Package 'rmet'

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Type Package

Title Download and Read Brazilian Meteorological Data from INMET

Version 0.1.0

Description Automates the download and processing of historical weather data from the Brazilian National Institute of Meteorology (INMET). It resolves formatting inconsistencies in raw CSV files across different years, removes structural artifacts, standardizes column names, converts timestamps to local Brazilian time zones, and outputs tidy data frames ready for analysis. Data are retrieved from <https://portal.inmet.gov.br/dadoshistoricos>.

Depends R (>= 4.0.0)

Encoding UTF-8

LazyData true

Language en-US

License GPL (>= 3)

URL https://github.com/rodrigosqrt3/rmet

BugReports https://github.com/rodrigosqrt3/rmet/issues

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Author Rodrigo Fonseca Villa [aut, cre] (ORCID: <https://orcid.org/0009-0005-2938-2270>)

Maintainer Rodrigo Fonseca Villa <rodrigo03.villa@gmail.com>

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Contents

`inmet_cache_clear` *Clear the rmet download cache*

Description

Deletes downloaded ZIP files from the cache directory.

Usage

```
inmet_cache_clear(
  years = NULL,
  dest_dir = tools::R_user_dir("rmet", "cache"),
  ask = interactive()
)
```

Arguments

`years`	Integer vector of years to remove, or `NULL` to remove all.
`dest_dir`	Character. Cache directory.
`ask`	Logical. If `TRUE` (default in interactive sessions), prompt before deleting.

Value

Invisible `NULL`.

inmet_cache_status *Check which years have already been downloaded*

Description

Convenience function that scans the cache directory and reports which annual ZIPs are present and valid.

Usage

```
inmet_cache_status(dest_dir = tools::R_user_dir("rmet", "cache"))
```

Arguments

dest_dir	Character. Cache directory (same as inmet_download()).

Value

A data.frame with columns year (integer), path (character), size_mb (numeric), and valid (logical, whether the ZIP passes integrity check).

Examples

```
inmet_cache_status()
```

inmet_download *Download INMET historical data ZIPs with resume support*

Description

Downloads one or more annual ZIP files from INMET's historical data portal. Downloads are resumable: if a partial file is already on disk (e.g., from a previous interrupted session), the function picks up where it left off instead of restarting.

Usage

```
inmet_download(
  years = as.integer(format(Sys.Date(), "%Y")),
  dest_dir = tools::R_user_dir("rmet", "cache"),
  max_tries = 15L,
  quiet = FALSE,
  force = FALSE
)
```

Arguments

years	Integer vector of years to download. Available years start from 2000. Defaults to the current year.
dest_dir	Character. Directory where ZIP files will be saved. Created automatically if it does not exist. Defaults to a persistent cache directory under `tools::R_user_dir("rmet", "cache")`.
max_tries	Integer. Maximum number of download attempts per year before giving up. Defaults to 15.
quiet	Logical. If TRUE, suppresses progress messages. Defaults to FALSE.
force	Logical. If TRUE, deletes any existing (possibly partial) ZIP before downloading. Defaults to FALSE.

Details

INMET's server sometimes drops connections mid-transfer. The function handles this by using curl's CURLOPT_RESUME_FROM to append to the partial file on each retry, then validates the result with `utils::unzip()`. A `Sys.sleep(5)` back-off separates retries.

ZIP files are **not** extracted by this function. Use `inmet_read()` to parse the contents directly from the ZIP, or `inmet_extract()` to unzip to a directory.

Value

Invisibly returns a named character vector (class `character`) of local file paths to the downloaded ZIP files. Names correspond to the requested years (e.g., `"2023"`). Years that failed to download are excluded. If all downloads fail, an empty named character vector is returned.

See Also

`inmet_read()`, `inmet_extract()`

Examples

```
paths <- inmet_download(years = 2000, dest_dir = tempdir())
```

---

inmet_extract *Extract and save INMET ZIP contents to a directory*

Description

Unzips one or more downloaded INMET annual ZIPs to a target directory, preserving the original CSV files.

