

# Package ‘emodnet.wfs’

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**Title** Access 'EMODnet' Web Feature Service Data

**Version** 2.1.2

**Description** Access and interrogate 'EMODnet' (European Marine Observation and Data Network) Web Feature Service data <<https://emodnet.ec.europa.eu/en/emodnet-web-service-documentation#data-download-services>>.

This includes listing existing data sources, and getting data from each of them.

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**URL** <https://docs.ropensci.org/emodnet.wfs/>,  
<https://github.com/EMODnet/emodnet.wfs>

**BugReports** <https://github.com/EMODnet/emodnet.wfs/issues>

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emodnet\_get\_layers      *Get EMODnet WFS datasets (layers)*

---

## Description

Performs an WFS getFeature request for layers from a wfs object or specified EMODnet Service. Filtering of layer features can also be handled via ECQL language filters.

## Usage

```
emodnet_get_layers(  
  wfs = NULL,  
  service = NULL,
```

```

    service_version = NULL,
    layers,
    crs = NULL,
    cql_filter = NULL,
    simplify = FALSE,
    reduce_layers = deprecated(),
    ...
)

```

## Arguments

wfs	A WFSClient R6 object with methods for interfacing an OGC Web Feature Service. From <code>emodnet_init_wfs_client()</code> .
service	the EMODnet OGC WFS service name. For available services, see <code>emodnet_wfs()</code> .
service_version	<b>[Deprecated]</b> the WFS service version. Now always "2.0.0".
layers	a character vector of layer names. To get info on layers, including layer_name use <code>emodnet_get_wfs_info()</code> .
crs	integer. EPSG code for the output crs. If NULL (default), layers are returned with original crs.
cql_filter	character. Features returned can be filtered using valid Extended Common Query Language (ECQL) filtering statements ( <a href="https://docs.geoserver.org/stable/en/user/filter/ecql_reference.html">https://docs.geoserver.org/stable/en/user/filter/ecql_reference.html</a> ). Should be one of: <ul style="list-style-type: none"> <li>• character string or character vector of length 1. Filter will be recycled across all layers requested.</li> <li>• character vector of length equal to the length of layers. Filter will be matched to layers sequentially. Elements containing NA are ignored</li> <li>• named character vector. Each filter will be applied to the layer corresponding to the filter name. Filters with names that do not correspond to any layers are ignored. Layers without corresponding filters are returned whole.</li> </ul>
simplify	whether to reduce output layers to a single sf object. This only works if the column names are the same.
reduce_layers	<b>[Deprecated]</b> use simplify.
...	additional vendor parameter arguments passed to <code>ows4R::GetFeature()</code> . For example, including <code>count = 1</code> returns the first available feature. Or <code>outputFormat = "CSV"</code> (or <code>outputFormat = "JSON"</code> ) might help downloading bigger datasets.

## Value

If `simplify = FALSE` (default), a list of sf objects, one element for each layer. Any layers for which download was unsuccessful will be NULL. If `simplify = TRUE`, all layers are reduced (if possible: if all column names are the same) to a single sf containing data for all layers. NULL layers are ignored. `simplify = TRUE` can also be used to return an sf out of a single layer request instead of a list of length 1.

## Big downloads

If a layer is really big (like "abiotic\_observations" of the "biology\_occurrence\_data" service), you might consider a combination of these ideas:

- using `outputFormat = "CSV"`;
- filtering using `cql_filters` or `bounding boxes` (possibly splitting the area of interests into several requests);
- Using [EMODnet's download toolbox](#).

## Examples

```
# Layers as character vector
emodnet_get_layers(
  service = "biology",
  layers = c("mediseh_zostera_m_pnt", "mediseh_posidonia_nodata")
)

# Usage of cql_filter
emodnet_get_layers(
  service = "biology",
  layers = "mediseh_zostera_m_pnt",
  cql_filter = "country = 'Francia'"
)

# Usage of vendor parameter
emodnet_get_layers(
  service = "biology",
  layers = "mediseh_zostera_m_pnt",
  count = 1
)

# Usage of csv output
data <- emodnet_get_layers(
  service = "biology_occurrence_data",
  layers = "abiotic_observations",
  outputFormat = "CSV"
)
str(data[["abiotic_observations"]])
```

---

emodnet\_get\_layer\_info

*Metadata about data available from the different services: data (layers) from a data source (service), metadata on layers from a service, metadata on layers from all services.*

---

## Description

Get WFS available layer information

## Usage

```
emodnet_get_layer_info(wfs, layers)

emodnet_get_wfs_info(wfs = NULL, service = NULL, service_version = NULL)

emodnet_get_all_wfs_info()
```

## Arguments

wfs	A WFSCClient R6 object with methods for interfacing an OGC Web Feature Service. From <code>emodnet_init_wfs_client()</code> .
layers	a character vector of layer names. To get info on layers, including layer_name use <code>emodnet_get_wfs_info()</code> .
service	the EMODnet OGC WFS service name. For available services, see <code>emodnet_wfs()</code> .
service_version	<b>[Deprecated]</b> the WFS service version. Now always "2.0.0".

