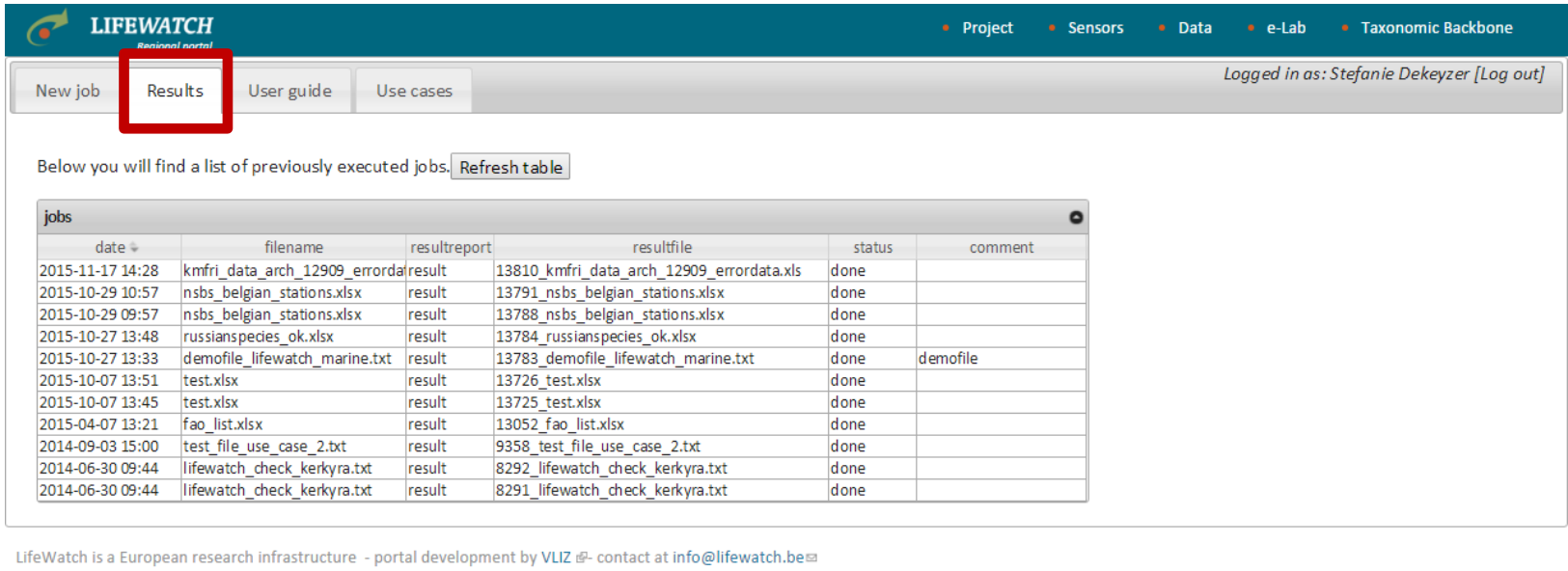

filename = input file, file you uploaded

resultreport = overview of job properties, requested services, a preview of the result file, how many data records each selected service could add, explanation of the added fields

resultfile = input file + additional data requested through selected web services

status = pending, done, error

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LIFEWATCH Regional portal

Project • Sensors • Data • e-Lab • Taxonomic Backbone

New job | Results | User guide | Use cases

Home » Manual

Manual

Through this interactive section of the LifeWatch.be portal users can upload their own data using a standard data format, and choose from several web services, models and applications to process the data.

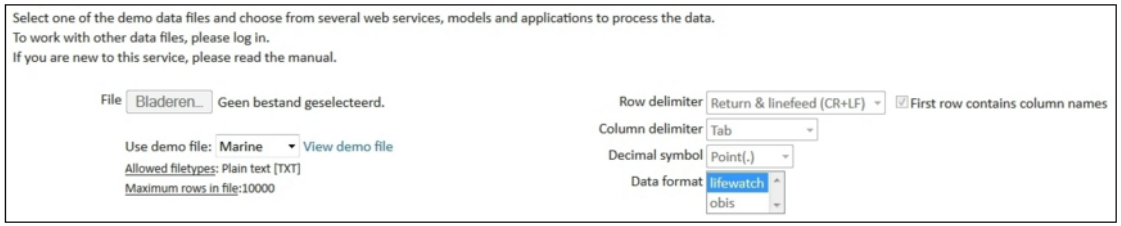
1. HOW TO USE THE WEB SERVICES

1. Upload your file

Prepare your data file for upload. Allowed file types: Plain text [TXT], Plain text [CSV], Excel [XLS] and Excel [XLSX]. To feed the required information to the portal, you can use the standard LifeWatch data format based on and compatible with Darwin Core and the OBIS Schema. For the web service "Check OBIS file" the data can also be uploaded to the portal in the OBIS Schema format. In Section 2 of the manual you can find a description of the LifeWatch data format, some examples, and an overview of the required fields for every web service.

