

Package ‘echor’

September 11, 2026

Type Package

Title Access EPA 'ECHO' Data

Version 0.1.10

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Description An R interface to United States Environmental Protection Agency (EPA) Environmental Compliance History Online ('ECHO') Application Program Interface (API). 'ECHO' provides information about EPA permitted facilities, discharges, and other reporting info associated with permitted entities. Data are obtained from <<https://echo.epa.gov/>>.

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Encoding UTF-8

Imports curl, dplyr, httr, plyr, progress, purrr, readr, rlang, sf, tibble, tidyr (>= 1.0.0), utils

Suggests httptest, testthat, utf8

BugReports <https://github.com/mps9506/echor/issues>

URL <https://github.com/mps9506/echor>, <https://mps9506.github.io/echor/>

Language en-US

Config/Needs/website mps9506/mpsTemplates, ggplot2, ggrepel, ggspatial, here, kableExtra, knitr, prettymapr, raster, rmarkdown, sf

Config/Needs/coverage xml2

Config/roxygen2/version 8.1.0

NeedsCompilation no

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Repository CRAN

Date/Publication 2026-09-11 20:10:27 UTC

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downloadDMRs	<i>Download Multiple DMRs</i>
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Description

Returns DMRs in a nested list using echoGetEffluent(). Uses a dataframe with a column of p_id numbers. Please note that p_id’s are case sensitive.

Usage

```
downloadDMRs(df, idColumn, pBar = TRUE, verbose = FALSE, ...)
```

Arguments

df	dataframe with column of id numbers
idColumn	unquoted string, name of column containing the p_id permit numbers
pBar	logical, display a progress bar? Defaults to TRUE
verbose	logical, indicating whether to provide processing and retrieval messages. Defaults to FALSE. Suggest leaving this FALSE if pBar = TRUE.
...	additional arguments passed to echoGetEffluent

Value

dataframe df, with a column containing the discharge monitoring reports downloaded with echoGetEffluentSummary

Examples

```
## This example requires an internet connection to run

## Retrieve multiple DMRs for flow

df <- tibble::tibble("id" = c('TX0119407', 'TX0132187'))
df <- downloadDMRs(df, id)
```

```
echoAirGetFacilityInfo
```

Downloads EPA ECHO permitted air emitter information

Description

Returns a dataframe or simplefeature dataframe of permitted facilities returned by the query. Uses EPA's ECHO API: https://echo.epa.gov/tools/web-services/facility-search-air#!/Facilities/get_air_rest_services_get_facility_info

Usage

```
echoAirGetFacilityInfo(output = "df", verbose = FALSE, ...)
```

Arguments

output	Character string specifying output format. output = 'df' for a dataframe or output = 'sf' for a simple features spatial dataframe. See (https://CRAN.R-project.org/package=sf) for more information about simple features.
verbose	Logical, indicating whether to provide processing and retrieval messages. Defaults to FALSE
...	Further arguments passed as query parameters in request sent to EPA ECHO's API. For more options see: https://echo.epa.gov/tools/web-services/facility-search-water#!/Facility_Information/get_air_rest_services_get_facility_info for a complete list of parameter options. Examples provided below.

Value

dataframe or sf dataframe suitable for plotting

Examples

```
## These examples require an internet connection to run

## Retrieve table of facilities by bounding box
echoAirGetFacilityInfo(p_c1lon = '-96.407563',
p_c1lat = '30.554395',
```

```
p_c2lon = '-96.25947',
p_c2lat = '30.751984',
output = 'df')

## Retrieve a simple features dataframe by bounding box
spatialdata <- echoAirGetFacilityInfo(p_c1lon = '-96.407563',
p_c1lat = '30.554395',
p_c2lon = '-96.25947',
p_c2lat = '30.751984',
output = 'sf')
```

echoAirGetMeta

Downloads EPA ECHO Air Facility Metadata

Description

Returns variable name and descriptions for parameters returned by [echoAirGetFacilityInfo](#)

