

# Package: rrrricanes (via r-universe)

November 27, 2024

**Type** Package

**Title** Web Scraper for Atlantic and East Pacific Hurricanes and Tropical Storms

**Description** Get archived data of past and current hurricanes and tropical storms for the Atlantic and eastern Pacific oceans. Data is available for storms since 1998. Datasets are updated via the rrrricanesdata package. Currently, this package is about 6MB of datasets. See the README or view `vignette("`drat`)"` for more information.

**Version** 0.2.0.6.10

**Depends** R (>= 4.1.0)

**URL** <https://docs.ropensci.org/rrricanes>  
<https://github.com/ropensci/rrricanes>

**BugReports** <https://github.com/ropensci/rrricanes/issues>

**License** MIT + file LICENSE

**LazyData** TRUE

**ByteCompile** TRUE

**Imports** broom (>= 0.5), crul (>= 0.7), curl (>= 3.3), dplyr (>= 0.8), ggplot2 (>= 3.1), iotools, httr (>= 1.4), lubridate (>= 1.7), purrr (>= 0.3), readr (>= 1.3), rlang (>= 0.3), rvest (>= 0.3), stringr (>= 1.4), tibble (>= 2.1), tidyr (>= 0.8), tidyselect (>= 0.2), xml2 (>= 1.2)

**Suggests** covr, devtools, here, knitr, rmarkdown, rnaturalearthdata (>= 0.1), sf (>= 1.0), sp, testthat

**VignetteBuilder** knitr

**Encoding** UTF-8

**RoxygenNote** 7.1.2

**Config/pak/sysreqs** libicu-dev libxml2-dev libssl-dev libx11-dev

**Repository** <https://ropensci.r-universe.dev>

**RemoteUrl** <https://github.com/ropensci/rrricanes>

**RemoteRef** main

**RemoteSha** 67cda48829d87779dfd9a3e85e306dce03a91e46

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---

<code>al_prblty_stations</code>	<i>al_prblty_stations</i>
---------------------------------	---------------------------

---

## Description

Retrieve list of probability stations based in the Atlantic basin from the NHC. To be used in tandem with 'wndprb' products.

## Usage

```
al_prblty_stations()
```

## Details

Originally it was believed this data source would be removed by the National Hurricane Center but it appears to have been updated. Additional columns have been added, one up front and three in the back. These columns all contain the same values each and I am unable to find documentation describing the values.

Regardless, the data is kept, just in case.

## Warnings

Calling `al_prblty_stations` will generate a warning:

```
> "Expected 7 pieces. Additional pieces discarded in 1 rows [90]."
```

Station PATRICK AFB actually has eight columns. The data is kept for consistency; you decide if you want it or not.

---

al\_tracking\_chart      *al\_tracking\_chart*

---

### Description

Build tracking chart centered on Atlantic Basin.

### Usage

```
al_tracking_chart(...)
```

### Arguments

...                      Additional parameters for [tracking\\_chart](#) and `ggplot2`

### Value

`ggplot2` object centered on Atlantic basin.

### See Also

[tracking\\_chart](#)

### Examples

```
## Not run:
# Build map with white land areas, thin black borders
al_tracking_chart(color = "black", size = 0.1, fill = "white")

# 50nm resolution, no states
al_tracking_chart(res = 50, states = FALSE, color = "black", size = 0.1,
                  fill = "white")

# 50nm resolution, coastlines only
al_tracking_chart(countries = FALSE, res = 50, color = "black", size = 0.1,
                  fill = "white")

# Adding and modifying with ggplot functions
al_tracking_chart(color = "black", size = 0.1, fill = "white") +
  ggplot2::labs(x = "Lon", y = "Lat",
                title = "Base Atlantic Tracking Chart")

## End(Not run)
```

---

cp_prblty_stations	<i>cp_prblty_stations</i>
--------------------	---------------------------

---

**Description**

Retrieve list of probability stations based in the central Pacific from the NHC. To be used in tandem with 'wndprb' products.

**Usage**

```
cp_prblty_stations()
```

---

df.al_12_2005_prblty	<i>Strike probabilities for Hurricane Katrina (AL122005)</i>
----------------------	--

---

**Description**

Strike probabilities for Hurricane Katrina (AL122005)

**Usage**

```
df.al_12_2005_prblty
```

**Format**

An object of class `tbl_df` (inherits from `tbl`, `data.frame`) with 937 rows and 10 columns.

**Source**

<http://www.nhc.noaa.gov/archive/2005/KATRINA.shtml?>

---

df.al_18_2012	<i>Forecast/Advisory and Wind Speed Probabilities for Hurricane Sandy (AL182012)</i>
---------------	--

---

**Description**

Forecast/Advisory and Wind Speed Probabilities for Hurricane Sandy (AL182012)

**Usage**

```
df.al_18_2012
```

**Format**

An object of class `list` of length 2.

**Source**

<http://www.nhc.noaa.gov/archive/2012/SANDY.shtml>

---

df.al\_18\_2012\_fstadv    *Forecast/Advisory for Hurricane Sandy (AL182012)*

---

**Description**

Forecast/Advisory for Hurricane Sandy (AL182012)

**Usage**

```
df.al_18_2012_fstadv
```

**Format**

An object of class `tbl_df` (inherits from `tbl`, `data.frame`) with 31 rows and 117 columns.

**Source**

<http://www.nhc.noaa.gov/archive/2012/SANDY.shtml>

---

df.al\_18\_2012\_wndprb    *Wind speed probabilities for Hurricane Sandy (AL182012)*

---

**Description**

Wind speed probabilities for Hurricane Sandy (AL182012)

**Usage**

```
df.al_18_2012_wndprb
```

**Format**

An object of class `tbl_df` (inherits from `tbl`, `data.frame`) with 2227 rows and 18 columns.