Click on "Browse" to upload your file. This will open the file explorer on your PC. Select your file. For uploading your own data files a login and password are required. You can also use a demo file with marine or terrestrial data.

Select the way you have delimited your data by choosing the relevant row and column delimiter. Use the flag box to indicate whether your first row contains the column names or not. Indicate whether you use comma (,) or point (.) as decimal symbol. Select the format the data is in: LifeWatch format or OBIS Schema.



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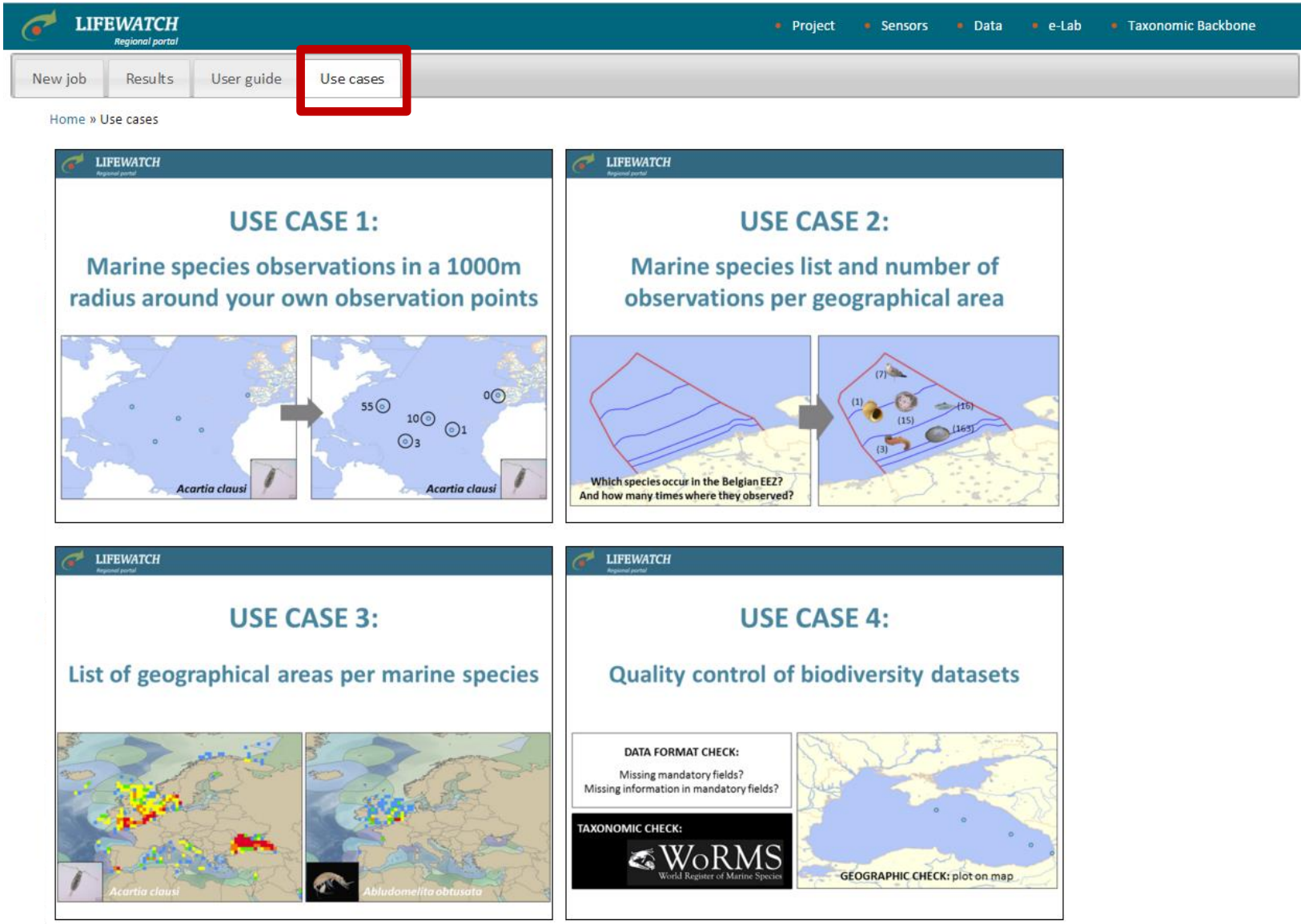
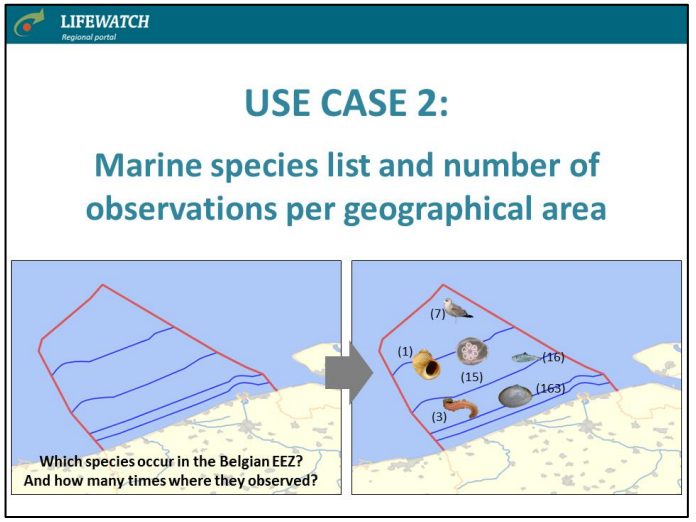


