Package ‘geoknife’

April 27, 2021

Type  Package
Title  Web-Processing of Large Gridded Datasets
Version  1.6.5
Date  2021-04-26
Description  Processes gridded datasets found on the U.S. Geological Survey Geo Data Portal web application or elsewhere, using a web-enabled workflow that eliminates the need to download and store large datasets that are reliably hosted on the Internet. The package provides access to several data subset and summarization algorithms that are available on remote web processing servers (Read et al. (2015) <doi:10.1111/ecog.01880>).

License  CC0

URL  https://github.com/USGS-R/geoknife

BugReports  https://github.com/USGS-R/geoknife/issues

Copyright  This software is in the public domain because it contains materials that originally came from the United States Geological Survey, an agency of the United States Department of Interior.

Depends  R (>= 3.5.0)
Imports  whisker, xml2, methods, httr (>= 1.0.0), curl, sp, utils, progress (>= 1.1.2)
Suggests  testthat, xtable, knitr, rmarkdown, ggmap, dplyr, rasterVis, ggplot2, rgdal, maps

VignetteBuilder  knitr

RoxygenNote  7.1.0

NeedsCompilation  no

Author  Jordan Read [aut, cre],
        Jordan Walker [aut],
        Alison Appling [aut],
        David Blodgett [aut],
        Emily Read [aut],
        Luke Winslow [aut],
R topics documented:

abstract ................................................................. 3
algorithm ............................................................... 3
attribute<- ........................................................... 4
cancel ................................................................. 5
check ................................................................. 6
datagroup ............................................................. 7
datagroup-class ...................................................... 8
defaultProcessInputs ............................................. 8
download ............................................................ 9
gconfig ............................................................. 9
ggeoj . .............................................................. 10
gestyle-class ......................................................... 12
geknife .............................................................. 12
geo<- ............................................................. 13
parseCategorical .................................................... 14
parseTimeseries ..................................................... 15
query ............................................................... 15
result .............................................................. 17
simplegeom ........................................................ 18
simplegeom-class ................................................. 19
start .............................................................. 19
successful .......................................................... 20
times .............................................................. 21$url<- ............................................................ 22
values<- .......................................................... 23
variables .......................................................... 23
version<- .......................................................... 24
wait .............................................................. 25
webdata ........................................................... 26
webdata-class ..................................................... 27
webgeom .......................................................... 27
webgeom-class .................................................... 29
webprocess ........................................................ 30
webprocess-class ................................................. 30
XML ............................................................ 31

Index 33
**abstract**

*get abstract from a datagroup*

**Description**

extracts the abstract information from a datagroup object

**Usage**

```r
abstract(.Object)
```

```r
## S4 method for signature 'datagroup'
abstract(.Object)
```

```r
title(.Object)
```

```r
## S4 method for signature 'datagroup'
title(.Object)
```

**Arguments**

`.Object` a datagroup object

---

**algorithm**

*the algorithm of a webprocess object*

**Description**

Functions to get or set the algorithm of a `webprocess` object. The algorithm is the type of process that will be used, and can be accessed or modified using the algorithm method.

**Usage**

```r
algorithm(.Object)
```

```r
algorithm(.Object) <- value
```

```r
## S4 method for signature 'webprocess'
algorithm(.Object)
```

```r
## S4 replacement method for signature 'webprocess'
algorithm(.Object) <- value
```

```r
## S4 method for signature 'xml_document'
algorithm(.Object)
```
Arguments

`.Object`  
a `webprocess` object

`value`  
a list with name of algorithm and relative url endpoint

Examples

```r
## Not run:
wp <- webprocess()
algorithm(wp)

## End(Not run)
```

---

**attribute<->**  
the attribute of a `webgeom` object

Description

get or set the attribute of a `webgeom` object.

Usage

```r
attribute(.Object) <- value

attribute(.Object)
```

```r
## S4 replacement method for signature 'webgeom'
attribute(.Object) <- value

## S4 method for signature 'webgeom'
attribute(.Object)
```

Arguments

`.Object`  
a `webgeom` object

`value`  
a attribute
cancel  
cancel a geo-web processing request

Description
Cancel process for geojob

Usage
cancel(.Object)

## S4 method for signature 'geojob'
cancel(.Object)

## S4 method for signature 'missing'
cancel(.Object)

Arguments

/Object a geojob object with an active geo-web processing request.

