Package 'laketemps'

October 13, 2022

Type Package

Title Lake Temperatures Collected by Situ and Satellite Methods from 1985-2009

Version 0.5.1

Date 2015-02-28

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Description Lake temperature records, metadata, and climate drivers for 291 global lakes during the time period 1985-2009. Temperature observations were collected using satellite and in situ methods. Climatic drivers and geomorphometric characteristics were also compiled and are included for each lake. Data are part of the associated publication from the Global Lake Temperature Collaboration project (http://www.laketemperature.org). See citation('laketemps') for dataset attribution.

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

Depends R (>= 3.0),

Imports dplyr, reshape2

LazyLoad yes

LazyData no

NeedsCompilation no

Repository CRAN

Date/Publication 2015-02-28 17:44:57

R **topics documented:**

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get_climate *get climate data according to lake name from GLTC dataset*

Description

Climate data compiled for the Global Lake Temperature Collaboration can be accessed and returned as data.frames. See associated publication and references therein for details including units and data provenance.

Usage

```
get_climate(lake_name, types)
```

Arguments

lake_name	a valid name of a lake in the GLTC dataset (see get_lake_names). lake_name is case insensitive.
types	name for the climate data (see get_climate_names). types is case insensitive. All data are returned if this argument is missing.

Value

a lake data.frame, or an empty data.frame if no data exist

References

Sharma, Sapna; Gray, Derek; Read, Jordan; O'Reilly, Catherine; Schneider, Philipp; Qudrat, Anam; Gries, Corinna; Stefanoff, Samantha; Hampton, Stephanie; Hook, Simon; Lenters, John; Livingstone, David; McIntyre, Peter; Adrian, Rita; Allan, Mathew; Anneville, Orlane; Arvola, Lauri; Austin, Jay; Bailey, John; Baron, Jill; Brookes, Justin; Chen, Yuwei; Daly, Robert; Dokulil, Martin; Dong, Bo; Ewing, Kye; de Eyto, Elvira; Hamilton, David; Havens, Karl; Haydon, Shane; Hetzenauer, Harald; Heneberry, Joceylene; Hetherington, Amy; Higgins, Scott; Hixcon, Eric; Izmest'eva, Lyubov; Jones, Benjamin; Kangur, Kullli; Kasprzak, Peter; Koster, Olivier; Kraemer, Benjamin; Kumagai, Michio; Kuusisto, Esko; Leshkevich, George; May, Linda; MacIntyre, Sally; Mueller-Navarra, Doerthe; Naumenko, Mikhail; Noges, Peeter; Noges, Tiina; Niederhauser, Pius; North, Ryan; Paterson, Andrew; Plisnier, Pierre-Denis; Rigosi, Anna; Rimmer, Alon; Rogora, Michela; Rudstram, Lars; Rusak, James; Salmaso, Nico; Samal, Nihar; Schindler, Daniel;

Schladow, Geoffrey; Schmidt, Silke; Schultz, Tracey; Silow, Eugene; Straile, Dietmar; Teubner, Katrin; Verburg, Piet; Voutilainen, Ari; Watkinson, Andrew; Weyhenmeyer, Gesa; Williamson, Craig; Woo, Kara (2014): Globally distributed lake surface water temperatures collected in situ and by satellites; 1985-2009. Long Term Ecological Research Network. http://dx.doi.org/10.6073/pasta/379a6cebee50119df2575

See Also

[get_climate_names](), [get_lake_names](), [get_surface_temps]()

Examples

```
get_climate_names()
get_climate('Victoria', types = c('Radiation.Shortwave.Summer', 'Air.Temp.Mean.Summer.NCEP'))
get_climate('Mendota')
get_climate('mendota','radiation.shortwave.summer')
```

---

get_climate_names	*get climate data names in GLTC dataset*

Description

get climate names for the Global Lake Temperature Collaboration dataset. If a lake_name is used, only names of climate drivers that exist for that lake will be returned. If no lake_name is specified, all climate driver names for the entire dataset will be returned.

Usage

```
get_climate_names(lake_name)
```

Arguments

lake_name   a valid name of a lake in the GLTC dataset (see [get_lake_names]()).

Value

a character vector of valid climate variable names

See Also

[get_climate](), [get_lake_names]()

Examples

```
get_climate_names()
get_climate_names('Victoria')
```

---

get_lake_names   *get lake names in GLTC dataset*

Description

Lake names that are part of the Global Lake Temperature Collaboration can be accessed and returned. See associated publication and references therein for details including units and data provenance.

Usage

```
get_lake_names()
```

Value

a character vector of valid lake names from the Global Lake Temperature Collaboration dataset.

See Also

[get_climate_names](), [get_metadata_names]()

Examples

```
get_lake_names()
```

---

get_metadata   *get metadata for a lake in GLTC dataset*

Description

Find associated metadata for a lake from the Global Lake Temperature Collaboration dataset. See associated publication and references therein for details including units and data provenance.