Concatenated use of the data services

You upload a list with marine place names (e.g. North Sea, Atlantic Ocean) and want to know which species have already been observed in these areas and how many times (based on OBIS).



<u>Developed data services</u>:

Place name **1.** → MRGID **2.** → # of observations in OBIS + species list

1. **Get lat-lon by name**
2. **Taxon list of a certain region**

http://www.lifewatch.be/data-services

LIFEWATCH Regional portal

Homepage | Project | Data services | Downloads | Sensor network | Login

New job | Results | Manual | Use cases | *Changelog*

1. Upload your file

Select one of the demo data files and choose from several web services, models and applications to process the data.
To work with other data files, please log in.
If you are new to this service, please read the manual.

File
Choose File | No file chosen

Use demo file: Marine ▾ View demo file
Allowed filetypes: Marine | Terrestrial | Plain text [CSV] | excel [XLS] | excel [XLSX]
Maximum rows in

Heading: First row contains column names
Column delimiter: Tab
Decimal symbol: Point(.)
Data format: lifew… obis

2. Select webservices

Name	Source	Description	Environment	Status
⊞ Data validation and QC services				
⊞ MarineRegions gazetteer services				
⊞ Taxon observations				
⊞ Taxon services				
⊞ Tidal services				
⊞ Geographical services - Administrative boundaries				
⊞ Geographical services - Bathymetry				
⊞ Geographical services - Biogeographical classification				
⊞ Geographical services - Environmental data				
⊞ Geographical services - Features				
⊞ Geographical services - Protected areas				
⊞ Geographical services - Total biological valuation				

3. Verify order, change order if necessary and run

Selected services

http://www.lifewatch.be/data-services

LIFEWATCH Regional portal

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File

Choose File | No file chosen

Use demo file: Marine | View demo file

Allowed filetypes: | Plain text [CSV] | excel [XLS] | excel [XLSX]

Maximum rows in

Marine
Terrestrial

Heading: First row contains column names

Column delimiter: Tab

Decimal symbol: Point(.)

Data format: lifew… obis

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3. Verify order, change order if necessary and run

Selected services

http://www.lifewatch.be/data-services

LIFEWATCH Regional portal

Homepage • Project • Data services • Downloads • Sensor network • Logged in as: Stefanie Dekeyzer [Log out]

2. Select webservices

	Name	Source	Description	Environment	Status
⊞	**Data validation and QC services**				
⊞	**MarineRegions gazetteer services**				
☐	Get lat-long by accepted name	MarineRegions	Returns the latitude, longitude,accepted name and the Marine Regions ID (MRGID) of a given gazetteer... Read more	Marine & terrestrial	Good
☐	Get lat-long by mrgid	MarineRegions	Returns the latitude and longitude of the centroid and the preferred gazetteer name of a Marine Regi... Read more	Marine & terrestrial	Good
☑	Get lat-long by name	MarineRegions	Returns the latitude, longitude, matched name and the Marine Regions ID (MRGID) of a given gazetteer... Read more	Marine & terrestrial	Good
☐	Get gazetteer name by Lat-long	MarineRegions	Returns the Marine Regions place name and the Marine Regions ID (MRGID) of the bounding box (radius ... Read more	Marine & terrestrial	Good
⊞	**Taxon observations**				
☐	Number of observations in a 1000m radius around a point	OBIS	Gives the number of observations of a taxon in a radius of 1000 meter around a point.	marine	Good
☑	Taxon list of a certain region	OBIS	Gives a taxon list based on observations from the obis database for a certain region (mrgid as input... Read more	marine	Good
☐	Number of observations of a marine taxon	OBIS	Returns all observation points (latitude and longitude) in the Ocean Biogeographic Information Syste... Read more	marine	Good
⊞	**Taxon services**				
⊞	**Tidal services**				
⊞	**Geographical services - Administrative boundaries**				
⊞	**Geographical services - Bathymetry**				
⊞	**Geographical services - Biogeographical classification**				
⊞	**Geographical services - Environmental data**				
⊞	**Geographical services - Features**				
⊞	**Geographical services - Protected areas**				
⊞	**Geographical services - Total biological valuation**				

