

# Package ‘metScanR’

January 18, 2017

**Title** Find, Map, and Gather Data from Meteorological Stations

**Version** 0.0.1

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**Description** A tool for locating, mapping, and gathering meteorological data from various US surface networks: COOP, USCRN, USRCRN, AL-USRCRN, ASOS, AWOS, SNOTEL, SNOTEL-LITE, SCAN, SNOW, and NEON. The functions within this package allow the user to locate stations that are near a user specified latitude and longitude (or NEON site). Future updates to the package will allow the user to obtain datasets from these networks.

**Depends** R (>= 3.3.1)

**Imports** geosphere, RColorBrewer, plotly, leaflet, ggmap, rjson

**License** GPL-3

**Encoding** UTF-8

**LazyData** true

**RoxygenNote** 5.0.1.9000

**URL** <https://cflagg.github.io/metScanR/>

**NeedsCompilation** no

**Author** Josh Roberti [aut, cre],  
Cody Flagg [aut],  
Lee Stanish [aut],  
Sam Weintraub [aut],  
Derek Smith [aut]

**Maintainer** Josh Roberti <jaroberti87@gmail.com>

**Repository** CRAN

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| mapSiteFinder | <i>mapSiteFinder</i> |
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**Description**

A plotting tool that maps the results of `siteFinder()`. This function requires internet connection!

**Usage**

```
mapSiteFinder(x)
```

**Arguments**

x                    A list output from `siteFinder()`

**Value**

A map of resulting environmental monitoring sites found using `siteFinder()`

**Author(s)**

Josh Roberti <jaroberti87@gmail.com>  
Lee Stanish  
Cody Flagg  
Sam Weintraub  
Derek Smith

**See Also**

Currently none

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|                         |
|-------------------------|
| NEON_masterTraceability |
| <i>NEON Sites:</i>      |

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**Description**

A dataset containing metadata of sites within the National Ecological Observatory Network (NEON):

**Usage**

```
data(NEON_masterTraceability)
```

**Format**

A data frame with 80 rows and 17 variables

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NOAA\_NCEI\_masterTraceability  
*NOAA sites:*

---

**Description**

A dataset containing metadata for networks and sites managed by the National Oceanic and Atmospheric Administration (NOAA):

**Usage**

```
data(NOAA_NCEI_masterTraceability)
```

**Format**

A data frame with 11151 rows and 17 variables

---

NRCS\_masterTraceability  
*NRCS sites:*

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**Description**

A dataset containing metadata for networks and sites managed by the National Resources Conservation Service (NRCS):

**Usage**

```
data(NRCS_masterTraceability)
```

**Format**

A data frame with 2217 rows and 17 variables

---

 siteFinder
 

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*siteFinder*


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### Description

A search tool that finds environmental monitoring sites from various networks (US only): COOP, USCRN, USRCRN, ASOS, AWOS, SNOTEL, SCAN, and NEON.

### Usage

```
siteFinder(NEON.site = NULL, Lat = NULL, Lon = NULL, radius = 150,
  networks = "all", startDate = NULL, endDate = NULL, vars = "all",
  elevThresh = NULL)
```

### Arguments

**NEON.site** Mandatory if Lat and Lon are NULL; An object of class character containing a 4-letter NEON site Identifier. The lat/lon pair of the NEON.site will be used as your point of interest (POI).

**Lat** Mandatory if NEON.site is NULL; An object of numeric containing the latitude of your POI.

**Lon** Mandatory if NEON.site is NULL; An object of numeric containing the longitude of your POI.

**radius** An object of class numeric in kilometers (km) which describes the radius from your point of interest that will be searched for sites. Defaults to: 100 (km)

**networks** A vector of class character containing the network names; Defaults to 'all' networks. Current networks are:

COOP - Cooperative Observer Network [<http://www.nws.noaa.gov/om/coop/>],[<http://www.nws.noaa.gov>]

USCRN - United States Climate Reference Network [<https://www.ncdc.noaa.gov/crn/>]

USRCRN - United States Regional Climate Reference Network; includes South-west US regional network and Alabama regional network [<https://www.ncdc.noaa.gov/crn/usrcrn/>]

ASOS - Automated Surface Observing System [<https://www.ncdc.noaa.gov/data-access/land-based-station-data/land-based-datasets/automated-surface-observing-system-asos>]

AWOS - Automated Weather Observing System [<https://www.ncdc.noaa.gov/data-access/land-based-station-data/land-based-datasets/automated-weather-observing-system-awos>]

SNOTEL - SNOW TELometry [<http://www.wcc.nrcs.usda.gov/snow/>]

SCAN - Soil Climate Analysis Network [<http://www.wcc.nrcs.usda.gov/scan/>]

NEON - National Ecological Observatory Network [<http://www.neonscience.org/>]

Currently there are 13,368 available stations comprised within all above networks. Some stations are part of various networks. For instance some ASOS stations are also part of the COOP network. We are in the process of adding more networks to the database.

**startDate** An object of class character containing the start date: 'YYYY-mm-dd'. Defaults to NULL

**endDate** An object of class character containing the end date: 'YYYY-mm-dd'. Defaults to NULL

**vars** A vector of class character containing search variables. Defaults to 'all.' The network(s) that measure the specified variable(s) will be returned. The vars were generated on a network by network basis, assuming each station within said network collects the basic suite of measurements specified by the network. For more information regarding measurement types by network, please see the links above. Users can search for individual variables using the vars command with one or many of the following variables:

AIR\_TEMP - Air temperature

ALT - Altimeter Setting

DEW\_TEMP - Dewpoint Temperature

PRECIP\_BULK - Bulk Precipitation

PRECIP\_TYPE - Precipitation Type

PRES - Barometric Pressure

RH - Relative Humidity

SFC\_TEMP - Surface Temperature

SKY - Sky Conditions

SNOW\_DEPTH - Snow Depth

SNOW\_WC - Snow Water Content

SOIL\_MOIS - Soil Moisture

SOIL\_TEMP - Soil Temperature

SOL\_RAD - Solar Radiation

TSTORM - Thunderstorm Detection

VIS - Visibility

WET - Wetness

WIND\_DIR - Wind Direction

WIND\_SPE - Wind Speed

**elevThresh** An object of class numeric in meters (m) which defines the elevation threshold to filter resulting sites. This threshold is relative to your POI. For instance, if elevThresh is set to '1000', any sites with elevations less than or equal to 1000 m relative to the POI will be returned.

### Value

object A list containing a vector comprising the latitude and longitude of center of search area, and a dataframe of environmental monitoring sites that meet the search criteria.

### Author(s)

Josh Roberti <jaroberti87@gmail.com>  
Cody Flagg  
Lee Stanish  
Sam Weintraub  
Derek Smith

### See Also

Currently none

### Examples

```
siteFinder(NEON.site="HARV",startDate="1965-10-20",endDate="1986-09-02")  
siteFinder(Lat=40.05,Lon=-105.27,startDate="2000-01-05",radius=45,network="COOP")
```

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