Package 'emodnet.wfs'

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Title Access 'EMODnet' Web Feature Service Data

Version 2.1.1

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

Depends R (>= 4.1)

Imports checkmate, cli, dplyr, lifecycle, memoise, ows4R (>= 0.5),
purrr, rlang, sf, tibble, utils, whoami

Suggests covr, httptest, knitr, mapview, readr, rmarkdown, testthat
(>= 3.1.2), testthis, withr

VignetteBuilder knitr

Config/Needs/readme rerddap

Config/Needs/website webshot

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Config/testthat/parallel true

Encoding UTF-8

RoxygenNote 7.3.2.9000

SystemRequirements C++11, GDAL (>= 2.0.1), GEOS (>= 3.4.0), PROJ (>=
4.8.0)

NeedsCompilation no

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  <https://github.com/ropensci/software-review/issues/653>.)

Contents

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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 `emodnet_init_wfs_client()`.
service	the EMODnet OGC WFS service name. For available services, see `emodnet_wfs()`.
service_version	**[Deprecated]** 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 `emodnet_get_wfs_info()`.
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 (`https://docs.geoserver.org/stable/en/user/filter/ecql_reference.html`). Should be one of:

- character string or character vector of length 1. Filter will be recycled across all layers requested.
- character vector of length equal to the length of layers. Filter will be matched to layers sequentially. Elements containing NA are ignored
- 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.

simplify	whether to reduce output layers to a single `sf` object. This only works if the column names are the same.
reduce_layers	**[Deprecated]** use `simplify`.
...	additional vendor parameter arguments passed to `ows4R::GetFeature()`. For example, including `count = 1` returns the first available feature. Or `outputFormat = "CSV"` (or `outputFormat = "JSON"`) 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 `WFSClient` R6 object with methods for interfacing an OGC Web Feature Service. From `emodnet_init_wfs_client()`.
layers	a character vector of layer names. To get info on layers, including `layer_name` use `emodnet_get_wfs_info()`.
service	the EMODnet OGC WFS service name. For available services, see `emodnet_wfs()`.
service_version	
	[Deprecated] 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 emodnet_wfs().
service_version	
	[Deprecated] 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::WFSClient R6 object with methods for interfacing an OGC Web Feature Service.

See Also

WFSClient 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 `WFSClient` R6 object with methods for interfacing an OGC Web Feature Service. From `emodnet_init_wfs_client()`.
service	the EMODnet OGC WFS service name. For available services, see `emodnet_wfs()`.
service_version	
	[Deprecated] the WFS service version. Now always "2.0.0".
layer	character sting of layer name. To get info on layers, including `layer_name` use `emodnet_get_wfs_info()`.

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 `WFSClient` R6 object with methods for interfacing an OGC Web Feature Service. From `emodnet_init_wfs_client()`.
service	the EMODnet OGC WFS service name. For available services, see `emodnet_wfs()`.
service_version	
	[Deprecated] the WFS service version. Now always "2.0.0".
layer	character sting of layer name. To get info on layers, including `layer_name` use `emodnet_get_wfs_info()`.

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 WFSClient R6 object with methods for interfacing an OGC Web Feature Ser-
                vice. From emodnet_init_wfs_client().

service   the EMODnet OGC WFS service name. For available services, see emodnet_wfs().
service_version
                [Deprecated] the WFS service version. Now always "2.0.0".

layer   character sting of layer name. To get info on layers, including layer_name use
                emodnet_get_wfs_info().

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

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 `WFSClient` R6 object with methods for interfacing an OGC Web Feature Service. From `emodnet_init_wfs_client()`.
service	the EMODnet OGC WFS service name. For available services, see `emodnet_wfs()`.
service_version	
	[Deprecated] the WFS service version. Now always "2.0.0".
layer	character sting of layer name. To get info on layers, including `layer_name` use `emodnet_get_wfs_info()`.
attribute	character string, name of layer attribute (variable). Use `layer_attributes_get_names()` 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_summar` `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"
)
```

---

should_run_example   *Should we run this emodnet.wfs example?*

Description

Determines whether we are in pkgdown or in an interactive session. Do not use it in your own package!

Usage

```
should_run_example()
```

Value

A Boolean indicating whether to run the example.

Examples

```
should_run_example()
```

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