3. Verify order, change order if necessary and run

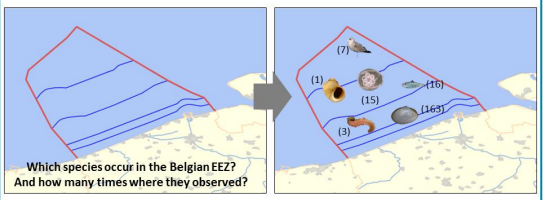
Selected services

- Get lat-long by name ×
- Taxon list of a certain region ×

LIFEWATCH Regional portal

USE CASE 2:

Marine species list and number of observations per geographical area



1. Get lat-long by mrgid
2. Taxon list of a certain region

4. Preview screen

http://www.lifewatch.be/data-services

When you click "Next", you are redirected to the preview screen. Make sure that every column name from the uploaded file corresponds with a column name from the pick list. In this case choose 'Location'.

Preview of the file 'test_file_use_case_2.txt' (first 20 records)
Please select a columnname from the dataformat term that corresponds to your column and click 'Start'.

column 0

Location

Location

Wandelaar

Belgian Exclusive Economic Zone

North Sea

Your concatenated webservices are stated below.

1. Get lat-long by name

Input columns

- Location (column 0)

2. Taxon list of a certain region

Your concatenated webservices are stated below.

1. Get lat-long by name

2. Taxon list of a certain region

Input columns

- LocationID (Get lat-long by name)

Your concatenated webservices are stated below.

1. Get lat-long by name

2. Taxon list of a certain region

legend :

- Field is present in the inputfile.
- Field is present in the output of previous webservices.
- Field is missing from inputfile and from the output of previous webservices.
- There are more than one possible input fields, choose the preferred field.

http://www.lifewatch.be/data-services

LIFEWATCH Regional portal • Homepage • Project • Data services • Downloads • Sensor network • Logged in as: Stefanie Dekeyzer [Log out]

New job | Results | Manual | Use cases — Changelog

Your job is in progress.
If there are validation errors, they will appear on top.

To submit another job, click on the button 'newjob'. To view all jobs, click on the button 'results'.

new job | Results

LIFEWATCH Regional portal • Homepage • Project • Data services • Downloads • Sensor network • Logged in as: Stefanie Dekeyzer [Log out]

New job | Results | Manual | Use cases — Changelog

Below you will find a list of previously executed jobs. refresh table

jobs

date	filename	resultreport	resultfile	status	comment
2014-09-03 15:00	test_file_use_case_2.txt	open	9358_test_file_use_case_2.txt	done	
2014-06-30 09:44	lifewatch_check_kerkyra.txt	open	8292_lifewatch_check_kerkyra.txt	done	
2014-06-30 09:44	lifewatch_check_kerkyra.txt	open	8291_lifewatch_check_kerkyra.txt	done	

Report

http://www.lifewatch.be/data-services

Job properties
Name: Dekeyzer Stefanie
Number job: 5816
Comment:
Inputfile: test_file_use_case_2.txt
Resultfile: 5816_test_file_use_case_2.tab

Requested Services (2)

- Get lat-long by name
- Get a taxon list of a certain region (mrgid)

Resultfile

Results - Get lat-long by name
Number of no exact match(es) :0
Number of fuzzy match(es) :0
Number of no match(es) :0
Number of error(s) :0
Number of exact match(es) :19

Results - Get a taxon list of a certain region (mrgid)
Wandelaar: Number of unique species found in OBIS => 0
Belgian Exclusive Economic Zone: Number of unique species found in OBIS => 6805
North Sea: Number of unique species found in OBIS => 5147
Central North Sea: Number of unique species found in OBIS => 15930
Northern North Sea: Number of unique species found in OBIS => 15930
Southern North Sea: Number of unique species found in OBIS => 17025
German part of the North Sea: Number of unique species found in OBIS => 5147
Danish part of the North Sea: Number of unique species found in OBIS => 4487
Dutch part of the North Sea: Number of unique species found in OBIS => 7258
Norwegian part of the North Sea: Number of unique species found in OBIS => 5692
French part of the North Sea: Number of unique species found in OBIS => 2757
United Kingdom part of the North Sea: Number of unique species found in OBIS => 10224
Belgian part of the North Sea: Number of unique species found in OBIS => 6805
North Sea Bottom Current: Number of unique species found in OBIS => 6805

Legend - added fields

added_row_ws	Indicates which service has added the row to the result file
aphiaid	Unique identifier within the Aphia database
Latitude_by_name	
Longitude_by_name	
matched_name	the name of the matching marineregions gazetteer name
mrgid_by_name	
required_fields_check	Are the required fields present and completed? (1=yes, 0=no)
Scientific_name	Name of taxon
taxonlist_mrgid_note	Note on taxonlist for mrgid