Details
cancel is a method for cancelling a geo-web processing request.

Value
A geojob object with no active job

See Also
check, start

Examples
wd <- webdata('prism')
wg <- webgeom('state::New Hampshire')
wp <- webprocess()
gj <- geojob()
xml(gj) <- XML(wg, wd, wp)
url(gj) <- url(wp)
## Not run:
gj <- start(gj)
gj <- cancel(gj)
## End(Not run)
check

Check status of processing request

Description
Check status of processing request

Usage
check(.Object)

## S4 method for signature 'geojob'
check(.Object)

## S4 method for signature 'character'
check(.Object)

Arguments
/Object

.a geojob object with an active GDP process request, or a character URL of an existing job

Details
check is a method for checking the process status of an active (executed) geojob object. The method returns process, which is a list containing two fields: status and URL. If the geojob object has not been executed (see start), this method returns status='none' and URL=NULL.

Value
process, a list containing status and URL.

Author(s)
Jordan S. Read

See Also
start

Examples
gj <- geojob() # create geojob object
check(gj) # no process for empty geojob object
**Description**

A class representing a geoknife job (`datagroup`).

**Usage**

```r
datagroup(...)  # additional arguments passed to initialize method

datagroup(...)  # not implemented

length(x)  # length: a datagroup object

x[i, j, ..., drop = TRUE]  # S4 method for signature 'datagroup'
```

**Arguments**

- `...`: additional arguments passed to initialize method
- `x`: a `datagroup` object
- `i`: index specifying elements to extract or replace.
- `j`: not implemented
- `drop`: not implemented

**Value**

the `datagroup` object

**Author(s)**

Jordan S Read
datagroup-class  

**Description**
contains collections of webdata that can be processed with geoknife

**Slots**
group  a list of webdata compatible elements

---

**defaultProcessInputs**  

**Default Process Inputs**

**Description**
parses DescribeProcess request

**Usage**
defaultProcessInputs(algorithm, wps_url, wps_version)

**Arguments**
algorithm  the WPS algorithm to get process inputs for
wps_url  the service base URL for the WPS
wps_version  the service version to use

**Value**
list of default, optional, and required process inputs for use in the webprocess object.
download

**download output from geojob**

### Description

download the result of a processing job to a local destination.

### Usage

download(.Object, destination, ...)

```r
## S4 method for signature 'geojob,missing'
download(.Object, destination, ...)

## S4 method for signature 'character,missing'
download(.Object, destination, ...)

## S4 method for signature 'geojob,character'
download(.Object, destination, ...)

## S4 method for signature 'character,character'
download(.Object, destination, ...)
```

### Arguments

- `.Object` a `geojob` or job id that has completed
- `destination` a file destination. If missing, a temp directory will be used
- `...` additional arguments passed to `write_disk`, such as `overwrite = TRUE`

### Value

the location of the downloaded file

### Author(s)

Jordan S Read

---

gconfig

**configure geoknife settings**

### Description

access and set defaults for geoknife configuration
Usage

gconfig(..., no.readonly = FALSE)

Arguments

... values for gconfig
no.readonly currently not implemented for TRUE

Value

Borrowed text and functionality from par. When parameters are set, their previous values are returned in an invisible named list. Such a list can be passed as an argument to par to restore the parameter values. Use gconfig(no.readonly = TRUE) for the full list of parameters that can be restored. When just one parameter is queried, the value of that parameter is returned as (atomic) vector. When two or more parameters are queried, their values are returned in a list, with the list names giving the parameters. Note the inconsistency: setting one parameter returns a list, but querying one parameter returns a vector.

Examples

gconfig # all config
gconfig('wait')
gconfig('sleep.time' = 10)
gconfig('sleep.time' = 8, wait=TRUE)

geojob create geojob object

Description

A class representing a geoknife job (geojob).

Usage

geojob(xml, ...)

