# Obtaining ws_monitor Data

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## Obtaining Data

The PWFSLSmoke package currently has 4 different sources of data for creating monitor objects:

- Air Now
- airsis
- EPA
- WRCC

Below we will look at how to use each of these methods.

### Air Now

To work with Air Now data we are going to use the `airnow_load` function. Let's take a look at the funtcion

```
?airnow_load

>
...
Usage

  airnow_load(startdate, enddate, monitorIDs = NULL, parameter = "PM2.5",
              baseUrl = "http://smoke.airfire.org/RData/AirNowTech/")
Arguments

  startdate
    desired start date (integer or character representing YYYYMMDD[HH])
  enddate
    desired end date (integer or character representing YYYYMMDD[HH])
  monitorIDs
    The set of monitor IDs to be subsetted. When set to NULL, the function returns
    all the monitor IDs available in the metadata
  parameter
    The parameter of interest
  baseUrl
    base URL for AirNow meta and data files
...
```

Like most functions that load data, we need a `startdate` and an `enddate`. The rest of the arguments are optional. If we know what monitors we want and have their ID's, we can specify that with the `monitorIDs` paramater. We can also choose to get data other then PM 2.5 with the `parameter` parameter. Here is a complete lits of all available parameter codes. Finally, we can pick a base URL. This would be used to download RData from somewhere other than http://smoke.airfire.org/RData/AirNowTech/.

Heres an example of how this function could be used to map temperature data in the state of Washington for the first 10 days of August, 2015:

```
> data <- airnow_load(20150801, 20150810, parameter = 'TEMP')
> data <- monitor_subsetBy(data, stateCode == 'WA')
> monitor_leaflet(data, breaks = c(30, 32, 37, 40, 42, 45, 50))
```

### airsis

To work with Air Now data we are going to use the `airnow_load` function. Let's take a look at the funtcion

```
?airsis_load

>
...
Usage

  airsis_load(startdate, enddate, monitorIDs = NULL, stateCodes = NULL,
              url = "http://smoke.airfire.org/RData/AIRSIS/AIRSIS_monitors.RData")
Arguments

  startdate
    desired start date (integer or character representing YYYYMMDD[HH])
  enddate
    desired end date (integer or character representing YYYYMMDD[HH])
  monitorIDs
    optional vector of monitorIDs used to subset the data
  stateCodes
    optional vector of stateCodes used to subset the data
  url
    The location of the meta and data files (Default = 'http://smoke.airfire.org/RData/AirNowTech/')
...
```

### EPA

To work with Air Now data we are going to use the `airnow_load` function. Let's take a look at the funtcion

```
?epa_createMonitorObject

>
...
Usage

  epa_createMonitorObject(parameterName = "PM2.5", parameterCode = 88101,
                          year = 2013, verbose = TRUE,
                          baseUrl = "http://aqsdr1.epa.gov/aqsweb/aqstmp/airdata/")
Arguments

  parameterName
    name of parameterName.
  parameterCode
    specific parameter code (e.g. PM2.5 could be 88101 or 88502)
  year
    year
  verbose
```

```
    logical flag to generate verbose output
  baseUrl
    base URL for archived hourly data
...
```

## WRCC

To work with Air Now data we are going to use the `wrcc_load` function. Let's take a look at the funtcion

```
?wrcc_load

>
...
Usage

  wrcc_load(startdate, enddate, monitorIDs = NULL, stateCodes = NULL,
            url = "http://smoke.airfire.org/RData/WRCC/WRCC_monitors.RData")
Arguments

  startdate
    desired start date (integer or character representing YYYYMMDD[HH])
  enddate
    desired end date (integer or character representing YYYYMMDD[HH])
  monitorIDs
    optional vector of monitorIDs used to subset the data
  stateCodes
    optional vector of stateCodes used to subset the data
  url
    The location of the meta and data files (Default = 'http://smoke.airfire.org/RData/AirNowTech/')
...
```

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Next (Dataframes and Simple Plots) #TODO ALIGN Index