Package: azmetr (via r-universe)

March 8, 2025

Title Access Arizona Weather Data from the AZMet API

Version 0.4.0

Description Provides R functions to access the Arizona Meteorological Network (AZMet) API. Functions are more than just ``thin wrappers'' and do some parsing of input parameters and wrangling of output data.

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Imports attempt, curl, dplyr, httr2, lubridate, magrittr, purrr, rlang, tibble, tidyselect

Encoding UTF-8

Roxygen list(markdown = TRUE)

RoxygenNote 7.3.1

URL https://uace-azmet.github.io/azmetr/, https://uace-azmet.r-universe.dev/azmetr

BugReports https://github.com/uace-azmet/azmetr/issues

Suggests covr, ggplot2, glue, knitr, rmarkdown, testthat (>= 3.0.0), units, vcr (>= 0.6.0)

Config/testthat/edition 3

VignetteBuilder knitr

Depends R (>= 2.10)

LazyData true

Config/pak/sysreqs libssl-dev

Repository https://uace-azmet.r-universe.dev

RemoteUrl https://github.com/uace-azmet/azmetr

RemoteRef HEAD

RemoteSha c6a54345715ccf8d40a014b7a38a2117755b1a8e

Contents

`az_15min` *Retrieve 15-minute Weather Data from AZMet*

Description

Retrieves 15-minute data from the AZMet (Arizona Meteorological Network) API. For a list of weather stations and their locations see station_info, or visit https://azmet.arizona.edu/about.

Usage

```
az_15min(station_id = NULL, start_date_time = NULL, end_date_time = NULL)
```

Arguments

`station_id`	Station ID can be supplied as numeric vector (e.g. `station_id = c(8, 37)`) or as character vector with the prefix "az" and two digits (e.g. `station_id = c("az08", "az37")`). If left blank, data for all stations will be returned.
`start_date_time`	A length-1 vector of class POSIXct or character in YYYY-MM-DD HH:MM:SS format, in AZ time. If only a date (YYYY-MM-DD) is supplied, data will be requested starting at 00:00:01 of that day.
`end_date_time`	A length-1 vector of class POSIXct or character in YYYY-MM-DD HH:MM:SS format, in AZ time. If only a date (YYYY-MM-DD) is supplied, data will be requested through the *end* of that day (23:59:59). Defaults to the current date and time if left blank and `start_date_time` is specified.

Details

If neither `start_date_time` nor `end_date_time` are supplied, the most recent datetime of data will be returned. If only `start_date_time` is supplied, then `end_date_time` defaults to the current time. Supplying only `end_date_time` will result in an error.

Value

A tibble. For units and other metadata, see `https://azmet.arizona.edu/about`

Note

If `station_id` is supplied as a vector, multiple successive calls to the API will be made. You may find better performance getting data for all the stations by leaving `station_id` blank and subsetting the resulting dataframe. Only the most recent 48 hours of 15-minute data are stored in the AZMet API.

Source

https://azmet.arizona.edu/

See Also

`az_daily()`, `az_heat()`, `az_hourly()`, `az_lw15min()`, `az_lwdaily()`

Examples

```
## Not run:
# Most recent 15-minute data for all stations:
az_15min()

# Specify stations:
az_15min(station_id = c(1, 2))
az_15min(station_id = c("az01", "az02"))

# Specify dates:
az_15min(start_date_time = "2022-09-25 01:00:00")
az_15min(start_date_time = "2022-09-25 01:00:00", end_date_time = "2022-09-25 07:00:00")

## End(Not run)
```

---

az_add_units *Assign units using the* `units` *package*

Description

Assigns correct units to the output of `az_hourly()`, `az_daily()`, and `az_heat()` using the `units` package.