**Source**

<http://www.nhc.noaa.gov/archive/2012/SANDY.shtml>

---

`df.al_2012`*Atlantic cyclones for 2012*

---

**Description**

Atlantic cyclones for 2012

**Usage**

`df.al_2012`

**Format**

An object of class `tbl_df` (inherits from `tbl`, `data.frame`) with 19 rows and 4 columns.

**Source**

<http://www.nhc.noaa.gov/archive/2012/>

---

`df.gis_adv`*GIS advisory dataset for Hurricane Sandy Adv 18*

---

**Description**

GIS advisory dataset for Hurricane Sandy Adv 18

**Usage**

`df.gis_adv`

**Format**

An object of class `list` of length 4.

**Source**

[http://www.nhc.noaa.gov/gis/archive\\_forecast\\_results.php?id=a118&year=2012&name=Hurricane%20SANDY](http://www.nhc.noaa.gov/gis/archive_forecast_results.php?id=a118&year=2012&name=Hurricane%20SANDY)

---

df.gis\_storm\_surge      *GIS storm surge shapefile dataset for Hurricane Sandy(AL182012)*

---

**Description**

GIS storm surge shapefile dataset for Hurricane Sandy(AL182012)

**Usage**

df.gis\_storm\_surge

**Format**

An object of class list of length 1.

**Source**

[http://www.nhc.noaa.gov/gis/archive\\_psurge\\_results.php?id=a118&year=2012&name=Hurricane%20SANDY](http://www.nhc.noaa.gov/gis/archive_psurge_results.php?id=a118&year=2012&name=Hurricane%20SANDY)

---

df.gis\_wind\_radII      *GIS windfield and forecast wind radii for Hurricane Sandy (AL182012)*

---

**Description**

GIS windfield and forecast wind radii for Hurricane Sandy (AL182012)

**Usage**

df.gis\_wind\_radII

**Format**

An object of class list of length 2.

**Source**

[http://www.nhc.noaa.gov/gis/archive\\_forecast\\_info\\_results.php?id=a118&year=2012&name=Hurricane%20SANDY](http://www.nhc.noaa.gov/gis/archive_forecast_info_results.php?id=a118&year=2012&name=Hurricane%20SANDY)



---

df.gis_wsp	<i>GIS wind speed probabilities for Hurricane Sandy (AL182012)</i>
------------	--

---

**Description**

GIS wind speed probabilities for Hurricane Sandy (AL182012)

**Usage**

```
df.gis_wsp
```

**Format**

An object of class `list` of length 3.

**Source**

[http://www.nhc.noaa.gov/gis/archive\\_wsp.php](http://www.nhc.noaa.gov/gis/archive_wsp.php)

---

ep_prblty_stations	<i>ep_prblty_stations</i>
--------------------	---------------------------

---

**Description**

Retrieve list of probability stations based in the eastern Pacific from the NHC. To be used in tandem with 'wndprb' products.

**Usage**

```
ep_prblty_stations()
```

**Details**

Originally it was believed this data source would be removed by the National Hurricane Center but it appears to have been updated. Additional columns have been added, one up front and three in the back. These columns all contain the same values each and I am unable to find documentation describing the values.

Regardless, the data is kept, just in case.

**Warnings**

Calling `ep_prblty_stations` will generate a warning:

```
> "Expected 7 pieces. Missing pieces filled with 'NA' in 1 rows [41]."
```

Station SALINA CRUZ actually has six columns.

---

ep\_tracking\_chart      *ep\_tracking\_chart*

---

### Description

Build tracking chart centered on northeast Pacific Basin.

### Usage

```
ep_tracking_chart(...)
```

### Arguments

...                      Additional parameters for ggplot2

### Value

ggplot2 object centered on northeast Pacific basin.

### See Also

[tracking\\_chart](#)

### Examples

```
## Not run:
# Build map with white land areas, thin black borders
ep_tracking_chart(color = "black", size = 0.1, fill = "white")

# 50nm resolution, no states
ep_tracking_chart(res = 50, states = FALSE, color = "black", size = 0.1,
                  fill = "white")

# 50nm resolution, coastlines only
ep_tracking_chart(countries = FALSE, res = 50, color = "black", size = 0.1,
                  fill = "white")

# Adding and modifying with ggplot functions
ep_tracking_chart(color = "black", size = 0.1, fill = "white") +
  ggplot2::labs(x = "Lon", y = "Lat",
               title = "Base East Pacific Tracking Chart")

## End(Not run)
```

---

get_discus	<i>get_discus</i>
------------	-------------------

---

**Description**

Return dataframe of discussion data.

**Status** Classification of storm, e.g., Tropical Storm, Hurricane, etc.

**Name** Name of storm

**Adv** Advisory Number

**DateTime** Date of advisory issuance

**StormKey** ID of cyclone

**Contents** Text content of product

**Usage**

```
get_discus(links)
```

**Arguments**

links            URL to storm's archive page.

**See Also**

[get\\_storms](#), [public](#)

**Examples**

```
## Not run:  
# Return dataframe of storm discussions for Tropical Storm Alex (AL011998)  
get_discus("http://www.nhc.noaa.gov/archive/1998/1998ALEXadv.html")  
  
## End(Not run)
```

---

get_fstadv	<i>get_fstadv</i>
------------	-------------------

---

**Description**

Return dataframe of forecast/advisory data.

