# Contents

# 1 Ideas, To Do, Resources, etc

http://science.sciencemag.org/content/313/5789/940http://www.pnas.org/content/108/32/13165
http://rstb.royalsocietypublishing.org/content/371/1696/20150178http://fam.nwcg.gov/fam-web/weatherfirecd/
fire_files.htmhttp://fam.nwcg.gov/fam-web/kcfast/mnmenu.htmhttp://www.nific.gov

http://nationalmap.gov/small_scale/atlasftp.html

https://daac.ornl.gov/cgi-bin/dsviewer.pl?ds_id=1293
https://www.fs.fed.us/psw/publications/4451/psw_2009_4451-001.pdf
https://labcit.ligo.caltech.edu/~ethrane/Resources/UNIX/
https://community.tableau.com/thread/141548
?

https://gis.stackexchange.com/questions/664/whats-the-difference-between-a-projection-and-a-datum
http://resources.esri.com/help/9.3/arcgisengine/dotnet/89b720a5-7339-44b0-8b58-0f5bf2843393.htm
http://grindgis.com/blog/wgs84-vs-nad83

https://www.nifc.gov/fireInfo/fireInfo_statistics.html

# 2 PM2.5 Surface Paper Notes

## 2.1 Papers published in Atmospheric Environment - use as style example

# 3 Papers to cite/discuss in Introduction and/or Discussion

## 3.1 Notes on Papers

# 4 Fire attribution paper

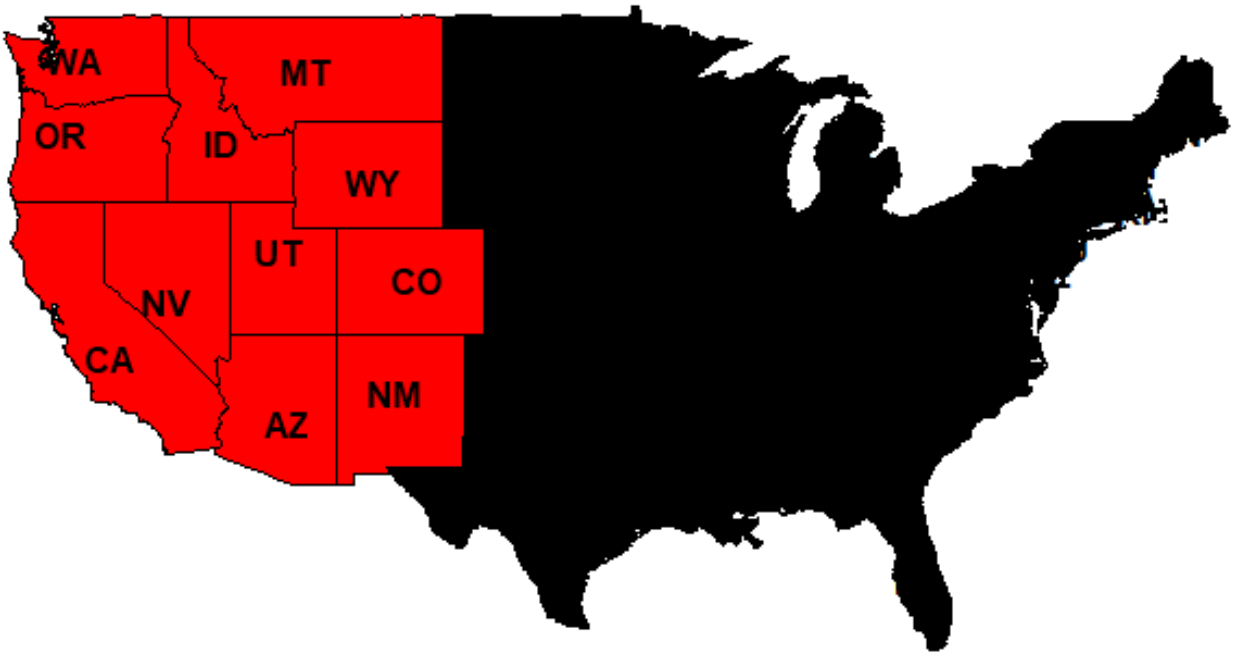# 5    Data Sources for Machine Learning



Figure 1: Map of 11-state study area.

**All PM2.5 Monitor Locations**
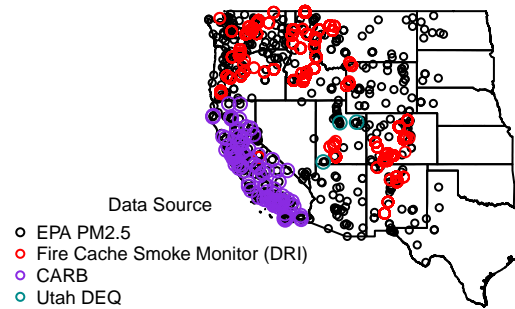
## All PM2.5 Observation Locations



Figure 2: Map of locations of PM2.5 observations for entire study period, 2008 to 2014.
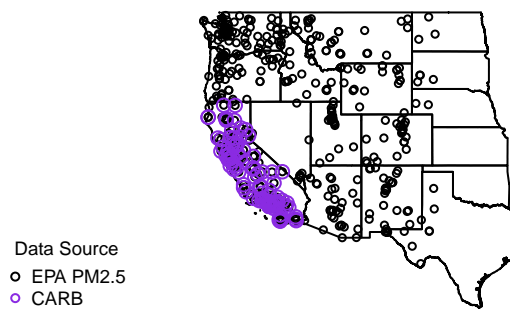
## PM2.5 Observation Locations, 2008