Usage

```
az_add_units(x)
```

Arguments

x	A tibble output by `az_hourly()`, `az_daily()`, or `az_heat()`

Value

A tibble with columns of class "units"

Examples

```
## Not run:
daily <- az_daily()

daily_units <-
  az_add_units(daily)

#unit conversions with `units::set_units()`
daily_units$sol_rad_total %>% units::set_units("kW h m-2")

#units carry through calculations
climatic_balance <-
  daily_units$precip_total_mm - daily_units$eto_pen_mon
climatic_balance

## End(Not run)
```

`az_daily` *Retrieve Daily Weather Data from AZMET*

Description

Retrieves daily data from the Arizona Meteorological Network API. For a list of weather stations and their locations see station_info, or visit https://azmet.arizona.edu/about.

Usage

```
az_daily(station_id = NULL, start_date = NULL, end_date = NULL)
```

Arguments

`station_id`	station ID can be supplied as numeric vector (e.g. `station_id = c(8, 37)`) or as character vector with the prefix "az" and two digits (e.g. `station_id = c("az08", "az37")`). If left blank, data for all stations will be returned.
`start_date`	A length-1 vector of class Date, POSIXct, or character in YYYY-MM-DD format. Will be rounded **down** to the nearest day if more precision is supplied. Defaults to the day before the current date (i.e., the most recent complete day) if left blank.
`end_date`	A length-1 vector of class Date, POSIXct, or character in YYYY-MM-DD format. Will be rounded **down** to the nearest day if more precision is supplied. Defaults to the day before the current date (i.e., the most recent complete day) if left blank.

Details

If neither `start_date` nor `end_date` are supplied, the most recent day of data will be returned. If only `start_date` is supplied, then the end date defaults to the day before the current date (i.e., the most recent complete day). Supplying only `end_date` will result in an error.

Value

A tibble. For units and other metadata, see https://azmet.arizona.edu/about

Note

If `station_id` is supplied as a vector, multiple successive calls to the API will be made. You may find better performance getting data for all the stations by leaving `station_id` blank and subsetting the resulting dataframe. Requests for data from all stations for more than 6-12 months may take considerable time.

Source

https://azmet.arizona.edu/

See Also

`az_15min()`, `az_heat()`, `az_hourly()`, `az_lw15min()`, `az_lwdaily()`

Examples

```
## Not run:
# Most recent data for all stations:
az_daily()

# Specify stations:
az_daily(station_id = c(1, 2))
az_daily(station_id = c("az01", "az02"))

# Specify dates:
az_daily(start_date = "2022-09-25")
az_daily(start_date = "2022-09-25", end_date = "2022-09-26")

## End(Not run)
```

---

az_heat *Retrieve Accumulated Heat Units and Evapotranspiration*

Description

Retrieves accumulated heat units and reference evapotranspiration units from the Arizona Meteorological Network API. By default, returned values are cumulative since January 1 of the current year. For a list of weather stations and their locations see station_info, or visit https://azmet.arizona.edu/about.

Usage

```
az_heat(station_id = NULL, start_date = NULL, end_date = NULL)
```

Arguments

station_id	station ID can be supplied as numeric vector (e.g. station_id = c(8, 37)) or as character vector with the prefix "az" and 2 digits (e.g. station_id = c("az08", "az37")) If left blank data for all stations will be returned
start_date	A length-1 vector of class Date, POSIXct, or character in YYYY-MM-DD format. Will be rounded **down** to the nearest day if more precision is supplied.
end_date	A length-1 vector of class Date, POSIXct, or character in YYYY-MM-DD format. Will be rounded **down** to the nearest day if more precision is supplied. Defaults to the current date if left blank. If only an end_date is supplied, then data will be cumulative from the start of the year of end_date.

Details

Unlike az_daily(), only one row of data per station is returned, regardless of start_date and end_date. However, the data returned is cumulative over the time period specified by start_date and end_date.

Value

A tibble. For units and other metadata, see https://azmet.arizona.edu/about

Note

If station_id is supplied as a vector, multiple successive calls to the API will be made. You may find better performance getting data for all the stations by leaving station_id blank and subsetting the resulting dataframe.