**Usage**

```
get_fstadv(links)
```

**Arguments**

**links** URL to storms' archive page.

**Details**

Returns a wide dataframe of most the data available in a cyclones forecast/advisory product (watches and warnings are not included at this time).

Overall structure of the dataframe is listed below. Note the following clarifications:

1. The value of 'n' in 'Hr{n}' variables is the forecast period. Up to 2002, forecast periods are 12, 24, 36, 48 and 72 hours. After 2002, forecast periods were extended to 96 and 120 hours. Not all forecast periods will be available for every cyclone advisory (e.g., if it is dissipating or expected to dissipate.)
2. Wind radius data is not included 96 and 120 hour forecast periods.
3. Forecast dates are not truly 12, 24, ..., 120 hours from the date/time of the advisory. The NHC issues two positions in these products; one for current and one for three hours prior. It is the latter position the forecast date/times are based.

**Status** Classification of cyclone

**Name** Name of cyclone

**Adv** Advisory number

**DateTime** Date and time of advisory

**StormKey** Unique identifier of cyclone

**Lat** Latitude of cyclone center

**Lon** Longitude of cyclone center

**Wind** Maximum sustained one-minute winds in knots

**Gust** Maximum sustained one-minute gusts in knots

**Pressure** Minimum central pressure in millibars

**PosAcc** Position accuracy of cyclone in nautical miles

**FwdDir** Compass angle of forward motion

**FwdSpeed** Forward speed in miles per hour

**Eye** Size of eye in nautical miles

**NE64** Radius of  $\geq 64$ kt winds in northeast quadrant

**SE64** Radius of  $\geq 64$ kt winds in southeast quadrant

**SW64** Radius of  $\geq 64$ kt winds in southwest quadrant

**NW64** Radius of  $\geq 64$ kt winds in northwest quadrant

**NE50** Radius of  $\geq 50$ kt winds in northeast quadrant

**SE50** Radius of  $\geq 50$ kt winds in southeast quadrant

**SW50** Radius of  $\geq 50$ kt winds in southwest quadrant

**NW50** Radius of  $\geq 50$ kt winds in northwest quadrant

**NE34** Radius of  $\geq 34$ kt winds in northwest quadrant

**SE34** Radius of  $\geq 34$ kt winds in southeast quadrant  
**SW34** Radius of  $\geq 34$ kt winds in southwest quadrant  
**NW34** Radius of  $\geq 34$ kt winds in northwest quadrant  
**Hr{n}FcstDate** Forecast valid date  
**Hr{n}Lat** Forecast latitude in 'n' hours  
**Hr{n}Lon** Forecast longitude in 'n' hours  
**Hr{n}Wind** Forecast maximum wind in 'n' hours  
**Hr{n}Gust** Forecast maximum gust in 'n' hours  
**Hr{n}NE64** Forecast wind radius in 'n' hours  
**Hr{n}SE64** Forecast wind radius in 'n' hours  
**Hr{n}SW64** Forecast wind radius in 'n' hours  
**Hr{n}NW64** Forecast wind radius in 'n' hours  
**Hr{n}NE50** Forecast wind radius in 'n' hours  
**Hr{n}SE50** Forecast wind radius in 'n' hours  
**Hr{n}SW50** Forecast wind radius in 'n' hours  
**Hr{n}NW50** Forecast wind radius in 'n' hours  
**Hr{n}NE34** Forecast wind radius in 'n' hours  
**Hr{n}SE34** Forecast wind radius in 'n' hours  
**Hr{n}SW34** Forecast wind radius in 'n' hours  
**Hr{n}NW34** Forecast wind radius in 'n' hours  
**SeasNE** Radius of 12ft seas in northeast quadrant  
**SeasSE** Radius of 12ft seas in southeast quadrant  
**SeasSW** Radius of 12ft seas in southwest quadrant  
**SeasNW** Radius of 12ft seas in northwest quadrant

#### See Also

[tidy\\_adv](#), [tidy\\_wr](#), [tidy\\_fcst](#), [tidy\\_fcst\\_wr](#)

#### Examples

```

## Not run:
# Return dataframe of forecast/advisories for Tropical Storm Alex (AL011998)
get_fstadv("http://www.nhc.noaa.gov/archive/1998/1998ALEXadv.html")

## End(Not run)

```

---

```
get_ftp_storm_data    get_ftp_storm_data
```

---

### Description

Retrieve text products from the National Hurricane Center's FTP server. Not all products may exist for certain storms.

### Usage

```
get_ftp_storm_data(
    stormid,
    products = c("discus", "fstadv", "posest", "public", "prblty", "update", "wndprb")
)
```

### Arguments

stormid	A six-character alphanumeric string formatted as AABBBCCC where <b>AA</b> The basin of the storm; AL or EP <b>BB</b> Storm number for the year as decimal number (e.g., 01, 02, ..., 10, ...) <b>CCCC</b> Year with century
products	Products to retrieve; discuss, fstadv, posest, public, prblty, update, and windprb.

### See Also

[get\\_storm\\_data](#)

---

```
get_posest    get_posest
```

---

### Description

Return dataframe of position estimate data.

### Usage

```
get_posest(links)
```

### Arguments

links	URL to storm's archive page.
-------	------------------------------

**Details**

This product was discontinued after the 2013 hurricane season and is now included in the Tropical Cyclone Update product ([update](#)).

**Status** Classification of storm, e.g., Tropical Storm, Hurricane, etc.

**Name** Name of storm

**DateTime** Date of advisory issuance

**Contents** Text content of product

**See Also**

[get\\_storms](#), [posest](#)

---

get\_prblty

*get\_prblty*

---

**Description**

Strike probabilities; the chances of the center of a cyclone passing within 65 nautical miles of a location.