Usage

```
echoAirGetMeta(verbose = FALSE)
```

Arguments

verbose	Logical, indicating whether to provide processing and retrieval messages. Defaults to FALSE
---------	---

Value

returns a dataframe

Examples

```
## These examples require an internet connection to run

# returns a dataframe of
echoAirGetMeta()
```

echoGetCAAPR	<i>Download EPA ECHO emissions inventory report data</i>
--------------	--

Description

Download EPA ECHO emissions inventory report data

Usage

```
echoGetCAAPR(p_id, verbose = FALSE, ...)
```

Arguments

p_id	character string specify the identifier for the service. Required.
verbose	Logical, indicating whether to provide processing and retrieval messages. Defaults to FALSE
...	Additional arguments

Value

dataframe

Examples

```
## This example requires an internet connection to run  
  
echoGetCAAPR(p_id = '110000350174')
```

echoGetEffluent	<i>Downloads EPA ECHO DMR records of dischargers with NPDES permits</i>
-----------------	---

Description

Uses EPA ECHO API to download the Discharge Monitoring Record (DMR) of a single plant, identified with p_id. Please note that the p_id is case sensitive.

Usage

```
echoGetEffluent(p_id, verbose = FALSE, ...)
```

Arguments

p_id	Character string specify the identifier for the service. Required. Case sensitive.
verbose	Logical, indicating whether to provide processing and retrieval messages. Defaults to FALSE
...	Further arguments passed on as query parameters sent to EPA's ECHO API. For more options see: https://echo.epa.gov/tools/web-services/effluent-charts#!/Effluent_Charts/get_eff_rest_services_get_effluent_chart

Value

Returns a dataframe.

Examples

```
## This example requires an internet connection to run

## Retrieve single DMR for flow

echoGetEffluent(p_id = 'tx0119407', parameter_code = '50050')
```

echoGetFacilities	<i>Downloads permitted facility information</i>
-------------------	---

Description

Provides interface for downloading facility information from Clean Air Act, Clean Water Act, and Safe Drinking Water Act permitted facilities.

Usage

```
echoGetFacilities(program, output = "df", verbose = FALSE, ...)
```

Arguments

program	Character, either program = 'caa', program = 'cwa', or program = 'sdw'. 'caa' retrieves facilities permitted under the Clean Air Act, 'cwa' retrieves facilities permitted under the Clean Water Act, and 'sdw' retrieves facilities permitted under the the Safe Drinking Water Act.
output	Character string specifying output format. output = 'df' for a dataframe or output = 'sf' for a simple features spatial dataframe. 'sf' only applies to CAA and CWA queries.
verbose	Logical, indicating whether to provide processing and retrieval messages. Defaults to FALSE.
...	Further arguments passed as query parameters in request sent to EPA ECHO's API.

Value

dataframe or sf dataframe suitable for plotting

echoGetReports	<i>Downloads self reported discharge and emissions data</i>
----------------	---

Description

Downloads self reported discharge and emissions data

Usage

```
echoGetReports(program, p_id, verbose = FALSE, ...)
```

Arguments

program	Character, one of program = 'caa', program = 'cwa', or program = 'nncr'. 'caa' retrieves facilities permitted under the Clean Air Act, 'cwa' retrieves facilities permitted under the Clean Water Act, and 'nncr' retrieves NPDES Noncompliance Report (NNCR) data for a facility or NPDES permit.
p_id	Character string specify the identifier for the service. For program = 'nncr', this is treated as the NPDES permit ID (permits__npdes_id). Required.
verbose	Logical, indicating whether to provide processing and retrieval messages. Defaults to FALSE.
...	Further arguments passed on as query parameters sent to EPA's ECHO API.

Value

Returns a dataframe

echoNNCRGetQuarters	<i>Downloads available NPDES Noncompliance Report (NNCR) fiscal year quarters</i>
---------------------	---

Description

Returns the fiscal year quarters ('fy_quarter') available for use with [echoNNCRGetSearch](#), [echoNNCRGetViolations](#), and [echoGetReports](#), along with the quarter's date range and release status. Uses EPA's ECHO API: <https://echo.epa.gov/tools/web-services/npdes-noncompliance-report>.