Source

https://azmet.arizona.edu/

See Also

az_15min(), az_daily(), az_hourly(), az_lw15min(), az_lwdaily()

Examples

```
## Not run:
# Most recent data for all stations:
az_heat()

# Specify stations:
az_heat(station_id = c(1, 2))
az_heat(station_id = c("az01", "az02"))

# Specify dates:
## Cumulative since October 2022
az_heat(start_date = "2022-10-01")

## Cumulative from the first of the year through March
```

```
yr <- format(Sys.Date(), "%Y")

az_heat(end_date = paste(yr, "03", "31", sep = "-"))

## End(Not run)
```

---

az_hourly *Retrieve Hourly Weather Data*

Description

Retrieves hourly weather data from the Arizona Meteorological Network API. For a list of weather stations and their locations see station_info, or visit https://azmet.arizona.edu/about.

Usage

```
az_hourly(station_id = NULL, start_date_time = NULL, end_date_time = NULL)
```

Arguments

`station_id`	station ID can be supplied as numeric vector (e.g. `station_id = c(8, 37)`) or as character vector with the prefix "az" and 2 digits (e.g. `station_id = c("az08", "az37")`) If left blank, data for all stations will be returned
`start_date_time`	A length-1 vector of class POSIXct or character in YYYY-MM-DD HH format, in AZ time. Will be rounded **down** to the nearest hour if more precision is supplied. If only a date (YYYY-MM-DD) is supplied, data will be requested starting at 01:00:00 of that day
`end_date_time`	A length-1 vector of class POSIXct or character in YYYY-MM-DD HH format, in AZ time. Will be rounded **down** to the nearest hour if more precision is supplied. If only a date (YYYY-MM-DD) is supplied, data will be requested through the *end* of that day (23:59:59). Defaults to the current date and time if left blank and `start_date_time` is specified.

Details

If neither `start_date_time` nor `end_date_time` are supplied, the most recent hour of data will be returned. If only `start_date_time` is supplied, then `end_date_time` defaults to the current time. Supplying only `end_date_time` will result in an error.

Value

A tibble. For units and other metadata, see `https://azmet.arizona.edu/about`

Note

If `station_id` is supplied as a vector, multiple successive calls to the API will be made. You may find better performance getting data for all the stations by leaving `station_id` blank and subsetting the resulting dataframe. Requests for data from all stations for more than 10-15 days may take considerable time.

Source

https://azmet.arizona.edu/

See Also

`az_15min()`, `az_daily()`, `az_heat()`, `az_lw15min()`, `az_lwdaily()`

Examples

```
## Not run:
# Most recent data for all stations:
az_hourly()

# Specify stations:
az_hourly(station_id = c(1, 2))
az_hourly(station_id = c("az01", "az02"))

# Specify dates:
az_hourly(start_date_time = "2022-09-25 01")
az_hourly(start_date_time = "2022-09-25 01", end_date = "2022-09-25 20")

## End(Not run)
```

---

az_lw15min *Retrieve 15-minute Leaf Wetness Data from AZMet*

Description

Retrieves 15-minute leaf-wetness data from the AZMet (Arizona Meteorological Network) API. Currently, these data only are available from weather stations in the Yuma area. For a list of stations and their locations see station_info, or visit https://azmet.arizona.edu/about.

Usage

```
az_lw15min(station_id = NULL, start_date_time = NULL, end_date_time = NULL)
```

Arguments

station_id	Station ID can be supplied as numeric vector (e.g. station_id = c(8, 37)) or as character vector with the prefix "az" and two digits (e.g. station_id = c("az08", "az37")). If left blank, data for all stations will be returned.
start_date_time	A length-1 vector of class POSIXct or character in YYYY-MM-DD HH:MM:SS format, in AZ time. If only a date (YYYY-MM-DD) is supplied, data will be requested starting at 00:00:01 of that day.
end_date_time	A length-1 vector of class POSIXct or character in YYYY-MM-DD HH:MM:SS format, in AZ time. If only a date (YYYY-MM-DD) is supplied, data will be requested through the *end* of that day (23:59:59). Defaults to the current date and time if left blank and start_date_time is specified.