## S4 method for signature 'missing'
geojob(xml, ...)

## S4 method for signature 'xml_document'
geojob(xml, ...)

## S4 method for signature 'character'
geojob(xml, ...)

xml(.Object) <- value
geojob

xml(.Object)

id(.Object)
id(.Object) <- value

id(.Object)

## S4 replacement method for signature 'geojob'
id(.Object) <- value

## S4 method for signature 'geojob'
id(.Object)

## S4 method for signature 'character'
id(.Object)

Arguments

xml location of xml (URL or local path)
...
 addObject a geojob object
value a character string of xml

Value

the geojob object

Author(s)

Jordan S Read

Examples

xml <- "<foo> <bar> text <baz/> </bar> </foo>"
gj <- geojob()
xml(gj) <- xml
xml(gj)
xml <- "<foo version="1.0.0"> <bar> text <baz/> </bar> </foo>"
gj <- geojob(xml = xml)
xml(gj)
id(gj)"
Description

contains the information for processing the job, and the versions of the resources used.

Slots

- `url` URL of web processing endpoint
- `xml` XML character for post
- `id` job identifier
- `package.version` the version of the geoknife package
- `algorithm.version` the version of the algorithm used for processing

Usage

geoknife(stencil, fabric, knife = webprocess(...), ...)

Arguments

- `stencil` a `webgeom`, `simplegeom`, or any type that can be coerced into `simplegeom`
- `fabric` a dataset. A `webdata` or any type that can be coerced into `webdata`
- `knife` (optional) a `webprocess` object
- `...` additional arguments passed to new `webprocess`. Can also be used to modify the `knife` argument, if it is supplied.

Details

The `stencil` argument is akin to cookie cutter(s), which specify how the dataset is to be subsampled spatially. Supported types are all geometric in nature, be they collections of points or polygons. Because geoprocessing operations require a non-zero area for `stencil`, if points are used (i.e., the different point collections that can be used in `simplegeom`), there is a negligible automatic point buffer applied to each point to result in a non-zero area.

Naming of the components of the `stencil` will impact the formatting of the result returned by the `geoknife` processing job (the `geojob`)

Description

Creates the processing job and allows specifying the processing details.
geoknife will check the class of the stencil argument, and if stencil's class is not `webgeom`, it will attempt to coerce the object into a `simplegeom`. If no coercion method exists, geoknife will fail.

The fabric argument is akin to the dough or fabric that will be subset with the stencil argument. At present, this is a web-available gridded dataset that meets a variety of formatting restrictions. Several quick start methods for creating a `webdata` object (only `webdata` or an type that can be coerced into `webdata` are valid arguments for fabric).

Making concurrent requests to the Geo Data Portal will NOT result in faster overall execution times. The data backing the system is on high performance storage, but that storage is not meant to support parallelized random access and can be significantly slower under these conditions. Read more: https://my.usgs.gov/confluence/display/GeoDataPortal/Geo+Data+Portal+Scalability+Guidelines

Value

and object of class `geojob`

Examples

```r
## Not run:
job <- geoknife(stencil = c(-89,42), fabric = 'prism')
check(job)

#-- set up geoknife to email user when the process is complete
job <- geoknife(webgeom("state::Wisconsin"), fabric = 'prism', email = 'fake.email@gmail.com')

## End(Not run)
```

```r
gem<-  the geom of an object
```

Description

The "feature" of a webgeom. This is the key mapping to the web resource that is used as the spatial feature of reference. Other details specified in `attribute` and `values`.

Usage

```r
geom(.Object) <- value
```

```r
geom(.Object)
```

```r
## S4 replacement method for signature 'webgeom'
geom(.Object) <- value
```

```r
## S4 method for signature 'webgeom'
geom(.Object)
```
parseCategorical

Arguments

  .Object  a webgeom object
  value    a geom

See Also

  attribute and values

parseCategorical      parse categorical coverage file into R environment

Description

  a function for loading data into R from a file (or URL) from a completed processing request

Usage

  parseCategorical(file, delim)

Arguments

  file       a geojob categorical processing result file location (See download).
  delim      the file delimiter

Value

  a data.frame of categorical fraction (and/or count) values.

See Also

  check, download, parseTimeseries

Examples

  local.file <- system.file('extdata','csv_categorical_multifeature.csv', package = 'geoknife')
  output <- parseCategorical(local.file, delim = ',')
parseTimeseries

parse timeseries file into R environment

Description

a function for loading data into R from a file (or URL) from a completed processing request

Usage

parseTimeseries(file, delim, with.units = FALSE)

Arguments

file               a geojob timeseries processing result file location (See download).
delim              the file delimiter
with.units        boolean for including a units column in returned data.frame (default = FALSE)

Value

a data.frame of timeseries values.