List of species for the North Sea

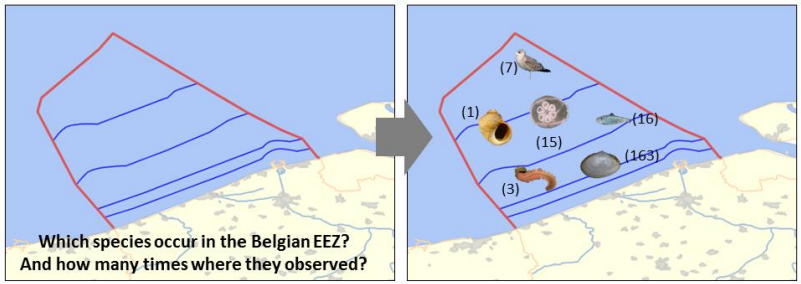
Number of observations for that species in the North Sea

	A	B	C	D	E	F	G	H	I	J	K	L
1	location	required_fields_check	latitude_by_name	longitude_by_name	matched_name	mrgid_by_name	scientific_name	aphiaid	tax	added_row_ws	num_observation	
6812	North Sea	1	5.596.853	5.596.853	North Sea	2350						
6813							Microcystis wesenbergii	146561		taxonlist_mrgid	1	
6814							Ampharetinae	152252		taxonlist_mrgid	7	
6815							Culicimorpha	150928		taxonlist_mrgid	5	
6816							Raniceps raninus	126442		taxonlist_mrgid	1	
6817							Munnidae	118263		taxonlist_mrgid	5	
6818							Protohydridae	22788		taxonlist_mrgid	1	
6819							Rhodophyta	852		taxonlist_mrgid	50	
6820							Rhizostoma	135257		taxonlist_mrgid	5	
6821							Talorchestia	101788		taxonlist_mrgid	1	
6822							Gyrodinium spirale	109876		taxonlist_mrgid	1	
6823							Pyramidellinae	224522		taxonlist_mrgid	1	
6824							Eulimidae	135		taxonlist_mrgid	3	
6825							Hirudinea	2041		taxonlist_mrgid	1	
6826							Thalassiosira nitzschioides	149227		taxonlist_mrgid	1	
6827							Proclea	129711		taxonlist_mrgid	1	
6828							Phaxas	138335		taxonlist_mrgid	18	
6829							Clytia	117030		taxonlist_mrgid	119	
6830							Cellaria salicornia	153836		taxonlist_mrgid	1	
6831							Scopelocheirus hopei	102720		taxonlist_mrgid	1	
6832							Pasiphaea sivado	107677		taxonlist_mrgid	2	
6833							Laminariaceae	143755		taxonlist_mrgid	2	
6834							Margelopsis	117151		taxonlist_mrgid	32	
6835							Halaphanolaimus longisetosus	121257		taxonlist_mrgid	1	
6836							Cydippida	1251		taxonlist_mrgid	458	
6837							Metopa	101764		taxonlist_mrgid	1	
6838							Carpelimus (Taenosoma) foveolatus	150688		taxonlist_mrgid	2	
6839							Dictyosphaerium pulchellum	178933		taxonlist_mrgid	3	
6840							Lagerheimia genevensis	178610		taxonlist_mrgid	3	
6841							Delavalia	347056		taxonlist_mrgid	11	
6842							Nassarius nitidus	140509		taxonlist_mrgid	1	
6843							Choniolaimus papillatus	120928		taxonlist_mrgid	2	
6844							Monhysteridae	2188		taxonlist_mrgid	137	
6845							Chaetonotus (Schizochaetonotus)	371021		taxonlist_mrgid	1	
6846							Microlaimus pinguis	153418		taxonlist_mrgid	3	
6847							Heterocheila	151022		taxonlist_mrgid	2	
6848							Ironidae	2199		taxonlist_mrgid	121	
6849							Alosa fallax	126415		taxonlist_mrgid	15	
6850							Jania	144012		taxonlist_mrgid	1	
6851							Lymnocardiinae	381865		taxonlist_mrgid	17	
6852							Strombidiidae	1703		taxonlist_mrgid	1	
6853							Tomopteris krampi	131556		taxonlist_mrgid	1	
6854							Antithamnionella ternifolia	163275		taxonlist_mrgid	2	
6855							Pherusa flabellata	130110		taxonlist_mrgid	1	

LIFEWATCH
Regional portal

USE CASE 2:

Marine species list and number of observations per geographical area



Future data services

More data bases and data systems will become interlinked and accessible through the LifeWatch data services:

- Both European and global data
- Both marine and terrestrial data
- Taxonomic, biogeographic, ecological and genomic data

More data services are being developed, based on the needs identified by the scientific community.

Future data services

The ultimate goal is to answer complex scientific questions:

- If I take a benthos sample in the North Sea, which species can I expect?
- Which invasive pelagic species are known to occur in the Black Sea?
- Give me the maximum and minimum salinity where organisms with DNA seq homology above x% with this DNA seq. (=seqA) have been found.
- Etc.