Usage

```
get_metadata(lake_name, metadata_name)
```

Arguments

lake_name	a valid name of a lake in the GLTC dataset (see [get_lake_names]()). lake_name is case insensitive.
metadata_name	a name of a metadata variable in GLTC dataset (optional; see [get_metadata_names]()). metadata_name is case insensitive.

Value

data.frame with metadata (if `metadata_name` is missing) or the value of that metadata field if `metadata_name` is specified

See Also

[get_metadata_names](), [get_lake_names](), [get_climate_names]()

Examples

```
get_metadata('Victoria','Sampling.depth')
get_metadata('Mendota')
get_metadata('mendota','sampling.depth')
get_metadata("Toolik.JJA",c('location','source'))
```

---

get_metadata_names   *get metadata names in GLTC dataset*

Description

Lake metadata records were compiled for the Global Lake Temperature Collaboration and can be accessed and returned as data.frames. See associated publication and references therein for details.

Usage

```
get_metadata_names(lake_name = NULL)
```

Arguments

lake_name   a valid name of a lake in the GLTC dataset (see [get_lake_names]()).

Value

a character vector of valid metadata variable names for all lakes. If `lake_name` is specified, only the metadata fields populated for `lake_name` are returned.

See Also

[get_metadata](), [get_climate_names](), [get_lake_names](),

Examples

```
get_metadata_names()
get_metadata_names('Victoria')
```

---

get_surface_temps   *get summer surface lake temperature data from GLTC dataset*

Description

get summer lake surface temperatures for the Global Lake Temperature Collaboration dataset. All temperatures are in degrees C.

Usage

```
get_surface_temps(lake_name, type)
```

Arguments

lake_name   a valid name of a lake in the GLTC dataset (see get_lake_names). lake_name
                is case insensitive.

type   source for the data. Either "Lake.Temp.Summer.InSitu" or "Lake.Temp.Summer.Satellite".
                if missing, both sources will be used.

Value

a lake data.frame (empty data.frame) if no data exist. Temperatures are returned in degrees C.

References

Sharma, Sapna; Gray, Derek; Read, Jordan; O'Reilly, Catherine; Schneider, Philipp; Qudrat, Anam; Gries, Corinna; Stefanoff, Samantha; Hampton, Stephanie; Hook, Simon; Lenters, John; Livingstone, David; McIntyre, Peter; Adrian, Rita; Allan, Mathew; Anneville, Orlane; Arvola, Lauri; Austin, Jay; Bailey, John; Baron, Jill; Brookes, Justin; Chen, Yuwei; Daly, Robert; Dokulil, Martin; Dong, Bo; Ewing, Kye; de Eyto, Elvira; Hamilton, David; Havens, Karl; Haydon, Shane; Hetzenauer, Harald; Heneberry, Joceylene; Hetherington, Amy; Higgins, Scott; Hixcon, Eric; Izmest'eva, Lyubov; Jones, Benjamin; Kangur, Kullli; Kasprzak, Peter; Koster, Olivier; Kraemer, Benjamin; Kumagai, Michio; Kuusisto, Esko; Leshkevich, George; May, Linda; MacIntyre, Sally; Mueller-Navarra, Doerthe; Naumenko, Mikhail; Noges, Peeter; Noges, Tiina; Niederhauser, Pius; North, Ryan; Paterson, Andrew; Plisnier, Pierre-Denis; Rigosi, Anna; Rimmer, Alon; Rogora, Michela; Rudstram, Lars; Rusak, James; Salmaso, Nico; Samal, Nihar; Schindler, Daniel; Schladow, Geoffrey; Schmidt, Silke; Schultz, Tracey; Silow, Eugene; Straile, Dietmar; Teubner, Katrin; Verburg, Piet; Voutilainen, Ari; Watkinson, Andrew; Weyhenmeyer, Gesa; Williamson, Craig; Woo, Kara (2014): Globally distributed lake surface water temperatures collected in situ and by satellites; 1985-2009. Long Term Ecological Research Network. http://dx.doi.org/10.6073/pasta/379a6cebee50119df2575

See Also

get_lake_names, get_climate

Examples

```
get_surface_temps('Victoria','Lake.Temp.Summer.Satellite')
get_surface_temps('Mendota','Lake.Temp.Summer.InSitu')

# - expect no satellite data for Lake Mendota:
get_surface_temps('Mendota','Lake.Temp.Summer.Satellite')

# retrieve from a lake site with multiple surface temperature sources:
get_surface_temps('Tahoe.Mid.Lake')
# is the same as:
get_surface_temps('Tahoe.Mid.Lake',c('Lake.Temp.Summer.Satellite', 'Lake.Temp.Summer.InSitu'))
```

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