Author(s)

Luke A. Winslow, Jordan S. Read

See Also

check, download, parseCategorical

Examples

local_file <- system.file('extdata', 'tsv_linear_ring.tsv', package = 'geoknife')
output <- parseTimeseries(local_file, delim = 't')

query

query webdata for various fields

Description

a method for finding possible values for a given field
Usage

query(.Object, field, ...)

## S4 method for signature 'webdata,character'
quarry(.Object, field, ...)

## S4 method for signature 'webdata,missing'
quarry(.Object, field, ...)

## S4 method for signature 'character,missing'
quarry(.Object, field, ...)

## S4 method for signature 'webgeom,character'
quarry(.Object, field, ...)

## S4 method for signature 'webprocess,character'
quarry(.Object, field, ...)

Arguments

/Object/ a webdata, webgeom, or webprocess object.
field a plural parameter name for fields in .Object (e.g., 'variables', 'times')
... additional arguments passed to methods

Value

a character vector of values corresponding to the query field specified

Author(s)

Jordan S. Read

Examples

## Not run:
fabric <- webdata('prism')
query(fabric, 'variables')
w <- webgeom()
ququery(w, 'geoms')
geom(w) <- "sample:CONUS_states"
query(w, 'attributes')
attribute(w) <- 'STATE'
query(w, 'values', rm.duplicates = TRUE)

## End(Not run)
result

parse process output into R environment

Description

da geojob method for loading data into R from a completed processing request

Usage

result(.Object, ...)

## S4 method for signature 'geojob'
result(.Object, ...)

## S4 method for signature 'character'
result(.Object, ...)

Arguments

/Object/ a geojob object with a successful processID, or a character URL of a completed job. (See check).

... additional arguments passed to parsers (e.g., with.units = TRUE)

Value

data.frame of timeseries values.

Author(s)

Jordan S. Read

Examples

## Not run:
job <- geoknife(stencil = c(-89,42), fabric = 'prism', wait = TRUE)
result(job, with.units = TRUE) # load and print output

# or use the job id:
id <- id(job)
result(id, with.units = TRUE) # load and print output

## End(Not run)
simplegeom  Create simplegeom object

Description

A simple geom is a simple set of geometries specified locally. See webgeom for web features.

Usage

    simplegeom(.Object, ...)

    ## S4 method for signature 'missing'
    simplegeom(.Object, ...)

    ## S4 method for signature 'ANY'
    simplegeom(.Object, ...)

Arguments

    .Object any object that can be coerced into simplegeom
    ... additional arguments passed to SpatialPolygonsDataFrame

Value

    the simplegeom object

Author(s)

    Jordan S Read

Examples

    simplegeom(c(-88.6, 45.2))
    ## Not run:
    library(sp)
    Sr1 <- Polygon(cbind(c(-89.0001,-89,-88.9999,-89,-89.0001),c(46,46.0001,46,45.9999,46)))
    Sr2 <- Polygon(cbind(c(-88.6,-88.5999,-88.5999,-88.6,-88.6),c(45.2,45.2,45.1999,45.1999,45.2)))
    Srs1 <- Polygons(list(Sr1), "s1")
    Srs2 <- Polygons(list(Sr2), "s2")
    SP <- SpatialPolygons(list(Srs1,Srs2), proj4string = CRS("+proj=longlat +datum=WGS84"))
    result(geoknife(simplegeom(SP), 'prism', wait=TRUE))

    ## End(Not run)
    simplegeom(data.frame('point1'=c(-89, 46), 'point2'=c(-88.6, 45.2)))
Description

The simplegeom class represents geometries that can be coerced into polygon features. This is one of two stencil types accepted by geoknife (the other being webgeom).

Details

The difference between webgeom and simplegeom is both in the permanence and the location of the data. webgeom is located on a web server that offers geometries using the web feature service (WFS) specification. simplegeom are typically local data that can be accessed within an R session. Within reason, anything that can be represented as a webgeom (or WFS) can also be represented by a simplegeom For example, a state or watershed can be read in as SpatialPolygons object and turned into a simplegeom.

