

Package ‘Argentum’

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Title Access Argentine WFS and WMS Geospatial Web Services

Version 2.1.0

Description Discovers and reads geospatial layers published by Argentine public organizations through the Open Geospatial Consortium standards Web Feature Service (WFS) and Web Map Service (WMS). Provides a cached catalogue of endpoints, capability parsing with version negotiation, paginated vector downloads returned as 'sf' objects, and raster map retrieval returned as 'terra' objects. For the underlying standards see <<https://www.ogc.org/standards/wfs/>> and <<https://www.ogc.org/standards/wms/>>.

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URL <https://github.com/thomasartopoulos/argentum>,
<https://thomasartopoulos.github.io/argentum/>

BugReports <https://github.com/thomasartopoulos/argentum/issues>

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argentum_browse	<i>Browse services interactively</i>
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Description

A guided prompt that walks from organization to service to layer, then either returns the data or writes it to disk. Intended for exploration at the console; every step it performs is available as a normal function call.

Usage

```
argentum_browse(action = c("read", "download"), dir = NULL)
```

Arguments

- action "read" returns the object, "download" writes files.
- dir Destination directory when action = "download".

Value

An sf object, a [terra::SpatRaster](#), or a download report, depending on the path taken. NULL if the user cancels.

Examples

```
if (interactive()) {  
  layer <- argentum_browse()  
}
```

argentum_cache_clear *Clear the argentum cache*

Description

Clear the argentum cache

Usage

```
argentum_cache_clear(what = c("all", "memory", "disk"))
```

Arguments

what Which tier to clear: "all", "memory" or "disk".

Value

Invisibly, the number of on-disk files removed.

Examples

```
argentum_cache_clear("memory")
```

argentum_cache_path *Where argentum stores cached documents*

Description

Downloads of the endpoint catalogue and of GetCapabilities documents are cached on disk so that repeated calls in a session, or across sessions, do not hammer public servers.

Usage

```
argentum_cache_path()
```

Value

A single file path. The directory is created on first use.

Examples

```
argentum_cache_path()
```

argentum_capabilities *Retrieve and parse a GetCapabilities document*

Description

Negotiates the protocol version by trying the newest first and falling back, which is what makes the package work against both GeoServer and ArcGIS Server deployments. The parsed document is cached; see [argentum_cache_path\(\)](#).

Usage

```
argentum_capabilities(  
  x,  
  service = c("wfs", "wms"),  
  version = NULL,  
  refresh = FALSE  
)
```

Arguments

x	An organization name from argentum_organizations() , or a service URL. Any query string on the URL is discarded and rebuilt.
service	"wfs" or "wms".
version	Force a protocol version, e.g. "1.1.0". If NULL (default) versions are tried newest-first.
refresh	Ignore the cache and re-request the document.

Value

An object of class `argentum_capabilities`: an `xml_document` with `service`, `version` and `url` attributes.

Examples

```
## Not run:  
cap <- argentum_capabilities("https://wms.ign.gob.ar/geoserver/ows", "wfs")  
cap  
  
## End(Not run)
```

argentum_download	<i>Download WFS layers to disk</i>
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Description

Writes one file per layer and returns a report. Failures are recorded and the run continues, so one broken layer does not abort a bulk download.

Usage

```
argentum_download(
  x,
  layers = NULL,
  dir = file.path(tempdir(), "argentum"),
  format = c("gpkg", "geojson", "shp"),
  overwrite = FALSE,
  bbox = NULL,
  crs = NULL,
  max_features = NULL,
  quiet = arg_opt("argentum.quiet")
)
```

Arguments

x	An organization name from argentum_organizations() , or a WFS URL.
layers	Character vector of layer names. NULL (default) downloads every layer the service publishes.
dir	Destination directory. Created if absent. Defaults to a session temporary directory, per CRAN policy on writing to the user's filesystem.
format	One of "gpkg" (default), "geojson" or "shp". GeoPackage is recommended: Shapefile truncates field names to ten characters and cannot hold more than 2 GB.
overwrite	Overwrite files that already exist.
bbox	Optional spatial filter. Either a numeric vector <code>c(xmin, ymin, xmax, ymax)</code> , or any object accepted by <code>sf::st_bbox()</code> , such as an existing sf object.
crs	Coordinate reference system to request, e.g. "EPSG:4326" or 4326. NULL (default) negotiates one from the layer's declared list, preferring EPSG:4326; if the layer declares none, the server's own default is used.
max_features	Stop after this many features. NULL (default) reads everything.
quiet	Suppress progress messages.