Details

If neither start_date_time nor end_date_time are supplied, the most recent datetime of data will be returned. If only start_date_time is supplied, then end_date_time defaults to the current time. Supplying only end_date_time will result in an error.

Value

A tibble. For units and other metadata, see https://azmet.arizona.edu/about

Note

If station_id is supplied as a vector, multiple successive calls to the API will be made. You may find better performance getting data for all the stations by leaving station_id blank and subsetting the resulting dataframe. Only the most recent 48 hours of 15-minute data are stored in the AZMet API.

Source

https://azmet.arizona.edu/

See Also

az_15min(), az_daily(), az_heat(), az_hourly(), az_lwdaily()

Examples

```
## Not run:
# Most recent 15-minute leaf-wetness data for all stations:
az_lw15min()

# Specify stations:
az_lw15min(station_id = c(1, 2))
az_lw15min(station_id = c("az01", "az02"))

# Specify dates:
az_lw15min(start_date_time = "2022-09-25 01:00:00")
```

```
az_lw15min(start_date_time = "2022-09-25 01:00:00", end_date_time = "2022-09-25 07:00:00")

## End(Not run)
```

`az_lwdaily` *Retrieve Daily Leaf Wetness Data from AZMet*

Description

Retrieves daily leaf wetness data from the Arizona Meteorological Network API. Currently, these data only are available from weather stations in the Yuma area. For a list of stations and their locations see station_info, or visit https://azmet.arizona.edu/about.

Usage

```
az_lwdaily(station_id = NULL, start_date = NULL, end_date = NULL)
```

Arguments

`station_id`	station ID can be supplied as numeric vector (e.g. `station_id = c(8, 37)`) or as character vector with the prefix "az" and two digits (e.g. `station_id = c("az08", "az37")`). If left blank, data for all stations will be returned.
`start_date`	A length-1 vector of class Date, POSIXct, or character in YYYY-MM-DD format. Will be rounded **down** to the nearest day if more precision is supplied. Defaults to the day before the current date (i.e., the most recent complete day) if left blank.
`end_date`	A length-1 vector of class Date, POSIXct, or character in YYYY-MM-DD format. Will be rounded **down** to the nearest day if more precision is supplied. Defaults to the day before the current date (i.e., the most recent complete day) if left blank.

Details

If neither `start_date` nor `end_date` are supplied, the most recent day of data will be returned. If only `start_date` is supplied, then the end date defaults to the day before the current date (i.e., the most recent complete day). Supplying only `end_date` will result in an error.

Value

A tibble. For units and other metadata, see `https://azmet.arizona.edu/about`

Note

If `station_id` is supplied as a vector, multiple successive calls to the API will be made. You may find better performance getting data for all the stations by leaving `station_id` blank and subsetting the resulting dataframe. Requests for data from all stations for more than 6-12 months may take considerable time.

Source

https://azmet.arizona.edu/

See Also

az_15min(), az_daily(), az_heat(), az_hourly(), az_lw15min()

Examples

```
## Not run:
# Most recent data for all stations:
az_lwdaily()

# Specify stations:
az_lwdaily(station_id = c(1, 2))
az_lwdaily(station_id = c("az01", "az02"))

# Specify dates:
az_lwdaily(start_date = "2022-09-25")
az_lwdaily(start_date = "2022-09-25", end_date = "2022-09-26")

## End(Not run)
```

---

station_info *AZMet station names and locations*

Description

Station names, station IDs, and location (lat, lon, elevation) of active AZMet weather stations

Usage

```
station_info
```

Format

A tibble with 30 rows and 5 columns:

`meta_station_name` Station name

`meta_station_id` Station ID

`latitude`, `logitude` Station location

`elev_m` Station elevation in meters

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