Future data services

Give me the maximum and minimum salinity where organisms with DNA seq homology above x% with this DNA seq. (=seqA) have been found.

Step1: use seqA in blast / fasta against genbank

- get list of genbank entries above cut-off

Step2: feed list to WoRMS hierachy match

- get list of taxa & specimens matching this seq.list

Step3: feed list to EurOBIS mapping tool

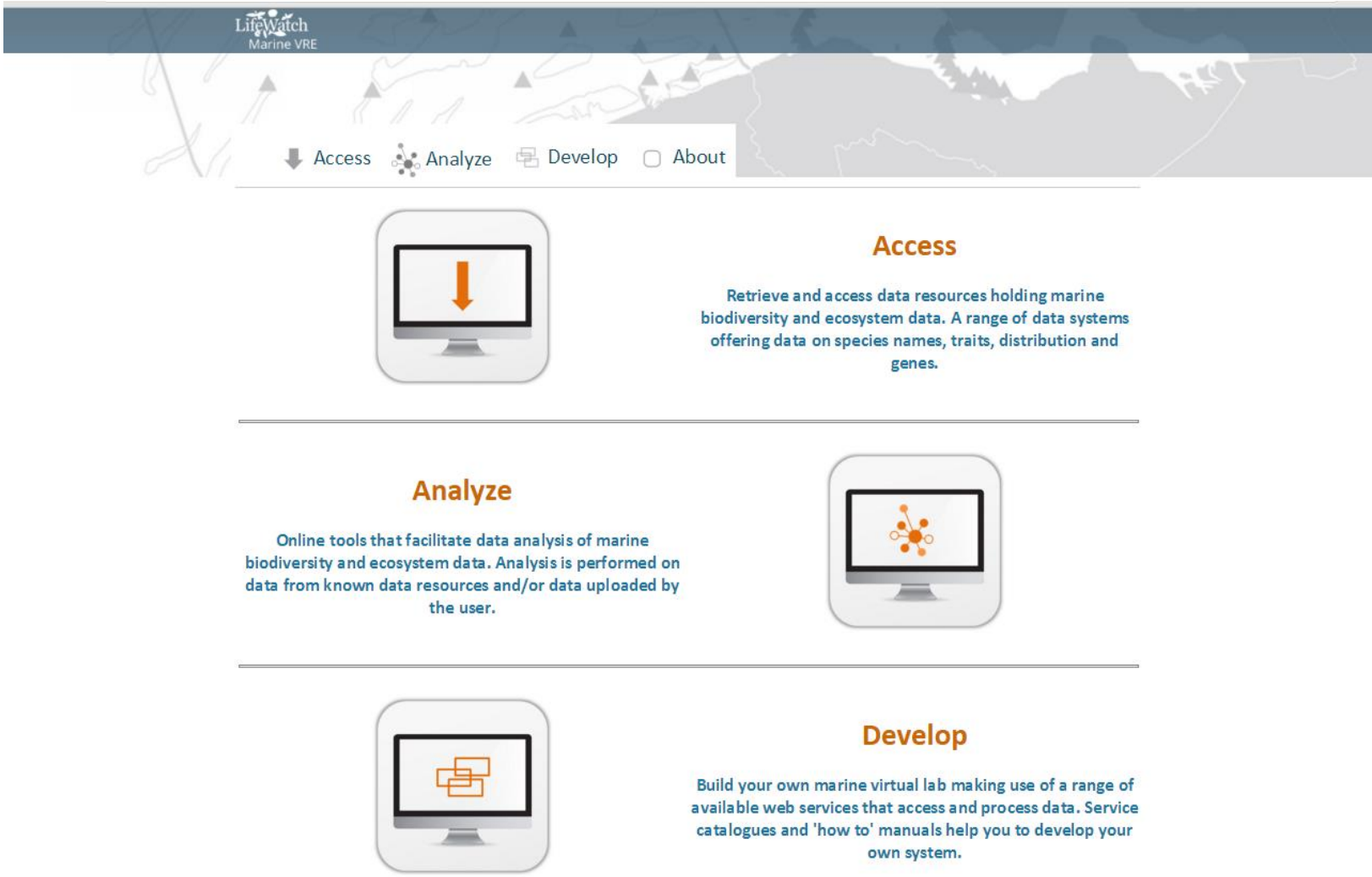
- get list of observations (positions, map, UW features)

