Package 'HURDAT'

January 28, 2020

Type Package

Title Hurricane Re-Analysis Project

Version 0.2.3.1

Depends R (>= 3.5)

Description Scraped dataset of the Hurricane Research Division's Hurricane
Re-Analysis Project known as HURDAT. Storm details are available for most
known hurricanes and tropical storms for the Atlantic and northeastern
Pacific ocean (northwestern hemi-
sphere). See <http://www.aoml.noaa.gov/hrd/hurdat/Data_Storm.html>
for more information.

URL https://github.com/timtrice/HURDAT

BugReports https://github.com/timtrice/HURDAT/issues

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Language en-us

LazyData TRUE

Imports dplyr, purrr, readr, rlang, rvest, tidyr, xml2

Suggests covr, devtools, knitr, testthat, rmarkdown

VignetteBuilder knitr

RoxygenNote 6.1.1

Encoding UTF-8

NeedsCompilation no

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Repository CRAN

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R **topics documented:**

AL   *Atlantic HURDAT*

Description

HURDAT dataset for the Atlantic basin.

Usage

```
AL
```

Format

A dataframe with 21 variables.

Key Unique key identifying the tropical cyclone. Formatted like AABBCCCC where AA is Basin,
     BB is YearNum and CC is Year

Name Name of the storm (UNNAMED for early storms)

DateTime Date and time of observation in UTC, POSIXct

Record Record identifier:

   C Closest approach to a coast, not followed by a landfall.
   G Genesis.
   I An intensity peak in terms of both pressure and wind.
   L Landfall (center of system crossing a coastline).
   P Minimum central pressure.
   R Provides additional detail on the intensity of the cyclone when rapid changes are underway.
   S Change of status of the system.
   T Provides additional detail on the track.
   W Maximum sustained wind speed.

Status Status of the system:

   TD Tropical depression (winds < 34 kts)
   TS Tropical storm (winds 34-63 kts)
   HU Hurricane (winds >= 64 kts)
   EX Extratropical cyclone of any intensity
   SD Subtropical cyclone of subtropical depression intensity (winds < 34 kts).
   SS Subtropical cyclone of subtropical cyclone intensity (winds >= 34 kts)

LO A low that is neither a tropical cyclone, subtropical cyclone nor extratropical of any intensity.

WV Tropical wave

DB Tropical disturbance

Lat Latitude position; >0 for northern hemisphere, <0 for southern hemisphere.

Lon Longitude position; >0 for eastern hemisphere, <0 for western hemisphere.

Wind Recorded or estimated wind speed in knots

Pressure Recorded or estimated central pressure in millibars

NE34 Radius of winds > 34 kts in the northeastern quadrant.

SE34 Radius of winds > 34 kts in the southeastern quadrant.

SW34 Radius of winds > 34 kts in the southwestern quadrant.

NW34 Radius of winds > 34 kts in the northwestern quadrant.

NE50 Radius of winds > 50 kts in the northeastern quadrant.

SE50 Radius of winds > 50 kts in the southeastern quadrant.

SW50 Radius of winds > 50 kts in the southwestern quadrant.

NW50 Radius of winds > 50 kts in the northwestern quadrant.

NE64 Radius of winds > 64 kts in the northeastern quadrant.

SE64 Radius of winds > 64 kts in the southeastern quadrant.

SW64 Radius of winds > 64 kts in the southwestern quadrant.

NW64 Radius of winds > 64 kts in the northwestern quadrant.

EP   *Eastern and Central Pacific HURDAT*

Description

HURDAT dataset for the northeastern and central Pacific basin.

Usage

EP

Format

A dataframe with 21 variables.

Key Unique key identifying the tropical cyclone. Formatted like AABBCCCC where AA is Basin, BB is YearNum and CC is Year

Name Name of the storm (UNNAMED for early storms)

DateTime Date and time of observation in UTC, POSIXct

Record Record identifier:

C Closest approach to a coast, not followed by a landfall.

G Genesis.

I An intensity peak in terms of both pressure and wind.

L Landfall (center of system crossing a coastline).

P Minimum central pressure.

R Provides additional detail on the intensity of the cyclone when rapid changes are underway.

S Change of status of the system.

T Provides additional detail on the track.

W Maximum sustained wind speed.

Status Status of the system:

TD Tropical depression (winds < 34 kts)

TS Tropical storm (winds 34-63 kts)

HU Hurricane (winds >= 64 kts)

EX Extratropical cyclone of any intensity

SD Subtropical cyclone of subtropical depression intensity (winds < 34 kts).

SS Subtropical cyclone of subtropical cyclone intensity (winds >= 34 kts)

LO A low that is neither a tropical cyclone, subtropical cyclone nor extratropical of any intensity.