## Details

To minimize the number of requests sent to webservices, these functions use memoise to cache results inside the active R session. To clear the cache, re-start R or run `memoise::forget(emodnet_get_wfs_info)/memoise::forget(emodnet_get_layer_info)`.

## Value

a tibble containing metadata on each layer available from the service.

## Functions

- `emodnet_get_layer_info()`: Get metadata for specific layers. Requires a wfs object as input.
- `emodnet_get_wfs_info()`: Get info on all layers from an EMODnet WFS service.
- `emodnet_get_all_wfs_info()`: Get metadata on all layers and all available services from server.

## Examples

```
emodnet_get_wfs_info(service = "bathymetry")
# Query a wfs object
wfs_bio <- emodnet_init_wfs_client("biology")
emodnet_get_wfs_info(wfs_bio)
# Get info for specific layers from wfs object
layers <- c("mediseh_zostera_m_pnt", "mediseh_posidonia_nodata")
emodnet_get_layer_info(wfs = wfs_bio, layers = layers)
```

---

```
emodnet_init_wfs_client
```

*Connect to a data source (service)*

---

**Description**

Initialise an EMODnet WFS client

**Usage**

```
emodnet_init_wfs_client(service, service_version = NULL, logger = NULL)
```

**Arguments**

service	the EMODnet OGC WFS service name. For available services, see <a href="#">emodnet_wfs()</a> .
service_version	<b>[Deprecated]</b> the WFS service version. Now always "2.0.0".
logger	the logger. Either NULL (no logging info), "INFO" (log about ows4R requests) or "DEBUG" (including curl details).

**Value**

An `ows4R::WFSCient` R6 object with methods for interfacing an OGC Web Feature Service.

**See Also**

WFSCient in package ows4R.

**Examples**

```
wfs <- emodnet_init_wfs_client(service = "bathymetry")
```

---

```
emodnet_wfs
```

*Which data sources (services) are available?*

---

**Description**

Available EMODnet Web Feature Services

**Usage**

```
emodnet_wfs()
```

**Format**

emodnet\_wfs:

**emodnet\_thematic\_lot** EMODnet disciplinary themes - bathymetry, biology, chemistry, geology, human activities, physics and seabed habitats

**service\_name** Name of the specific service. Use in [emodnet\\_init\\_wfs\\_client](#).

**service\_url** **Web Feature Service (WFS)** URL endpoint for accessing the service.

**Value**

Tibble of available EMODnet Web Feature Services

**Examples**

```
emodnet_wfs()
```

---

layer\_attributes\_get\_names

*Names of variables (attributes) available from a dataset (layer) in a data source (service).*

---

**Description**

Names of variables (attributes) available from a dataset (layer) in a data source (service).

**Usage**

```
layer_attributes_get_names(  
  wfs = NULL,  
  service = NULL,  
  service_version = NULL,  
  layer  
)
```

**Arguments**

wfs	A WFSCClient R6 object with methods for interfacing an OGC Web Feature Service. From <a href="#">emodnet_init_wfs_client()</a> .
service	the EMODnet OGC WFS service name. For available services, see <a href="#">emodnet_wfs()</a> .
service_version	<b>[Deprecated]</b> the WFS service version. Now always "2.0.0".
layer	character sting of layer name. To get info on layers, including layer_name use <a href="#">emodnet_get_wfs_info()</a> .

**Value**

character vector of layer attribute (variable) names.

**See Also**

Attributes metadata: [layer\\_attribute\\_descriptions\(\)](#), [layer\\_attribute\\_inspect\(\)](#), [layer\\_attributes\\_summarise](#), [layer\\_attributes\\_tbl\(\)](#)

**Examples**

```
layer_attributes_get_names(
  service = "biology",
  layer = "mediseh_zostera_m_pnt"
)
```

---

layer\_attributes\_summarise

*Get summaries of layer attributes (variables)*

---

**Description**

Get summaries of layer attributes (variables)

**Usage**

```
layer_attributes_summarise(
  wfs = NULL,
  service = NULL,
  service_version = NULL,
  layer
)
```

**Arguments**

wfs	A WFSCClient R6 object with methods for interfacing an OGC Web Feature Service. From <a href="#">emodnet_init_wfs_client()</a> .
service	the EMODnet OGC WFS service name. For available services, see <a href="#">emodnet_wfs()</a> .
service_version	<b>[Deprecated]</b> the WFS service version. Now always "2.0.0".
layer	character sting of layer name. To get info on layers, including layer_name use <a href="#">emodnet_get_wfs_info()</a> .