Step4: spatial query to environmental databases

- select min/max salinity at these positions

LifeWatch Marine VRE

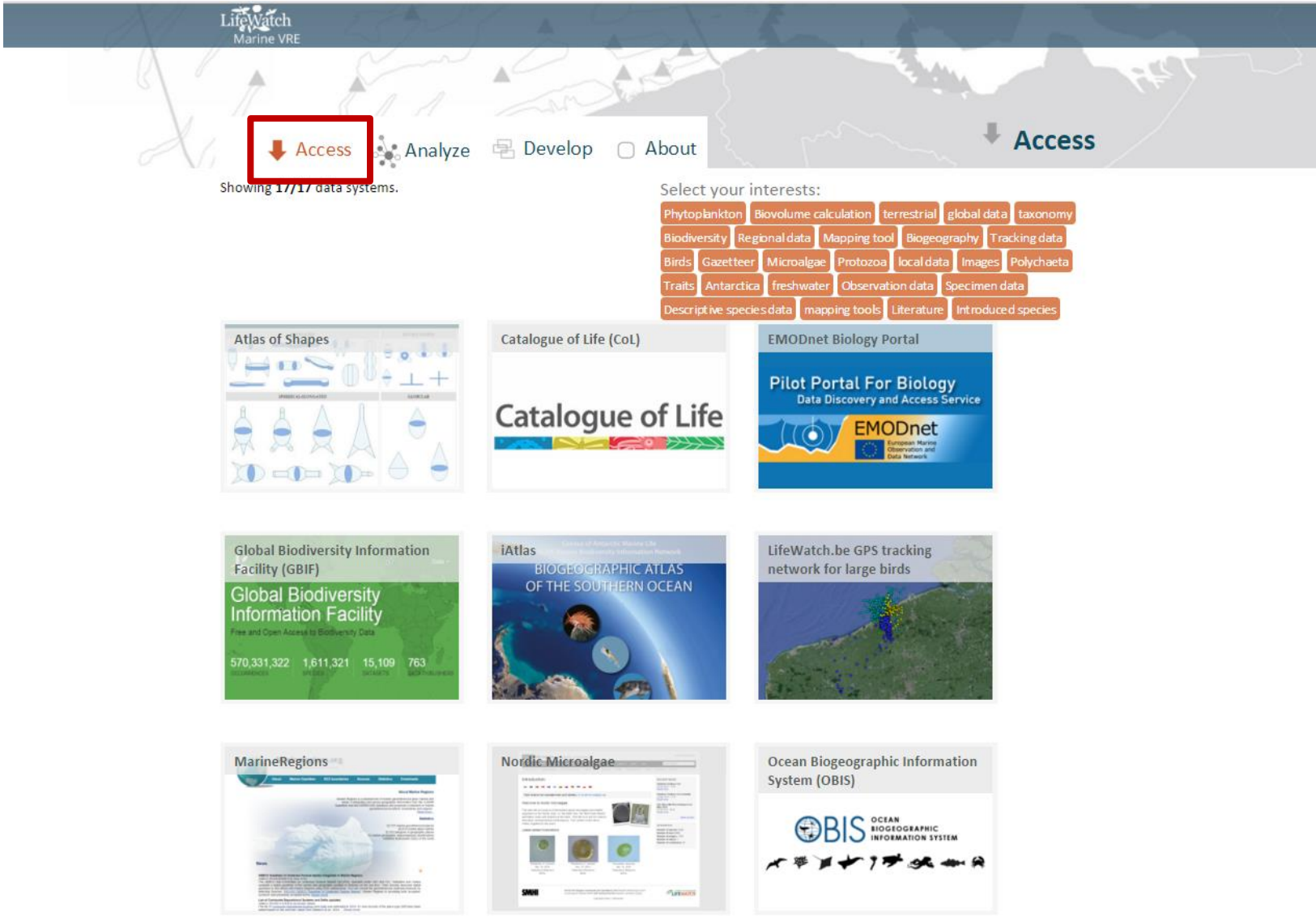
Virtual Research Environment



http://marine.lifewatch.eu/

LifeWatch Marine VRE

Virtual Research Environment



LifeWatch Marine VRE

Virtual Research Environment

LifeWatch Marine VRE

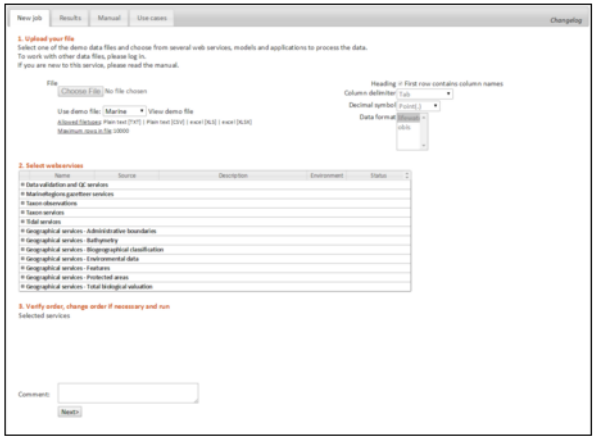
Virtual Research Environment

LifeWatch Marine VRE

Access | Analyze | Develop | About

Submitted by vlizadmin on Fri, 09/04/2015 - 10:43

Belgian LifeWatch e-Lab



The ultimate goal of LifeWatch is to set up a network for data exchange and data analysis through web services. Web services are systems that allow communication between two computers over the web, and allow the user to access the most recent and up-to-date information directly from within other applications.