WV Tropical wave

DB Tropical disturbance

Lat Latitude position; >0 for northern hemisphere, <0 for southern hemisphere.

Lon Longitude position; >0 for eastern hemisphere, <0 for western hemisphere.

Wind Recorded or estimated wind speed in knots

Pressure Recorded or estimated central pressure in millibars

NE34 Radius of winds > 34 kts in the northeastern quadrant.

SE34 Radius of winds > 34 kts in the southeastern quadrant.

SW34 Radius of winds > 34 kts in the southwestern quadrant.

NW34 Radius of winds > 34 kts in the northwestern quadrant.

NE50 Radius of winds > 50 kts in the northeastern quadrant.

SE50 Radius of winds > 50 kts in the southeastern quadrant.

SW50 Radius of winds > 50 kts in the southwestern quadrant.

NW50 Radius of winds > 50 kts in the northwestern quadrant.

NE64 Radius of winds > 64 kts in the northeastern quadrant.

SE64 Radius of winds > 64 kts in the southeastern quadrant.

SW64 Radius of winds > 64 kts in the southwestern quadrant.

NW64 Radius of winds > 64 kts in the northwestern quadrant.

| get_hurdat | *Get HURDAT and parse to dataframe* |

Description

Retrieve Raw HURDAT files for Atlantic (AL), northeast and central Pacific (EP) basins (northwestern hemisphere)

Usage

```
get_hurdat(basin = c("AL", "EP"))
```

Arguments

basin   AL or EP. Default is both.

Details

Raw text files *should* be found at http://www.nhc.noaa.gov/data/hurdat/ as of this writing. The codebooks are listed below.

See Also

Atlantic codebook: http://www.nhc.noaa.gov/data/hurdat/hurdat2-format-atlantic.pdf

NE/NC Pacific codebook: http://www.nhc.noaa.gov/data/hurdat/hurdat2-format-atlantic.pdf

Examples

```
## Not run:
# Get Atlantic storms
al <- get_hurdat(basin = "AL")

# Get northeast and north-central Pacific storms.
ep <- get_hurdat(basin = "EP")

# Get all storms
df <- get_hurdat()

## End(Not run)
```

HURDAT	*HURDAT*

Description

This R package currently aims to reorganize the NOAA HURDAT2 dataset for Atlantic, East Pacific and Central Pacific-basin tropical cyclones and present it in a cleaner format.

Details

The Atlantic basin dataset covers all cyclones that have developed in the Atlantic Ocean. The eastern Pacific datasets cover cyclones in the Pacific from the United States/Mexico coastlines to -140°W where the cyclone entered what is referred to as the central Pacific basin. The central Pacific basin extends westward to -180°W.

Named Cyclones

Cyclones were not named until 1950 and used names of the international phonetic alphabet. For example, Able, Baker, Charlie, etc.

In 1953, the National Hurricane Center began using female names and by 1954 the NHC would retire some names for storms of significance. Currently the World Meteorological Organization is responsible for maintaining the list of names, retiring names and assigning replacement names.

In this dataset, cyclones not named are simply referred to as "UNNAMED". To aid with identification, cyclones will be referenced by their 'Key', a string of alphanumeric characters identifying basin, the number of the storm for the year, followed by the four-digit year.

For example, *AL011851*:

- AL = Atlantic Basin ('Basin')
- 01 = First storm of the year ('YearNum')
- 1851 = Year of the storm ('Year')

Meteorological Definitions

It is useful to understand definitions and classifications of tropical cyclones.

- Cyclone: a system of winds rotating inward to an area of low pressure. This system rotates counter-clockwise in the northern hemisphere and clockwise in the southern hemisphere.
- Tropical depression: a tropical cyclone with winds less than 35 mph (34 kts).
- Tropical storm: a tropical with winds between 35 mph (34 kts) but less than 74mph (64 kts).
- Hurricane: a tropical cyclone with winds greater than 74 mph (64 kts).
- Extratropical Cyclone: a cyclone no longer containing tropical characteristics (warm-core center, tight pressure gradient near the center)
- Subtropical Cyclone: a cyclone containing a mix of tropical and non-tropical characteristics.
- Tropical cyclone: a warm-core surface low pressure system
- Tropical Wave: An open area of low pressure (trough) containing tropical characteristics
- Disturbance: An area of disturbed weather; a large disorganized area of thunderstorms.

Error Reporting

Please submit any errors, discrepancies or issues through the timtrice/HURDAT repository.

Errors in the raw data may also be reported to Chris Landsea or the National Hurricane Center Best Track Change Committee as explained on the HRD website.

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