Slots

sp a SpatialPolygons object
DRAW_NAMESPACE  (_private) web location of draw namespace
DRAW_SCHEMA  (_private) web location of draw schema

start  Submit a GDP web processing request

Description

Start process for geojob

Usage

start(.Object)

## S4 method for signature 'geojob'
start(.Object)

Arguments

.Object a geojob object

Details

start a geo-web processing request
start is a method for submitting a geo-web processing request.
successful

Value

A geojob object with an active GDP process request.

See Also

check

Examples

```r
wd <- webdata('prism')
wg <- webgeom('state::New Hampshire')
wp <- webprocess()
gj <- geojob()
## Not run:
xml(gj) <- XML(wg, wd, wp)
url(gj) <- url(wp)
gj <- start(gj)
## End(Not run)
```

successful 

Convenience function for GDP process state

Description

Simple wrapper to check process status

Usage

```r
successful(.Object, retry)
error(.Object, retry)
running(.Object, retry)
```

```r
running(.Object, retry = FALSE)
error(.Object, retry = FALSE)
```

Arguments

- `.Object` a geojob object or geojob ID (character)
- `retry` logical, attempt to retry again if communication failed with the server

Value

TRUE/FALSE indicating if process is in the given state (error, processing, successful)

Author(s)

Luke Winslow, Jordan S Read
times

See Also

check

Examples

```r
## Not run:
job <- geoknife(stencil = c(-89,42), fabric = 'prism')
check(job)

running(job)
error(job)
successful(job)

## End(Not run)
```

times

the times of an webdata object

Description

Functions to get or set the times of a webdata object

Usage

```r
times(.Object)

times(.Object) <- value

## S4 replacement method for signature 'webdata'
times(.Object) <- value

## S4 method for signature 'webdata'
times(.Object)
```

Arguments

- `.Object` a webdata object
- `value` a POSIXct vector

Examples

```r
wd <- webdata('prism')
times(wd) <- as.POSIXct(c("2012-11-04", "2012-11-12"))
times(wd)[1] <- as.POSIXct("2012-11-04")
times(wd)
```
**Description**

get or set the url of an object

**Usage**

```r
url(.Object) <- value
url(.Object, ...)
```

## S4 replacement method for signature 'ANY'

```r
url(.Object) <- value
```

## S4 replacement method for signature 'webprocess'

```r
url(.Object) <- value
```

## S4 method for signature 'character'

```r
url(.Object, ...)
```

## S4 method for signature 'missing'

```r
url(.Object, ...)
```

## S4 method for signature 'datagroup'

```r
url(.Object, ...)
```

## S4 method for signature 'ANY'

```r
url(.Object, ...)
```

**Arguments**

- `.Object` a `webgeom`, `webdata`, `geojob`, or `webprocess` object
- `value` a url
- `...` additional arguments that would be passed to the masked base::url function. These are only used when the `.Object` argument is character or missing `geojob`, or `webprocess` object
values<-  

the values of a webgeom

Description

The values of a webgeom are the values of the attributes used in the geometries. For example, if the webgeom's "geom" field is a feature collection containing states and counties, and the "attributes" are the states, then the values would be the specific states.

Usage

values(.Object) <- value
values(.Object)

## S4 replacement method for signature 'webgeom'
values(.Object) <- value

## S4 method for signature 'webgeom'
values(.Object)

Arguments

.Object   a webgeom object
value      a values

Examples

wg <- webgeom('state::Wisconsin')
values(wg)
values(wg) <- c('Wisconsin','New Hampshire')

variables  

the variables of a webdata object

Description

access or set the variables of a webdata object
Usage

variables(.Object) <- value
variables(.Object) <- value

## S4 method for signature 'webdata'
variables(.Object)

## S4 replacement method for signature 'webdata'
variables(.Object) <- value

Arguments

.Objet              a webdata object
value                a character vector for variables

version<-            the version of an object

Description

get the version of webgeom or webprocess

Usage

version(.Object) <- value
version(.Object)

## S4 replacement method for signature 'ANY'
version(.Object) <- value

## S4 method for signature 'ANY'
version(.Object)

Arguments

.Objet              a webgeom or webprocess object
value                a version
wait

**Description**

keeps R in a loop while GDP works on the request. Checks `running`. Will drop out of loop whenever !`running(geojob)`

**Usage**

```r
wait(.Object, sleep.time)
```

## S4 method for signature `geojob,numeric`
```r
wait(.Object, sleep.time)
```

## S4 method for signature `geojob,missing`
```r
wait(.Object, sleep.time)
```

## S4 method for signature `character,numeric`
```r
wait(.Object, sleep.time)
```

## S4 method for signature `character,missing`
```r
wait(.Object, sleep.time)
```

**Arguments**

- `.Object` a `geojob`
- `sleep.time` a number of seconds to wait in between checking the process

**Value**

invisible return of `.Object`, unaltered

**Examples**

```r
## Not run:
job <- geoknife(stencil = c(-89,42), fabric = 'prism')
2+2
wait(job)
check(job) # should be complete

## End(Not run)
```
webdata

create webdata object

Description

A class representing a web dataset.