Value

Invisibly, a data frame with one row per layer and columns layer, status ("success", "skipped" or "error"), path, features and message.

Examples

```
## Not run:
report <- argentum_download(
  "https://wms.ign.gob.ar/geoserver/ows",
  layers = "ign:provincia",
  dir = tempdir()
)
subset(report, status == "error")

## End(Not run)
```

argentum_help

Guided help at the console

Description

Prints a short, copy-pasteable guide for common tasks: getting started, understanding the catalogue, listing layers, downloading data, rendering WMS maps and tuning options. It complements ?argentum (the grouped reference) and the vignettes (the long-form articles).

Usage

```
argentum_help(topic = "inicio", lang = c("es", "en"))
```

Arguments

topic	What to explain. One of "inicio" (default), "catalogo", "capas", "descargar", "wms" or "opciones". English synonyms ("start", "catalog", "layers", "download", "options") are accepted.
lang	"es" (default) or "en".

Value

topic, invisibly. Called for its printed output.

Examples

```
argentum_help()
argentum_help("descargar")
argentum_help("download", lang = "en")
```

argentum_layers	<i>List the layers published by a service</i>
-----------------	---

Description

List the layers published by a service

Usage

```
argentum_layers(x, service = c("wfs", "wms"), refresh = FALSE)
```

Arguments

x	An organization name from argentum_organizations() , or a service URL.
service	"wfs" (default) or "wms".
refresh	Ignore the cached capabilities document.

Value

A data frame with columns name, title, abstract, crs and bbox (a WGS84 xmin, ymin, xmax, ymax string). Zero rows if the service publishes none. crs is normalised to EPSG:code form even when the service declares it as a URN.

Examples

```
## Not run:
layers <- argentum_layers("https://wms.ign.gob.ar/geoserver/ows")
head(layers[, c("name", "title")])

## End(Not run)
```

argentum_organizations	<i>List organizations publishing OGC services</i>
------------------------	---

Description

Returns the catalogue of Argentine public bodies known to expose OGC geoservices, as published in IDERA's own spreadsheet.

Usage

```
argentum_organizations(
  service = c("any", "wfs", "wms", "wcs", "csw"),
  refresh = FALSE
)
```

Arguments

service	Keep only organizations offering this service: "any" (default), "wfs", "wms", "wcs" or "csw". The package can read WMS and WFS; wcs_url and csw_url are carried so you can see what an organization publishes, and reach it with another tool.
refresh	If TRUE, ignore the cache and re-download the catalogue.

Value

A data frame with columns name, level, jurisdiction, dependency, organization, updated, wms_url, wfs_url, wcs_url and csw_url. name is the human-readable label used by the rest of the package.

See Also

[argentum_search_organizations\(\)](#), [argentum_layers\(\)](#)

Examples

```
## Not run:
orgs <- argentum_organizations()
head(orgs$name)

# Only those with a usable WMS endpoint
argentum_organizations(service = "wms")

## End(Not run)
```

argentum_read_wfs	<i>Read a WFS layer as an sf object</i>
-------------------	---

Description

Improves on the v1 importer in four ways: the protocol version is taken from the negotiated capabilities rather than hard-coded, large layers are fetched page by page instead of in one request that times out, a spatial or attribute filter can be pushed down to the server, and if the endpoint cannot produce GeoJSON the request falls back to GML.

Usage

```
argentum_read_wfs(
  x,
  layer,
  bbox = NULL,
  crs = NULL,
  max_features = NULL,
  page_size = arg_opt("argentum.page_size"),
```

```

    filter = NULL,
    quiet = arg_opt("argentum.quiet")
)

```

Arguments

x	An organization name from argentum_organizations() , or a WFS URL.
layer	Layer (feature type) name, as reported by argentum_layers() .
bbox	Optional spatial filter. Either a numeric vector c(xmin, ymin, xmax, ymax), or any object accepted by sf::st_bbox() , such as an existing sf object.
crs	Coordinate reference system to request, e.g. "EPSG:4326" or 4326. NULL (default) negotiates one from the layer's declared list, preferring EPSG:4326; if the layer declares none, the server's own default is used.
max_features	Stop after this many features. NULL (default) reads everything.
page_size	Features per request. Defaults to <code>getOption("argentum.page_size")</code> . Set to Inf to disable paging for servers that mishandle startIndex.
filter	A CQL filter pushed to the server, e.g. "provincia = 'Mendoza'". Supported by GeoServer; ignored by some ArcGIS deployments.
quiet	Suppress progress messages.