Usage

```
inmet_extract(
  years,
  dest_dir = tools::R_user_dir("rmet", "cache"),
  out_dir = file.path(dest_dir, "csv"),
  overwrite = FALSE,
  quiet = FALSE
)
```

Arguments

years	Integer vector of years to extract.
dest_dir	Character. Directory of ZIP files (same as inmet_download()).
out_dir	Character. Directory where CSVs will be written. Defaults to a subdirectory csv/ inside dest_dir.
overwrite	Logical. Overwrite existing CSVs? Defaults to FALSE.
quiet	Logical. Suppress messages. Defaults to FALSE.

Value

Invisible character vector of paths to all extracted CSV files.

---

inmet_read *Read INMET station data from downloaded ZIP files*

Description

Parses the CSV files inside INMET annual ZIP archives and returns a single tidy data.frame with consistent column names, correct data types, and a proper POSIXct timestamp column.

Usage

```
inmet_read(
  years,
  stations = NULL,
  dest_dir = tools::R_user_dir("rmet", "cache"),
  tz = "America/Sao_Paulo",
  variables = NULL,
  start_date = NULL,
  end_date = NULL,
  quiet = FALSE
)
```

Arguments

years	Integer vector of years to read. Each year must have a corresponding ZIP file in dest_dir (downloaded with inmet_download()).
stations	Character vector of station codes (e.g., "A001", "A652"). If NULL (default), all stations are returned.
dest_dir	Character. Directory containing the ZIP files. Defaults to the same cache directory used by inmet_download().
tz	Character. Time zone for the datetime column. INMET data uses UTC-3 (Brasília standard time). Defaults to "America/Sao_Paulo".
variables	Character vector of variable names to keep. If NULL (default), all variables are returned. See **Variables** section below.
start_date	Character. Optional start date in "YYYY-MM-DD" format.
end_date	Character. Optional end date in "YYYY-MM-DD" format.
quiet	Logical. Suppress progress messages. Defaults to FALSE.

Value

A data.frame containing the parsed INMET data. Columns include station identifiers (station_code, region, state, latitude, longitude, elevation), a POSIXct datetime column, and various meteorological measurements (temperature, precipitation, pressure, humidity, wind, and radiation). Returns an empty data.frame if no data is found.

Variables

You can pass a subset of the output column names to variables to limit what is returned, e.g.: variables = c("temp_dry_c", "precip_mm", "humid_rel_pct").

See Also

inmet_download(), inmet_stations()

Examples

```
df <- inmet_read(
  years = 2000,
  stations = "A801",
  dest_dir = tempdir()
)
head(df)
```

`inmet_stations` *List INMET automatic weather stations*

Description

Returns a `data.frame` of all INMET automatic weather stations (*estações automáticas*) with their metadata. The catalogue is bundled with the package and reflects the stations as of the package release date.

Usage

```
inmet_stations(region = NULL, state = NULL, search = NULL)
```

Arguments

`region`	Character vector. Filter by macro-region code(s): `"CO"`, `"N"`, `"NE"`, `"S"`, `"SE"`. Case-insensitive. If `NULL` (default), all regions are returned.
`state`	Character vector. Filter by two-letter state abbreviation(s) (e.g., `"RS"`, `"SP"`, `"AM"`). Case-insensitive. If `NULL` (default), all states are returned.
`search`	Character. A free-text search string applied to the station name column (case-insensitive, partial matching). If `NULL` (default), no name filtering is applied.

Value

A `data.frame` with columns:

`station_code` Character. INMET four-character station identifier.

`station_name` Character. Station name.

`region` Character. Macro-region code.

`state` Character. Two-letter state abbreviation.

`latitude` Numeric. Decimal degrees (negative = south).

`longitude` Numeric. Decimal degrees (negative = west).

`elevation` Numeric. Altitude in metres.

`start_year` Integer. Year from which data is available.

See Also

`inmet_download()`, `inmet_read()`

Examples

```
# All stations
st <- inmet_stations()
nrow(st)

# Stations in Rio Grande do Sul
st_rs <- inmet_stations(state = "RS")

# Search by name
inmet_stations(search = "porto alegre")
```

`rmet_example` *Hourly weather data from INMET station A801 (Porto Alegre), 2023*

Description

A dataset containing one year of hourly meteorological observations from the automatic station A801 (Porto Alegre, RS), downloaded from INMET.

Usage

```
rmet_example
```

Format

A data frame with columns as returned by `inmet_read()`. See `?inmet_read` for the full variable reference.

Source

INMET – Instituto Nacional de Meteorologia

Index