**Status** Classification of storm, e.g., Tropical Storm, Hurricane, etc.

**Name** Name of storm

**Adv** Advisory Number

**Date** Date of advisory issuance

**Location** Location for which the probability statistics rely

**A** Probability of a strike within the next 12 hours

**B** Probability of a strike between 12 and 24 hours

**C** Probability of a strike between 24 and 36 hours

**D** Probability of a strike between 36 and 48 hours

**E** Probability of a strike between 48 and 72 hours

**Usage**

```
get_prblty(links)
```

**Arguments**

links            URL to storm's archive page.

---

get\_product\_links      *get\_product\_links*

---

### Description

get\_product\_links

### Usage

get\_product\_links(links, product)

### Arguments

links	data frame containing Link that lists storm page urls
product	Data product

### Value

vector of links for specific storm and product

---

get\_public      *get\_public*

---

### Description

Return dataframe of public advisory data.

**Status** Classification of storm, e.g., Tropical Storm, Hurricane, etc.

**Name** Name of storm

**Adv** Advisory Number

**Date** Date of advisory issuance

**StormKey** Unique ID of the cyclone

**Contents** Text content of product

### Usage

get\_public(links)

### Arguments

links	URL to storm's archive page.
-------	------------------------------

### See Also

[get\\_storms](#), [public](#)



---

get_serial_numbers	<i>Get Serial Numbers</i>
--------------------	---------------------------

---

**Description**

Creates the serial numbers look up

This will create a fresh table for serial numbers Since this is constantly updated it should be re-freshed regularly especially when seeking recent tracks.

**Usage**

```
get_serial_numbers()
```

---

get_storms	<i>get_storms</i>
------------	-------------------

---

**Description**

Returns storms and product link.

**Usage**

```
get_storms(years = format(Sys.Date(), "%Y"), basins = c("AL", "EP"))
```

**Arguments**

years	numeric or vector, four digits (%Y format)
basins	One or both of c("AL", "EP")

**Format**

A 4xN dataframe

**Year** Numeric, four-digit year of the storm

**Name** Character, name of storm mixed-case

**Basin** AL (Atlantic) or EP (East Pacific)

**Link** URL to storms' product pages

**Details**

By default returns all storms for the current year. If no storms have developed will return an empty dataframe.

**Value**

Dataframe of storms.

**Source**

<http://www.nhc.noaa.gov/archive/2016/>

**Examples**

```
# Default. Get all storms, both basins, for last year.
## Not run:
storms <- get_storms(year = 2016, basin = c("AL", "EP"))

# Get storms for two different years
storms.2010 <- get_storms(c(2010, 2015))

# Get storms for two consecutive years, Atlantic basin only
storms.al.2005 <- get_storms(2005:2007, basin = "AL")

## End(Not run)
```

---

<code>get_storm_data</code>	<i>get_storm_data</i>
-----------------------------	-----------------------

---

**Description**

Retrieve data from products.

**Usage**

```
get_storm_data(
  links,
  products = c("discus", "fstadv", "posest", "public", "prblty", "update", "wndprb")
)
```

**Arguments**

`links` to storm's archive page.  
`products` Products to retrieve; `discus`, `fstadv`, `posest`, `public`, `prblty`, `update`, and `windprb`.

**Details**

`get_storm_data` is a wrapper function to make it more convenient to access the various storm products.

Types of products:

**discus** Storm Discussions. This is technical information on the cyclone such as satellite presentation, forecast model evaluation, etc.

**fstadv** Forecast/Advisory. These products contain the meat of an advisory package. Current storm information is available as well as structural design and forecast data.

**posest** Position Estimate. Issued generally when a storm is threatening; provides a brief update on location and winds.

**public** Public Advisory. Issued for public knowledge; more often for Atlantic than East Pacific storms. Contains general information.

**prblty** Strike Probability. Discontinued after the 2005 hurricane season, strike probabilities list the chances of x-force winds in a particular city.

**update** Cyclone Update. Generally issued when a significant change occurs in the cyclone.

**windprb** Wind Probability. Replace strike probabilities beginning in the 2006 season. Nearly identical.

Progress bars are displayed by default. Additionally, you can display messages for each advisory being worked by setting the `rrricanes.working_msg` to `TRUE`.

### Value

list of dataframes for each of the products.

### See Also

[get\\_ftp\\_storm\\_data](#)

### Examples

```
## Not run:
## Get public advisories for first storm of 2016 Atlantic season.
# get_storms(year = 2016, basin = "AL") |>
# dplyr::slice(1) |>
# pull(Link) |>
# get_storm_data( products = "public")
## Get public advisories and storm discussions for first storm of 2017
Atlantic season.
# get_storms(year = 2017, basin = "AL") |>
# slice(1) |>
# pull(Link) |>
# get_storm_data(products = c("discus", "public"))

## End(Not run)
```

---

get\_storm\_list

*get\_storm\_list*

---

### Description

Get storm list

### Usage

```
get_storm_list()
```

---

get_storm_track	<i>get_storm_track</i>
-----------------	------------------------

---

### Description

get\_storm\_track

### Usage

```
get_storm_track(
  serials,
  source = c("ACTIVE", "last3years", "since1980", "ALL", "EP", "NA", "NI", "SA", "SI",
            "SP", "WP")
)
```

### Arguments

serials	vector of serial numbers for a storm
source	Short name for source, allows use of smaller file.

### Value

data frame of storm track

---

get_update	<i>get_update</i>
------------	-------------------

---

### Description

Return dataframe of cyclone update data.