Usage

webdata(.Object, ...)

## S4 method for signature 'missing'
webdata(.Object, ...)

## S4 method for signature 'character'
webdata(
  .Object = c("prism", "iclus", "daymet", "gldas", "nldas", "topowx", "solar", "metobs"),
  ...
)

## S4 method for signature 'geojob'
webdata(.Object, ...)

## S4 method for signature 'ANY'
webdata(.Object, ...)

Arguments

/Object/ any object that can be coerced into webdata (currently character, webdata, and list)
...

... additional arguments passed initialize method (e.g., times, or any other in the webdata object.

Value

the webdata object representing a dataset and parameters

Slots

times value of type "POSIXct", start and stop dates for data
url value of type "character", the web location for the dataset
variable value of type "character", the variable(s) for data

Author(s)

Jordan S Read
Examples

```r
webdata('prism')
webdata('prism', times=as.POSIXct(c('1990-01-01', '1995-01-01')))
webdata(list(times = as.POSIXct(c('1895-01-01 00:00:00', '1899-01-01 00:00:00'))),
url = 'https://cida.usgs.gov/thredds/dodsC/prism',
variables = 'ppt'))
```

Description

A class for specifying details of web datasets (webdata!). These datasets have to be accessible through the OPeNDAP protocol or as WCS (web coverage services).

Slots

- `times`: vector of POSIXct dates (specifying start and end time of processing)
- `url`: URL of web data
- `variables`: variable(s) used for processing from dataset

webgeom

A class representing a web available feature geometry.

Usage

```r
webgeom(.Object, ...)
```

```
## S4 method for signature 'missing'
webgeom(.Object, ...)
```

```
## S4 method for signature 'ANY'
webgeom(.Object, ...)
```

Arguments

- `.Object`: any object that can be coerced into `webgeom`
- `...`: additional arguments passed initialize method (e.g., `url`). See the named slots above for arguments for ...
Details

slots can be accessed or set with methods of the same names (e.g., `url(webgeom())`)

Value

the webgeom object representing a dataset and parameters

Slots

- `url` value of type "character", the web location for the web feature service
- `geom` value of type "character", the feature for webgeom
- `attribute` the attribute (e.g., "State")
- `values` the values of the attribute, (e.g., "Wisconsin") or NA (all)

Author(s)

Jordan S Read

See Also

`url`, `geom`, `attribute`, `values`

Examples

```r
wg <- webgeom(geom = "sample:CONUS_states",
              attribute = "STATE",
              values = "New Hampshire")
#-- use available state datasets:
wg <- webgeom('state::New Hampshire')
wg <- webgeom('state::New Hampshire,Wisconsin,Alabama')
#-- use available Level III Ecoregion datasets:
wg <- webgeom('ecoregion::Colorado Plateaus,Driftless Area')
#-- use available simplified HUC8s:
wg <- webgeom('HUC8::09020306,14060009')
wg <- webgeom()
```

## Not run:

```r
## Steps to find data on Howard County in Texas:
#1) locate the `code(geom)` for counties by looking at the options for geoms
query(webgeom(), 'geoms') # discover sample:Counties
#2) locate the `code(attribute)` for county names by looking at the options for attributes
query(webgeom(geom='sample:Counties'), 'attributes') # discover FIPS
#3) find the appropriate fip code for the county:
howard.fips <- maps::county.fips %>%
dplyr::filter(polyname == 'texas,howard') %>% .$fips %>% as.character
#4) create a webgeom for the Howard County in Texas
stencil <- webgeom(geom='sample:Counties', attribute='FIPS', values=howard.fips)
#5) get data for Howard County
                  variables = "Total_precipitation_surface_1_Hour_Accumulation")
```
times = c(as.POSIXct("2016-06-06 05:00:00"),
          as.POSIXct("2016-06-07 05:00:00"))
job <- geoknife(stencil, fabric, wait = TRUE)
precipData <- result(job)
head(precipData)

## End(Not run)

---

**webgeom-class**  
**webgeom class**

**Description**

The **webgeom** class represents a web feature service (WFS) dataset. WFS is an open geospatial consortium standard for spatial data on the web. WFS supports filtering of spatial elements and this object can support many of those filters.