Usage

```
echoNNCRGetQuarters(verbose = FALSE)
```

Arguments

`verbose` Logical, indicating whether to provide processing and retrieval messages. Defaults to FALSE.

Value

Returns a dataframe.

Examples

```
## This example requires an internet connection to run

echoNNCRGetQuarters()
```

<code>echoNNCRGetReport</code>	<i>Downloads a NPDES Noncompliance Report (NNCR) facility/permit report</i>
--------------------------------	---

Description

Returns compliance and enforcement history for one or more facilities or NPDES permits at a time, across all available quarters. Uses EPA's ECHO API: <https://echo.epa.gov/tools/web-services/npdes-noncompliance-report>.

Usage

```
echoNNCRGetReport(verbose = FALSE, ...)
```

Arguments

`verbose` Logical, indicating whether to provide processing and retrieval messages. Defaults to FALSE.

`...` Further arguments passed as query parameters in the request sent to EPA ECHO's API. One of `frs_id`, `frs_id__in`, `permits__npdes_id`, or `permits__npdes_id__in` is required. For a complete list of parameter options, see the web services documentation linked above.

Value

Returns a dataframe. Nested facility, permit, and violation-level detail returned by the service is preserved as list-columns.

Examples

```
## This example requires an internet connection to run

echoNNCRGetReport(permits__npdes_id = "TX0119407")
```

echoNNCRGetSearch	<i>Searches the NPDES Noncompliance Report (NNCR)</i>
-------------------	---

Description

Returns a dataframe of permits and their summarized violation counts for a given fiscal year quarter, matching the search criteria. Uses EPA's ECHO API: <https://echo.epa.gov/tools/web-services/npdes-noncompliance-report>.

Usage

```
echoNNCRGetSearch(verbose = FALSE, ...)
```

Arguments

verbose	Logical, indicating whether to provide processing and retrieval messages. Defaults to FALSE.
...	Further arguments passed as query parameters in the request sent to EPA ECHO's API. fy_quarter is required; see echoNNCRGetQuarters for valid values. For a complete list of parameter options, including Django-style field lookups such as permit_state__in or permit_name__icontains, see the web services documentation linked above.

Value

Returns a dataframe.

See Also

[echoNNCRGetQuarters](#)

Examples

```
## This example requires an internet connection to run

echoNNCRGetSearch(fy_quarter = "FY24Q4", permit_state = "TX")
```

echoNNCRGetViolations	<i>Downloads detailed NPDES Noncompliance Report (NNCR) violations</i>
-----------------------	--

Description

Returns a dataframe of detailed violation records for a given fiscal year quarter, optionally filtered to a single facility (frs_id) or NPDES permit (npdes_id). Uses EPA's ECHO API: <https://echo.epa.gov/tools/web-services/npdes-noncompliance-report>.

Usage

```
echoNNCRGetViolations(verbose = FALSE, ...)
```

Arguments

verbose	Logical, indicating whether to provide processing and retrieval messages. Defaults to FALSE.
...	Further arguments passed as query parameters in the request sent to EPA ECHO's API. fy_quarter is required; see echoNNCRGetQuarters for valid values. For a complete list of parameter options, see the web services documentation linked above.

Value

Returns a dataframe.

See Also

[echoNNCRGetQuarters](#)

Examples

```
## This example requires an internet connection to run

echoNNCRGetViolations(fy_quarter = "FY24Q4", npdes_id = "TX0119407")
```

echoSDWGetMeta	<i>Downloads EPA ECHO Safe Drinking Water Facilities Metadata</i>
----------------	---

Description

Downloads EPA ECHO Safe Drinking Water Facilities Metadata

Usage

```
echoSDWGetMeta(verbose = FALSE)
```

Arguments

verbose	Logical, indicating whether to provide processing and retrieval messages. Defaults to FALSE
---------	---

Value

returns a dataframe

Examples

```
## These examples require an internet connection to run

# returns a dataframe of
echoSDWGetMeta()
```

echoSDWGetSystems	<i>Downloads public water system information</i>
-------------------	--

Description

Returns a dataframe of permitted public water systems returned by the query. Uses EPA's ECHO API: https://echo.epa.gov/tools/web-services/facility-search-drinking-water#!/Safe_Drinking_Water/get_sdw_rest_services_get_systems.