**Value**

output of `summary()` on the attributes (variables) in a given layer for a given service.

**See Also**

Attributes metadata: [layer\\_attribute\\_descriptions\(\)](#), [layer\\_attribute\\_inspect\(\)](#), [layer\\_attributes\\_get\\_names](#), [layer\\_attributes\\_tbl\(\)](#)

**Examples**

```
layer_attributes_summarise(
  service = "biology",
  layer = "mediseh_zostera_m_pnt"
)
```

---

layer\_attributes\_tbl *Possible values of variables (attributes) in a dataset (layer) from a data source (service).*

---

**Description**

Get layer attribute values tibble

**Usage**

```
layer_attributes_tbl(wfs = NULL, service = NULL, service_version = NULL, layer)
```

**Arguments**

wfs	A WFSCClient R6 object with methods for interfacing an OGC Web Feature Service. From <a href="#">emodnet_init_wfs_client()</a> .
service	the EMODnet OGC WFS service name. For available services, see <a href="#">emodnet_wfs()</a> .
service_version	<b>[Deprecated]</b> the WFS service version. Now always "2.0.0".
layer	character sting of layer name. To get info on layers, including layer_name use <a href="#">emodnet_get_wfs_info()</a> .

**Details**

Request excluding spatial information can be significantly faster. Can be useful for inspecting attribute values and constructing feature filters for more targeted and faster layer download.

**Value**

tibble of layer attribute (variable) values with geometry column removed.

**See Also**

Attributes metadata: [layer\\_attribute\\_descriptions\(\)](#), [layer\\_attribute\\_inspect\(\)](#), [layer\\_attributes\\_get\\_names\(\)](#), [layer\\_attributes\\_summarise\(\)](#)

**Examples**

```
layer_attributes_tbl(service = "biology", layer = "mediseh_zostera_m_pnt")
```

---

layer\_attribute\_descriptions

*Variables available in a dataset (layer) from a data source (service).*

---

## Description

Get layer attribute description

## Usage

```
layer_attribute_descriptions(  
  wfs = NULL,  
  service = NULL,  
  service_version = NULL,  
  layer  
)
```

## Arguments

wfs	A WFSCClient R6 object with methods for interfacing an OGC Web Feature Service. From <a href="#">emodnet_init_wfs_client()</a> .
service	the EMODnet OGC WFS service name. For available services, see <a href="#">emodnet_wfs()</a> .
service_version	<b>[Deprecated]</b> the WFS service version. Now always "2.0.0".
layer	character string of layer name. To get info on layers, including layer_name use <a href="#">emodnet_get_wfs_info()</a> .

## Value

data.frame containing layer attribute descriptions (metadata).

## See Also

Attributes metadata: [layer\\_attribute\\_inspect\(\)](#), [layer\\_attributes\\_get\\_names\(\)](#), [layer\\_attributes\\_summarise\(\)](#), [layer\\_attributes\\_tbl\(\)](#)

## Examples

```
layer_attribute_descriptions(  
  service = "biology",  
  layer = "mediseh_zostera_m_pnt"  
)
```

---

layer\_attribute\_inspect

*Summary of individual variable (attribute) in a dataset (layer) from a data source (service).*

---

## Description

Inspect layer attributes

## Usage

```
layer_attribute_inspect(  
  wfs = NULL,  
  service = NULL,  
  service_version = NULL,  
  layer,  
  attribute  
)
```

## Arguments

wfs	A WFSCClient R6 object with methods for interfacing an OGC Web Feature Service. From <a href="#">emodnet_init_wfs_client()</a> .
service	the EMODnet OGC WFS service name. For available services, see <a href="#">emodnet_wfs()</a> .
service_version	<b>[Deprecated]</b> the WFS service version. Now always "2.0.0".
layer	character string of layer name. To get info on layers, including layer_name use <a href="#">emodnet_get_wfs_info()</a> .
attribute	character string, name of layer attribute (variable). Use <a href="#">layer_attributes_get_names()</a> to get layer attribute names.

## Value

Detailed summary of individual attribute (variable). Particularly useful for inspecting factor or character variable levels or unique values.

## See Also

Attributes metadata: [layer\\_attribute\\_descriptions\(\)](#), [layer\\_attributes\\_get\\_names\(\)](#), [layer\\_attributes\\_summary\(\)](#), [layer\\_attributes\\_tbl\(\)](#)

## Examples

```
wfs <- emodnet_init_wfs_client(service = "biology")  
layer_attributes_get_names(wfs, layer = "mediseh_zostera_m_pnt")  
layer_attribute_inspect(  
  wfs, layer = "mediseh_zostera_m_pnt",
```

```
    attribute = "country"  
  )
```

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