Details

When a read fails outright the request is retried with paging disabled and then against each older protocol version, exactly as the ArgentinaGeoServices QGIS plugin does: several Argentine GeoServer installs advertise 2.0.0 and then fail to serialise GML in that version while answering 1.0.0 perfectly. If every attempt fails, the server is asked for a single feature so that its own error message can be reported instead of a bare parse failure.

Value

An sf data frame. Zero rows if the filter matches nothing.

See Also

[argentum_download\(\)](#) to write layers straight to disk.

Examples

```

## Not run:
url <- "https://wms.ign.gob.ar/geoserver/ows"

# Everything in a small layer
provinces <- argentum_read_wfs(url, "ign:provincia")

# Only what falls inside a bounding box, reprojected
argentum_read_wfs(
  url, "ign:provincia",
  bbox = c(-59, -35, -57, -34),

```

```

    crs = 4326
)

## End(Not run)

```

argentum_read_wms	<i>Render a WMS layer as a raster</i>
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Description

Issues a GetMap request and returns the rendered image georeferenced as a [terra::SpatRaster](#). Unlike a WFS read this gives you the server's own cartography — useful for basemaps, orthophotos and any layer published only as a picture.

Usage

```

argentum_read_wms(
  x,
  layer,
  bbox,
  crs = NULL,
  width = NULL,
  height = NULL,
  style = NULL,
  format = NULL,
  transparent = TRUE,
  quiet = arg_opt("argentum.quiet")
)

```

Arguments

x	An organization name from argentum_organizations() , or a WMS URL.
layer	Layer name, or a character vector of names to be drawn in order, first at the bottom.
bbox	Extent to render, as c(xmin, ymin, xmax, ymax) or any object accepted by sf::st_bbox() . Required: WMS has no "everything" request.
crs	CRS of bbox and of the output, e.g. "EPSG:4326" or 4326. Defaults to "EPSG:4326", or to the CRS of bbox if it carries one.
width, height	Image size in pixels. If only one is given, the other is derived from the aspect ratio of bbox. If neither is given, width defaults to 800.
style	Optional named style, or one per layer.
format	MIME type to request. NULL (default) negotiates one from the formats the service advertises for GetMap, preferring PNG, which keeps transparency. Pass a value such as "image/jpeg" to force it.
transparent	Request a transparent background.
quiet	Suppress progress messages.

Value

A [terra::SpatRaster](#) with the CRS set, ready to combine with vector data read via [argentum_read_wfs\(\)](#).

See Also

[argentum_wms_legend\(\)](#) for the matching legend graphic.

Examples

```
## Not run:
r <- argentum_read_wms(
  "https://wms.ign.gob.ar/geoserver/ows",
  layer = "ign:provincia",
  bbox = c(-59, -35, -57, -34),
  width = 800
)
terra::plotRGB(r)

## End(Not run)
```

argentum_search_organizations

Search the organization catalogue

Description

Search the organization catalogue

Usage

```
argentum_search_organizations(
  pattern,
  service = c("any", "wfs", "wms", "wcs", "csw"),
  refresh = FALSE
)
```

Arguments

pattern	Case-insensitive regular expression matched against name.
service	Keep only organizations offering this service: "any" (default), "wfs", "wms", "wcs" or "csw". The package can read WMS and WFS; <code>wcs_url</code> and <code>csw_url</code> are carried so you can see what an organization publishes, and reach it with another tool.
refresh	If TRUE, ignore the cache and re-download the catalogue.

Value

A data frame, possibly with zero rows.

Examples

```
## Not run:
argentum_search_organizations("buenos aires")
argentum_search_organizations("catastro", service = "wfs")

## End(Not run)
```

argentum_wms_legend	<i>Retrieve the legend graphic for a WMS layer</i>
---------------------	--

Description

Retrieve the legend graphic for a WMS layer

Usage

```
argentum_wms_legend(x, layer, style = NULL, format = "image/png")
```

Arguments

x	An organization name from argentum_organizations() , or a WMS URL.
layer	A single layer name.
style	Optional named style, or one per layer.
format	MIME type to request. NULL (default) negotiates one from the formats the service advertises for GetMap, preferring PNG, which keeps transparency. Pass a value such as "image/jpeg" to force it.

Value

A [terra::SpatRaster](#) holding the legend image (no CRS: it is a picture, not a map).

Examples

```
## Not run:
argentum_wms_legend("https://wms.ign.gob.ar/geoserver/ows", "ign:provincia")

## End(Not run)
```

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