Usage

```
echoSDWGetSystems(verbose = FALSE, ...)
```

Arguments

verbose	Logical, indicating whether to provide processing and retrieval messages. Defaults to FALSE
...	Further arguments passed as query parameters in request sent to EPA ECHO's API. For more options see: https://echo.epa.gov/tools/web-services/facility-search-drinking-water#!/Safe_Drinking_Water/get_sdw_rest_services_get_systems for a complete list of parameter options. Examples provided below.

Value

returns a dataframe

Examples

```
## These examples require an internet connection to run
echoSDWGetSystems(p_co = "Brazos", p_st = "tx")
```

```
echoWaterGetFacilityInfo
```

Downloads EPA ECHO water facility information

Description

Returns a dataframe or simplefeature dataframe of permitted facilities returned by the query. Uses EPA's ECHO API: <https://echo.epa.gov/tools/web-services/facility-search-water>.

Usage

```
echoWaterGetFacilityInfo(output = "df", verbose = FALSE, ...)
```

Arguments

output	Character string specifying output format. output = 'df' for a dataframe or output = 'sf' for a simple features spatial dataframe. See (https://CRAN.R-project.org/package=sf) for more information about simple features.
verbose	Logical, indicating whether to provide processing and retrieval messages. Defaults to FALSE
...	Further arguments passed as query parameters in request sent to EPA ECHO's API. For more options see: https://echo.epa.gov/tools/web-services/facility-search-water#!/Facility_Information/get_cwa_rest_services_get_facility_info for a complete list of parameter options. Examples provided below.

Value

returns a dataframe or simple features dataframe

Examples

```
## These examples require an internet connection to run

## Retrieve table of facilities by bounding box
echoWaterGetFacilityInfo(p_c1lon = '-96.407563',
  p_c1lat = '30.554395',
  p_c2lon = '-96.25947',
  p_c2lat = '30.751984',
  p_pcomp = 'POT',
  output = 'df')

## Retrieve a simple features dataframe by bounding box
spatialdata <- echoWaterGetFacilityInfo(p_c2lon = '-96.407563',
  p_c1lat = '30.554395',
  p_c2lon = '-96.25947',
  p_c2lat = '30.751984',
  p_pcomp = 'POT',
  output = 'sf')
```

echoWaterGetMeta

Downloads EPA ECHO Water Facility Metadata

Description

Returns variable name and descriptions for parameters returned by [echoWaterGetFacilityInfo](#)

Usage

```
echoWaterGetMeta(verbose = FALSE)
```

Arguments

verbose	Logical, indicating whether to provide processing and retrieval messages. Defaults to FALSE
---------	---

Value

returns a dataframe

Examples

```
## These examples require an internet connection to run

# returns a dataframe of
echoWaterGetMeta()
```

echoWaterGetParams	<i>Search parameter codes for Clean Water Act permits on EPA ECHO</i>
--------------------	---

Description

Returns a dataframe of parameter codes and descriptions.

Usage

```
echoWaterGetParams(term = NULL, code = NULL, verbose = FALSE)
```

Arguments

term	Character string specifying the parameter search term. Partial or complete search phrase or word.
code	Character string specifying the parameter search code value.
verbose	Logical, indicating whether to provide processing and retrieval messages. Defaults to FALSE

Value

Returns a dataframe.

Examples

```
## These examples require an internet connection to run

## Retrieve parameter codes for dissolved oxygen
echoWaterGetParams(term = "Oxygen, dissolved")

echoWaterGetParams(code = "00300")
```

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