**Status** Classification of storm, e.g., Tropical Storm, Hurricane, etc.

**Name** Name of storm

**Date** Date of advisory issuance

**Key** Unique ID of cyclone

**Contents** Text content of product

### Usage

```
get_update(links)
```

### Arguments

links	URL to storm's archive page.
-------	------------------------------

**See Also**

[get\\_storms](#), [update](#)

---

*get\_url\_contents*      *get\_url\_contents*

---

**Description**

Get contents from URL

**Usage**

```
get_url_contents(links)
```

**Arguments**

links                  character vector of URLs to download

**Details**

This function primarily is reserved for extracting the contents of the individual products (thought it can be used in other instances). Often, there are timeout issues. This is an attempt to try to work around that.

---

*get\_wndprb*                  *get\_wndprb*

---

**Description**

Return dataframe of wind speed probability data.

**Usage**

```
get_wndprb(links)
```

**Arguments**

links                  URL to storm's archive page.

**Details**

Wind Speed Probability product replaced Strike Probabilities product after the 2005 hurricane season. These products may not be issued for every advisory/cyclone.

**Status** Classification of storm, e.g., Tropical Storm, Hurricane, etc.

**Name** Name of storm

**Adv** Advisory Number

**Date** Date of advisory issuance

**Wind** Minimum wind speed for which probabilities reference

**Wind12** Probability of sustained 'Wind' within 12 hours

**Wind24** Probability of sustained 'Wind' within 24 hours

**Wind24Cum** Cumulative probability through 24 hours

**Wind36** Probability of sustained 'Wind' within 36 hours

**Wind36Cum** Cumulative probability through 36 hours

**Wind48** Probability of sustained 'Wind' within 48 hours

**Wind48Cum** Cumulative probability through 48 hours

**Wind72** Probability of sustained 'Wind' within 72 hours

**Wind72Cum** Cumulative probability through 72 hours

**Wind96** Probability of sustained 'Wind' within 96 hours

**Wind96Cum** Cumulative probability through 96 hours

**Wind120** Probability of sustained 'Wind' within 120 hours

**Wind120Cum** Cumulative probability through 120 hours

**Value**

Data frame of wndprb information

**Source**

[http://www.nhc.noaa.gov/about/pdf/About\\_Windspeed\\_Probabilities.pdf](http://www.nhc.noaa.gov/about/pdf/About_Windspeed_Probabilities.pdf)

---

gis\_advisory

*gis\_advisory*

---

**Description**

Advisory Forecast Track, Cone of Uncertainty, and Watches/Warnings

**Usage**

```
gis_advisory(key, advisory = as.character())
```

**Arguments**

key	Key of storm (i.e., AL012008, EP092015)
advisory	Advisory number. If NULL, all advisories are returned. Intermediate advisories are acceptable.

**See Also**

[gis\\_download](#)

---

gis\_breakpoints      *gis\_breakpoints*

---

**Description**

Return link to breakpoints shapefile by year

**Usage**

```
gis_breakpoints()
```

**Details**

Coastal areas placed under tropical storm and hurricane watches and warnings are identified through the use of "breakpoints." A tropical cyclone breakpoint is defined as an agreed upon coastal location that can be chosen as one of two specific end points or designated places between which a tropical storm/hurricane watch/warning is in effect. The U.S. National Weather Service designates the locations along the U.S. East, Gulf, and California coasts, Puerto Rico, and Hawaii. These points are listed in NWS Directive 10-605 (PDF). Individual countries across the Caribbean, Central America, and South America provide coastal locations for their areas of responsibility to the U.S. National Weather Service for the National Hurricane Center's use in tropical cyclone advisories when watches/warnings are issued by international partners. The National Hurricane Center maintains a list of pre-arranged breakpoints for the U.S. Atlantic and Gulf coasts, Mexico, Cuba and the Bahamas. Other sites are unofficial and sites not on the list can be selected if conditions warrant.

---

gis\_download      *gis\_download*

---

**Description**

Get GIS data for storm.

**Usage**

```
gis_download(url, ...)
```

**Arguments**

url            link to GIS dataset to download.  
...            additional parameters for simple features

---

gis\_latest            *gis\_latest*

---

**Description**

Latest GIS datasets for **active** cyclones

**Usage**

```
gis_latest(basins = c("AL", "EP"), ...)
```

**Arguments**

basins            AL and/or EP.  
...            additional parameters for sf::st\_read()

---

gis\_outlook            *gis\_outlook*

---

**Description**

Tropical Weather Outlook

**Usage**

```
gis_outlook()
```

**See Also**

[gis\\_download](#)



---

gis\_prob\_storm\_surge    *gis\_prob\_storm\_surge*

---

## Description

Probabilistic Storm Surge

## Usage

```
gis_prob_storm_surge(key, products, datetime = NULL)
```

## Arguments

key	Key of storm (i.e., AL012008, EP092015)
products	list of products and associated n values; psurge (0:20) or esurge (10, 20, 30, 40, 50).
datetime	Datetime in %Y%m%d%H format.

## Details

Probabilistic Storm Surge Forecasts

## Products

**esurge** The Tropical Cyclone Storm Surge Exceedances (P-Surge 2.5) data shows the probability, in percent, of a specified storm surge, including tides, exceeding the specified height, in feet, during the forecast period indicated. The 10 percent exceedance height, for example, is the storm surge height, including tides, above ground level (AGL) such that there is a 10 percent chance of exceeding it. The product is based upon an ensemble of Sea, Lake, and Overland Surge from Hurricanes (SLOSH) model runs using the National Hurricane Center (NHC) official advisory and accounts for track, size, and intensity errors based on historical errors and astronomical tide. Valid values are 10, 20, 30, 40 or 50.