In the framework of LifeWatch Belgium, several web services are being developed to standardize, analyze and visualize your data, and to extract additional data. An online tool was developed where users can select several web services at once in an easy, user friendly way. In this online interface the majority of the web services built by the Belgian LifeWatch partners are available.

These web services can also be used in a concatenated way, where the output of one web services is the input for the next web service. This is demonstrated in a few use cases.

Website:

http://www.lifewatch.be/data-services

Tags:

marine
terrestrial
Mapping tool
Calculation tool
Quality control

Developed by:

The online interface of the Belgian LifeWatch e-Lab is developed by the Flanders Marine Institute (VLIZ).

Used data resources:

- MarineRegions (gazetteer)
- Ocean Biogeographic Information System (OBIS) (biogeographic data system)
- World Register of Marine Species (WoRMS) (taxonomic database)
- Catalogue of Life (CoL) (taxonomic database)

LifeWatch Marine VRE

Virtual Research Environment

LifeWatch Marine VRE

Access | Analyze | Develop | About

Submitted by stefanied on Mon, 10/05/2015 - 10:17

LifeWatch Greece RvLab

The R vLab makes use of "R" which is a statistical processing environment widely used by scientists working in many biodiversity related disciplines. It supports an integrated and optimized (in respect to computational speed-up and data manipulation) online R environment. This vLab tackles common problems faced by R users, such as severe computational power deficit. Many of the routines operating under the R environment, such as the calculation of several biodiversity indices and the running of the multivariate analyses, are often of high computational demand and cannot deliver a result when the respective datasets are in the form of large matrices. This vLab allows for a predefined, commonly used set of R functions to run on the LifeWatch Infrastructure in order to support large-scale computational and modeling activities.

Website:

https://rvlab.portal.lifewatchgreece.eu

Tags:

Statistical analyses
Observation data
Vegan package
R
Calculation tool
Biological indices
Multivariate analyses

Developed by:

RvLab was developed at the Institute of Marine Biology, Genetics and Aquaculture (IMBBC), Hellenic Centre for Marine Research (HCMR), in collaboration with the Information Systems Laboratory of the Foundation for Research and Technology Hellas (FORTH-ICS), in the framework of LifeWatch Greece project.

Used data resources:

Except some demo data that users can use for testing, all the other input is files uploaded by the users.

Web services:

The RvLab can be accessed at the website https://rvlab.portal.lifewatchgreece.eu/

Used in tools:

LifeWatch Marine VRE

Virtual Research Environment

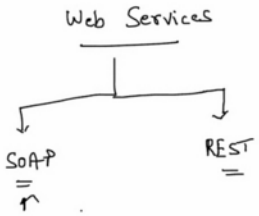
LifeWatch Marine VRE

Access | Analyze | Develop | About

Develop

Build your own marine virtual lab making use of a range of available web services that access and process data.

What are web services?



Within the envisaged e-infrastructure of LifeWatch, data exchange and data analysis are largely based on the use of web services. Web services are systems that allow communication between two computers over the web, and allow the user to access the most recent and up-to-date information directly from within other applications.

Web services can roughly be divided into two categories: SOAP (Simple Object Access Protocol) and REST (Representational State Transfer). SOAP has the ability to discover and describe web services via the WSDL (Web Services Description Language) standard, but usually needs a platform dependent library to work. REST uses standard HTTP (and JSON) and is much simpler to use, but lacks a standard way of description (as is the case with SOAP WSDL).

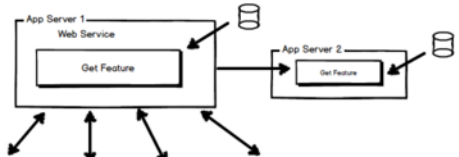
Where to find the web services?

Several catalogues exist listing the available web services. The BiodiversityCatalogue (developed by BioVeL) is a curated catalogue of available web services that are specific to the interests of the biodiversity science community. This catalogue is related to the BioCatalogue, which focus is on life science web services.

Both catalogues are community-oriented websites where service providers and community experts can register and curate services, and where users can discover them. Users can browse the catalogues and access full search options for services, checking their status and availability.

Geographic web services in general are listed in numerous spatial data catalogues, often with a specific contextual scope. Spatial data catalogue systems like the GeoNetwork Opensource offers catalogue applications for managing spatially referenced resources and documenting their web service parameters. Specifications of the geographic web services are specified by the OGC standards.

How to access the web services?



Web services can be accessed from within several platforms or software. Web services can for example be built into PHP web pages, service management tool, R scripts, and even spreadsheets software like MS Excel. Secondary application servers can use the web service to access data from the provider and combine this output with other local processes.

Some example implementations (specific for the WoRMS web services) can be