**Slots**

- **url**  URL of web feature service endpoint. Can be set or accessed using `url`
- **geom** character for geometric feature name. Can be set or accessed using `geom`
- **attribute** character for feature attribute (used for filtering and naming in output) Can be set or accessed using `attribute`
- **values** character vector of attribute values to be used in processing (a subset, or all if NA) Can be set or accessed using `values`
- **version** a character that specifies the web feature service (WFS) version to use. Can be set or accessed using `version`
- **GML_IDs** (_private) IDs that correspond to `values`. Used internally for processing.
- **WFS_NAMESPACE** (_private) web location of web feature service namespace
- **GML_NAMESPACE** (_private) web location of GML namespace
- **GML_SCHEMA_LOCATION** (_private) web location of GML schema location

**See Also**

`webgeom`, `url`, `geom`, `attribute`, `values`, `version`
webprocess-class

webprocess  

create webprocess object

Description

create webprocess object

Usage

webprocess(.Object, ...)

## S4 method for signature 'missing'
webprocess(.Object, ...)

## S4 method for signature 'character'
webprocess(
.Object = c("summary", "unweighted summary", "coverage summary", "subset", "coverage subset"),
...
)

## S4 method for signature 'ANY'
webprocess(.Object, ...)

Arguments

/Object/ any object that can be coerced into webprocess

/.../ additional arguments passed initialize method (e.g., url, version)

Value

the webprocess object

Author(s)

Jordan S Read

Description

A class representing geoknife web processing specifications
Slots

url  URL for webprocessing service. Can be set or accessed using url
algorithm  a list for algorithm used. Can be set or accessed using algorithm
version  a character specifying the web processing service version to use. Can be set or accessed using version
email  an email to send finished process alert to
wait  boolean for wait until complete (hold up R until processing is complete)
sleep.time  numeric for time to wait in between calls to check. Only used if wait=TRUE
processInputs  (_private) a list of required and options process inputs, and their default values (if specified). This is populated (or repopulated) whenever algorithm is set.
WPS_SCHEMA_LOCATION  (_private) location for web processing service schema
WPS_NAMESPACE  (_private) location for web processing service namespace
OWS_NAMESPACE  (_private) namespace web location
XSI_SCHEMA_LOCATION  (_private) schema web location
XSI_NAMESPACE  (_private) namespace web location
XLINK_NAMESPACE  (_private) namespace web location
UTILITY_URL  (_private) web processing service utility url. Uses same base url as public slot url
OGC_NAMESPACE  (_private) namespace web location
e-mailK  (_private) relative url for email when complete utility.

See Also

webprocess, url, algorithm, version

---

XML  XML from set of objects

Description

Extract important parts of stencil, fabric, and knife into POST XML

Usage

XML(stencil, fabric, knife)

## S4 method for signature 'ANY, webdata, webprocess'
XML(stencil, fabric, knife)

Arguments

stencil  a webdata OR simplegeom object
fabric  a webdata object
knife  a webprocess object
Value

XML as ?string?

Examples

wd <- webdata('prism', times = as.POSIXct(c('2001-01-01', '2002-02-05')))
wg <- webgeom('state::Wisconsin')
## Not run:
XML(wg, wd, webprocess())
sg <- simplegeom(c(-89, 45))
XML(sg, wd, webprocess())