**psurge** The Tropical Cyclone Storm Surge Probabilities (P-Surge 2.5) data shows the probability, in percent, of a specified storm surge occurring during the forecast period indicated. The product is based upon an ensemble of Sea, Lake, and Overland Surge from Hurricanes (SLOSH) model runs using the National Hurricane Center (NHC) official advisory and accounts for track, size, and intensity errors based on historical errors and astronomical tide. Valid values are 0:20.

## See Also

[Tropical Cyclone Storm Surge Probabilities](#)

[gis\\_download](#)

**Examples**

```
## Not run:
# Return the last psurge0 product for storm AL092016
gis_prob_storm_surge("AL092016", products = list("psurge" = 0))

# Return the psurge0 and esurge10 products for storm AL092016
gis_prob_storm_surge("AL092016", products = list("psurge" = 0, "esurge" = 1
0))

# Return all psurge0 products for Sep 2, 2016, storm AL092016
gis_prob_storm_surge("AL092016", products = list("psurge" = 0),
                    datetime = "20160902")

## End(Not run)
```

---

*gis\_storm\_surge\_flood* *gis\_storm\_surge\_flood*

---

**Description**

Potential Storm Surge Flooding (Inundation)

**Usage**

```
gis_storm_surge_flood(
  key,
  advisory = as.numeric(),
  products = c("inundation", "tidalmask")
)
```

**Arguments**

key	Key of storm (i.e., AL012008, EP092015)
advisory	Advisory number.
products	inundation or tidalmask

**See Also**

[gis\\_download](#)

---

gis_windfield	<i>gis_windfield</i>
---------------	----------------------

---

**Description**

Advisory Wind Field and Forecast Wind Radii

**Usage**

```
gis_windfield(key, advisory = as.character())
```

**Arguments**

key	Key of storm (i.e., AL012008, EP092015)
advisory	Advisory number. If NULL, all advisories are returned. Intermediate advisories are acceptable.

**Details**

Tropical Cyclone Advisory Wind Field [http://www.nhc.noaa.gov/gis/archive\\_forecast\\_info\\_results.php?id=al14&year=2016](http://www.nhc.noaa.gov/gis/archive_forecast_info_results.php?id=al14&year=2016) <http://www.nhc.noaa.gov/gis/forecast/archive/> Example file name: al012017\_fcst\_001.zip [basin]2[year\_num]2[year]4\_fcst\_[advisory]3.zip Many storms do not appear to have this data; especially earlier.

Not all advisories will be available for storms. For example, [Hurricane Matthew \(AL142016\)](#) is missing several advisories.

**See Also**

[gis\\_download](#)

---

gis_wsp	<i>gis_wsp</i>
---------	----------------

---

**Description**

Wind Speed Probabilities

**Usage**

```
gis_wsp(datetime, res = c(5, 0.5, 0.1))
```

**Arguments**

datetime	Datetime in %Y%m%d%H format. %m, %d and %H are optional but will return more datasets.
res	Resolution as a numeric vector; 5, 0.5, 0.1.

**Details**

Probability winds affecting an area within a forecast period. Datasets contain windfields for 34kt, 50kt and 64kt. Resolution is at 5km, 0.5 degrees and 0.1 degrees. Not all resolutions may be available for all storms. Not all windfields will be available for all advisories.

**See Also**

[gis\\_download](#)

**Examples**

```
## Not run:  
# Return datasets for January 1, 2016 with resolution of 0.5 degrees  
gis_wsp("20160101", res = 0.5)  
  
# Return wsp of 0.1 and 0.5 degree resolution, July, 2015  
gis_wsp("201507", res = c(0.5, 0.1))  
  
## End(Not run)
```

---

*knots\_to\_mph*

*knots\_to\_mph*

---

**Description**

convert knots (kt) to miles per hour (mph)

**Usage**

```
knots_to_mph(x)
```

**Arguments**

x                    wind speed in knots

**Value**

x in miles per hour

**Examples**

```
knots_to_mph(65)
```

---

*mb\_to\_in*

*mb\_to\_in*

---

**Description**

convert millibars (mb) to inches of mercury (in)

**Usage**

`mb_to_in(x)`

**Arguments**

x                      barometric pressure in mb

**Value**

x in inches

**Examples**

`mb_to_in(999)`

---

*nm\_to\_sm*

*nm\_to\_sm*

---

**Description**

Convert nautical miles to survey miles

**Usage**

`nm_to_sm(x)`

**Arguments**

x                      Nautical miles

**Examples**

`nm_to_sm(c(50, 100, 150))`

rrricanes

*rrricanes***Description**

rrricanes is a web-scraping library for R designed to deliver hurricane data (past and current) into well-organized datasets. With these datasets you can explore past hurricane tracks, forecasts and structure elements.

This documentation and additional help articles [can be found online](#).

Text products (Forecast/Advisory, Public Advisory, Discussions and Probabilities) are only available from 1998 to current. An effort will be made to add prior data as available.

**Getting Storms**

List all storms that have developed by year and basin. Year must be in a four-digit format (%Y) and no earlier than 1998. Basin can be one or both of Atlantic ("AL") or East Pacific ("EP").

[get\\_storms](#) List all storms by year, basin

**Getting Storm Data**

[get\\_storm\\_data](#) can be used to select multiple products, multiple storms and from multiple basins.

Additional text products are:

[get\\_discus](#) Storm Discussions

[get\\_fstadv](#) Forecast/Advisory. These products contain a bulk of the information for tropical cyclones including current position, structure, forecast position and forecast structure.

