

Package: azmetr (via r-universe)

November 20, 2024

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://github.com/uace-azmet/azmetr>,
<https://uace-azmet.github.io/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

Repository <https://cct-datascience.r-universe.dev>

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

RemoteRef HEAD

RemoteSha 3daee2bedaf67cc98be0ccc4589ffd1a14ecabf0

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az_15min	<i>Retrieve 15-minute Weather Data from AZMet</i>
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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. <code>station_id = c(8, 37)</code>) or as character vector with the prefix "az" and two digits (e.g. <code>station_id = c("az08", "az37")</code>). 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 <i>end</i> of that day (23:59:59). Defaults to the current date and time if left blank and <code>start_date_time</code> 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. <code>station_id = c(8, 37)</code>) or as character vector with the prefix "az" and two digits (e.g. <code>station_id = c("az08", "az37")</code>). 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 <i>end</i> 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. <code>station_id = c(8, 37)</code>) or as character vector with the prefix "az" and two digits (e.g. <code>station_id = c("az08", "az37")</code>). 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, longitude Station location
elev_m Station elevation in meters

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