## End(Not run)
Index

* methods
cancel, 5
parseCategorical, 14
parseTimeseries, 15
query, 15
result, 17
[,datagroup-method (datagroup), 7
][,datagroup,ANY,ANY-method
  (datagroup), 7

abstract, 3
abstract,datagroup-method (abstract), 3
algorithm, 3, 31
algorithm,webprocess-method
  (algorithm), 3
algorithm,xml_document-method
  (algorithm), 3
algorithm<- (algorithm), 3
algorithm<-,webprocess-method
  (algorithm), 3
attribute, 13, 14, 28, 29
attribute (attributes<->), 4
attribute,webgeom-method (attribute<->),
  4
attribute<-, 4
attribute<-,webgeom-method
  (attribute<->), 4
cancel, 5
cancel,geojob-method (cancel), 5
cancel,missing-method (cancel), 5
check, 6, 14, 15, 17, 20, 21, 31
check,character-method (check), 6
check,geojob-method (check), 6
datagroup, 7
datagroup,ANY-method (datagroup), 7
datagroup,datagroup-methods
  (datagroup), 7
datagroup-class, 8
defaultProcessInputs, 8
download, 9, 14, 15
download,character,character-method
  (download), 9
download,character,missing-method
  (download), 9
download,geojob,character-method
  (download), 9
download,geojob,missing-method
  (download), 9
error (successful), 20
gconfig, 9
geojob, 5, 6, 9, 10, 11–15, 17, 19, 20, 22
geojob,character-method (geojob), 10
geojob,geojob-method (geojob), 10
geojob,missing-method (geojob), 10
geojob,xml_document-method (geojob), 10
geojob-class, 12
geoknife, 8, 12, 19
geom, 28, 29
gem (geom<->), 13
gem,webgeom-method (geom<->), 13
geom<-, 13
gem<-,webgeom-method (geom<->), 13
id (geojob), 10
id,character-method (geojob), 10
id,geojob-method (geojob), 10
id<- (geojob), 10
id<-,geojob-method (geojob), 10
length,datagroup-method (datagroup), 7
par, 10
parseCategorical, 14, 15
parseTimeseries, 14, 15
query, 15
INDEX

query, character, missing-method (query), 15
query, webdata, character-method (query), 15
query, webdata, missing-method (query), 15
query, webdata-method (query), 15
query, webgeom, character-method (query), 15
query, webgeom-method (query), 15
query, webprocess, character-method (query), 15
query, webprocess-method (query), 15
result, 17
result, character-method (result), 17
result, geojob-method (result), 17
running, 25
running (successful), 20
simplegeom, 12, 13, 18, 19, 31
simplegeom, ANY-method (simplegeom), 18
simplegeom, missing-method (simplegeom), 18
simplegeom-class, 19
SpatialPolygons, 19
start, 6, 19
start, geojob-method (start), 19
successful, 20
times, 21
times, webdata-method (times), 21
times<-, (times), 21
times<-, webdata-method (times), 21
title (abstract), 3
title, datagroup-method (abstract), 3
url, 27–29, 31
url (url<->), 22
url, ANY-method (url<-), 22
url, character-method (url<-), 22
url, datagroup-method (url<-), 22
url, missing-method (url<-), 22
url<-, 22
url<-, ANY-method (url<-), 22
url<-, webprocess-method (url<-), 22
values, 13, 14, 28, 29
values (values<-), 23
values, webgeom-method (values<-), 23
values<-, 23
values<-, webgeom-method (values<-), 23
variables, 23
variables, webdata-method (variables), 23
variables<-, (variables), 23
variables<-, webdata-method (variables), 23
version, 29, 31
version (version<->), 24
version<-, 24
version<-, ANY-method (version<->), 24
wait, 25
wait, character, missing-method (wait), 25
wait, character, numeric-method (wait), 25
wait, geojob, missing-method (wait), 25
wait, geojob, numeric-method (wait), 25
webdata, 12, 13, 21, 22, 24, 26, 26, 31
webdata, ANY-method (webdata), 26
webdata, character-method (webdata), 26
webdata, geojob-method (webdata), 26
webdata, missing-method (webdata), 26
webdata-class, 27
webgeom, 4, 12–14, 18, 19, 22–24, 27, 27, 29
webgeom, ANY-method (webgeom), 27
webgeom, missing-method (webgeom), 27
webgeom-class, 29
webprocess, 3, 4, 12, 22, 24, 30, 30, 31
webprocess, ANY-method (webprocess), 30
webprocess, character-method (webprocess), 30
webprocess, missing-method (webprocess), 30
webprocess-class, 30
write_disk, 9
XML, 31
xml (geojob), 10
XML, ANY, webdata, webprocess-method
(XML), 31
xml, geojob-method (geojob), 10
XML, webgeom-method (XML), 31
xml<-, (geojob), 10
xml<-, geojob-method (geojob), 10