[get\\_posest](#) Position Estimates. Rare and used generally for threatening cyclones. This product was discontinued after the 2013 season and is now issued as [get\\_update](#).

[get\\_prblty](#) Strike Probabilities. Show the probability of the center of a cyclone passing within 65nm of a location for a given forecast period. This product was discontinued after 2005, replaced with [get\\_wndprb](#).

[get\\_public](#) Public Advisory. General non-structured information exists in these products.

[get\\_update](#) Updates. Generally issued when a cyclone undergoes a sudden change that requires immediate notice.

[get\\_wndprb](#) Wind Speed Probability. Lists the probability of a location experiencing a minimum of 35kt, 50kt or 64kt winds for an allotted forecast period or accumulated probability. This product replaced [get\\_prblty](#) after the 2005 season.

The products above may take some time to load if the NHC website is slow (as is often the case, unfortunately). For all storm advisories issued outside of the current month, use the `rrricanesdata` package.

To install `rrricanesdata`, run

```
install.packages("rrricanesdata", repos = "https://timtrice.github.io/drat/", type = "source")
```

See `vignette("installing_rrricanesdata", package = "rrricanes")` for more information.

## GIS Data

For enhanced plotting of storm data, several GIS datasets are available. The core GIS functions return URLs to help you refine the data you wish to view. (Some products will not exist for all storms/advisories). These products are:

[gis\\_advisory](#) Past track, current position, forecast and wind radii

[gis\\_breakpoints](#) Breakpoints for watches and warnings

[gis\\_latest](#) All available GIS products for active cyclones

[gis\\_outlook](#) Tropical Weather Outlook

[gis\\_prob\\_storm\\_surge](#) Probabilistic Storm Surge

[gis\\_windfield](#) Wind Radii

[gis\\_wsp](#) Wind Speed Probabilities

[gis\\_download](#) will download the datasets from the above functions.

Some GIS datasets will need to be converted to dataframes to plot geoms. Use [shp\\_to\\_df](#) to convert SpatialLinesDataFrames and SpatialPolygonsDataFrames. SpatialPointsDataFrames can be converted using `tibble::as_data_frame` targeting the `@data` object.

## Package Options

In [get\\_storms](#), the progress bar is based on the number of years being requested. In the product functions (i.e., [get\\_fstadv](#)) it is based on the number of advisories. It can be misleading when calling [get\\_storm\\_data](#) because it shows the progress of working through a storm's product advisories but will reset on new products/storms.

product datasets. In [get\\_storms](#), the progress bar is based on the number of years being requested. In the product functions (i.e., [get\\_fstadv](#)) it is based on the number of advisories. It can be misleading when calling [get\\_storm\\_data](#) because it shows the progress of working through a storm's product advisories but will reset on new products/storms.

`rrricanes.working_msg` is set to `FALSE` by default. When `TRUE`, it will list the current storm, advisory and date being worked.

---

saffir

*saffir*

---

## Description

Return category of tropical cyclone based on wind. Saffir- Simpson Hurricane Scale does not apply to non-tropical cyclones.

## Usage

`saffir(x)`

**Arguments**

x                      Vector of wind speed values.

**Examples**

```
saffir(c(32, 45, 70, 90, 110, 125, 140))
```

---

shp\_to\_df                      *shp\_to\_df*

---

**Description**

Convert shapefile object to dataframe

**Usage**

```
shp_to_df(obj)
```

**Arguments**

obj                      Spatial object to convert. See details.

**Details**

Takes a SpatialLinesDataFrame object or SpatialPolygonsDataFrame object and converts into a dataframe that can be plotted in ggplot2.

---

status\_abbrev\_to\_str                      *status\_abbrev\_to\_str*

---

**Description**

Convert Status abbreviation to string

**Usage**

```
status_abbrev_to_str(x)
```

**Arguments**

x                      character vector of status abbreviations



**Details**

Status abbreviations

**DB** Disturbance (of any intensity)

**EX** Extratropical cyclone (of any intensity)

**HU** Tropical cyclone of hurricane intensity (> 64 knots)

**LO** A low that is neither a tropical cyclone, a subtropical cyclone, nor an extratropical cyclone (of any intensity)

**SD** Subtropical cyclone of subtropical depression intensity (< 34 knots)

**SS** Subtropical cyclone of subtropical storm intensity (> 34 knots)

**TD** Tropical cyclone of tropical depression intensity (< 34 knots)

**TS** Tropical cyclone of tropical storm intensity (34-63 knots)

**WV** Tropical Wave (of any intensity)

**Value**

character vector of strings

**See Also**

<http://www.aoml.noaa.gov/hrd/hurdat/newhurdat-format.pdf>

**Examples**

```
# Extratropical Cyclone
status_abbrev_to_str("EX")

# Hurricane
status_abbrev_to_str("HU")
```

---

tidy\_adv

*tidy\_adv*

---

**Description**

Tidy current details of a fstadv dataframe object.

tidy\_adv will be deprecated in 0.2.2

**Usage**

```
tidy_adv(df)
```

```
tidy_fstadv(df)
```

**Arguments**

**df**                   fstadv dataframe object

**Details**

Returns current data only of a fstadv dataframe. Use Key, Adv and Date to join with other tidy dataframes.

**StormKey** Unique identifier of cyclone

**Adv** Advisory number

**Date** Date and time of advisory

**Status** Classification of cyclone

**Name** Name of cyclone

**Lat** Latitude of cyclone center

**Lon** Longitude of cyclone center

**Wind** Maximum sustained one-minute winds in knots

**Gust** Maximum sustained one-minute gusts in knots

**Pressure** Minimum central pressure in millibars

**PosAcc** Position accuracy of cyclone in nautical miles

**FwdDir** Compass angle of forward motion

**FwdSpeed** Forward speed in miles per hour

**Eye** Size of eye in nautical miles

**SeasNE** Radius of 12ft seas in northeast quadrant

**SeasSE** Radius of 12ft seas in southeast quadrant

**SeasSW** Radius of 12ft seas in southwest quadrant

**SeasNW** Radius of 12ft seas in northwest quadrant

**Examples**

```
## Not run:  
get_fstadv("http://www.nhc.noaa.gov/archive/1998/1998ALEXadv.html") |>  
  tidy_adv()  
  
## End(Not run)
```

---

tidy_fcst	<i>tidy_fcst</i>
-----------	------------------

---

### Description

Tidy forecasts of a fstadv dataframe object.

### Usage

```
tidy_fcst(df)
```

### Arguments

df                    fstadv dataframe object

### Details

Gathers all forecast points, tidies dataframe to make one row per forecast position. Complete cases only. Use Key, Adv and Date to join with other tidy dataframes.

**Key** Unique identifier of cyclone

**Adv** Advisory number

**Date** Date and time of advisory

**FcstDate** Forecast date and time in UTC

**Lat** Forecast latitude

**Lon** Forecast Longitude

**Wind** Forecast wind in knots

**Gust** Forecast gust in knots

### Examples

```
## Not run:  
get_fstadv("http://www.nhc.noaa.gov/archive/1998/1998ALEXadv.html") |>  
  tidy_fcst()  
  
## End(Not run)
```

---

tidy_fcst_wr	<i>tidy_fcst_wr</i>
--------------	---------------------

---

## Description

Tidy forecast wind radii of a fstadv dataframe object

## Usage

```
tidy_fcst_wr(df)
```

## Arguments

df                    fstadv dataframe object

## Details

Tidies forecast wind radius for each forecast position. Complete cases only (by quadrants). Use Key, Adv and Date to join with other tidy dataframes.

**StormKey** Unique identifier of cyclone

**Adv** Advisory number

**Date** Date and time of advisory

**FcstDate** Forecast date and time in UTC

**WindField** Minimum sustained wind field for quadrants

**NE** Radius in nautical miles for northeast quadrant

**SE** Radius in nautical miles for southeast quadrant

**SW** Radius in nautical miles for southwest quadrant

**NW** Radius in nautical miles for northwest quadrant

## Examples

```
## Not run:  
get_fstadv("http://www.nhc.noaa.gov/archive/1998/1998ALEXadv.html") |>  
  tidy_fcst_wr()  
  
## End(Not run)
```

---

tidy_wr	<i>tidy_wr</i>
---------	----------------

---

### Description

Tidy current wind radius of a fstadv dataframe object.

### Usage

```
tidy_wr(df)
```

### Arguments

df                    fstadv dataframe object

### Details

Returns tidy dataframe of current wind radius values for a cyclone. Returns only complete.cases (based on quadrants).

**StormKey** Unique identifier of cyclone

**Adv** Advisory number

**Date** Date and time of advisory

**Windfield** Minimum wind speed expected

**NE** Radius of 'Windfield' in the northeast quadrant

**SE** Radius of 'Windfield' in the southeast quadrant

**SW** Radius of 'Windfield' in the southwest quadrant

**NW** Radius of 'Windfield' in the northwest quadrant

### Examples

```
## Not run:  
get_fstadv("http://www.nhc.noaa.gov/archive/1998/1998ALEXadv.html") |>  
  tidy_wr()  
  
## End(Not run)
```

---

tracking_chart	<i>tracking_chart</i>
----------------	-----------------------

---

## Description

Build base tracking chart using ggplot

## Usage

```
tracking_chart(countries = TRUE, states = TRUE, res = 110, ...)
```

## Arguments

countries	Show country borders. Default TRUE.
states	Show state boundaries. Default TRUE. Ignored if 'countries' is FALSE.
res	Resolution of charts; 110 (1:110m), 50 (1:50m), 10 (1:10m). Default is low. The higher the resolution, the longer the plot takes to appear.
...	Additional ggplot2::aes parameters

## Value

Returns ggplot2 object that can be printed directly or have new layers added.

## See Also

[aes](#)

## Examples

```
## Not run:
# Build map with white land areas, thin black borders
tracking_chart(color = "black", size = 0.1, fill = "white")

# 50nm resolution, no states
tracking_chart(res = 50, states = FALSE, color = "black", size = 0.1,
              fill = "white")

# 50nm resolution, coastlines only
tracking_chart(countries = FALSE, res = 50, color = "black", size = 0.1,
              fill = "white")

# Adding and modifying with ggplot functions
tracking_chart(color = "black", size = 0.1, fill = "white") +
  ggplot2::labs(x = "Lon", y = "Lat", title = "Base Tracking Chart")

## End(Not run)
```

---

`twoal`*twoal*

---

**Description**

Atlantic Tropical Weather Outlook

**Usage**

`twoal()`

**Details**

This function parses the latest xml tropical weather outlook for the Atlantic ocean. The core data is located in the 'channel\$item' element where 'title', 'description' and 'pubDate' reside. 'link' is also available to point to the NHC website.

---

`twoep`*twoep*

---

**Description**

East Pacific Tropical Weather Outlook

**Usage**

`twoep()`

**Details**

This function parses the latest xml tropical weather outlook for the east Pacific. The core data is located in the 'channel\$item' element where 'title', 'description' and 'pubDate' reside. 'link' is also available to point to the NHC website.

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