Figure 3: Map of locations of PM2.5 observations during 2008.
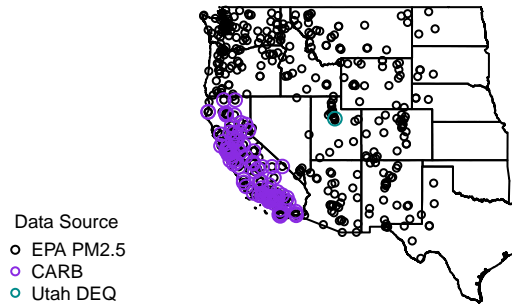
## PM2.5 Observation Locations, 2009



Figure 4: Map of locations of PM2.5 observations during 2009.

## PM2.5 Observation Locations, 2010



Figure 5: Map of locations of PM2.5 observations during 2010.

**PM2.5 Observation Locations, 2011**



Figure 6: Map of locations of PM2.5 observations during 2011.

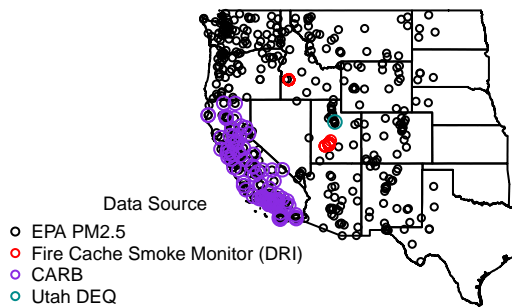**PM2.5 Observation Locations, 2012**



Figure 7: Map of locations of PM2.5 observations during 2012.

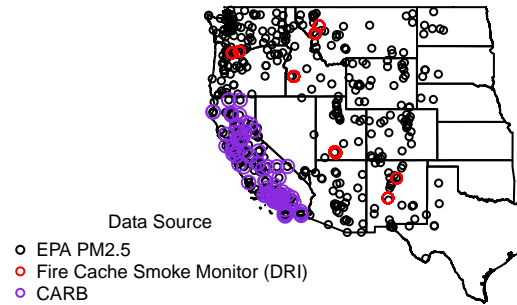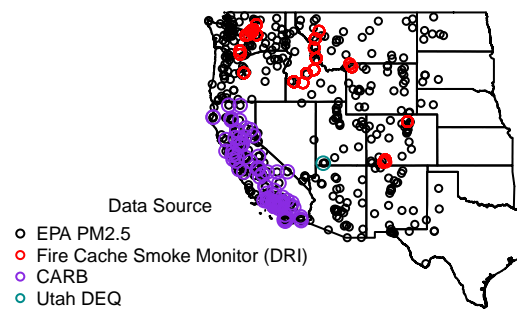# PM2.5 Observation Locations, 2013
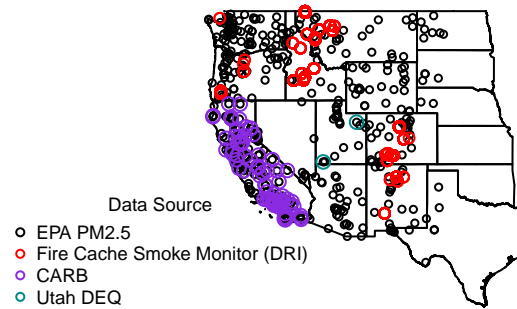


Figure 8: Map of locations of PM2.5 observations during 2013.

# PM2.5 Observation Locations, 2014
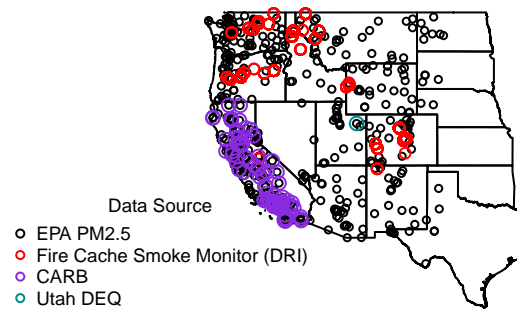


Figure 9: Map of locations of PM2.5 observations during 2014.

## 5.1 PM2.5 Monitor data from US EPA AQS Air Data Query Tool

**Data Source**

https://www.epa.gov/outdoor-air-quality-data/forms/contact-us-about-outdoor-air-quality-data

https://aqs.epa.gov/aqsweb/airdata/download_files.html#Daily

https://aqs.epa.gov/aqsweb/airdata/aqs_monitors.ziphttps://aqs.epa.gov/aqsweb/airdata/download_files.html#Meta

**Brief Description**

**Notes**
**File Format**
**Data Filtering and Processing**
**Final Variable(s)**
**Methods**

**Quality Control**
**Script Names**

**Data File Names**
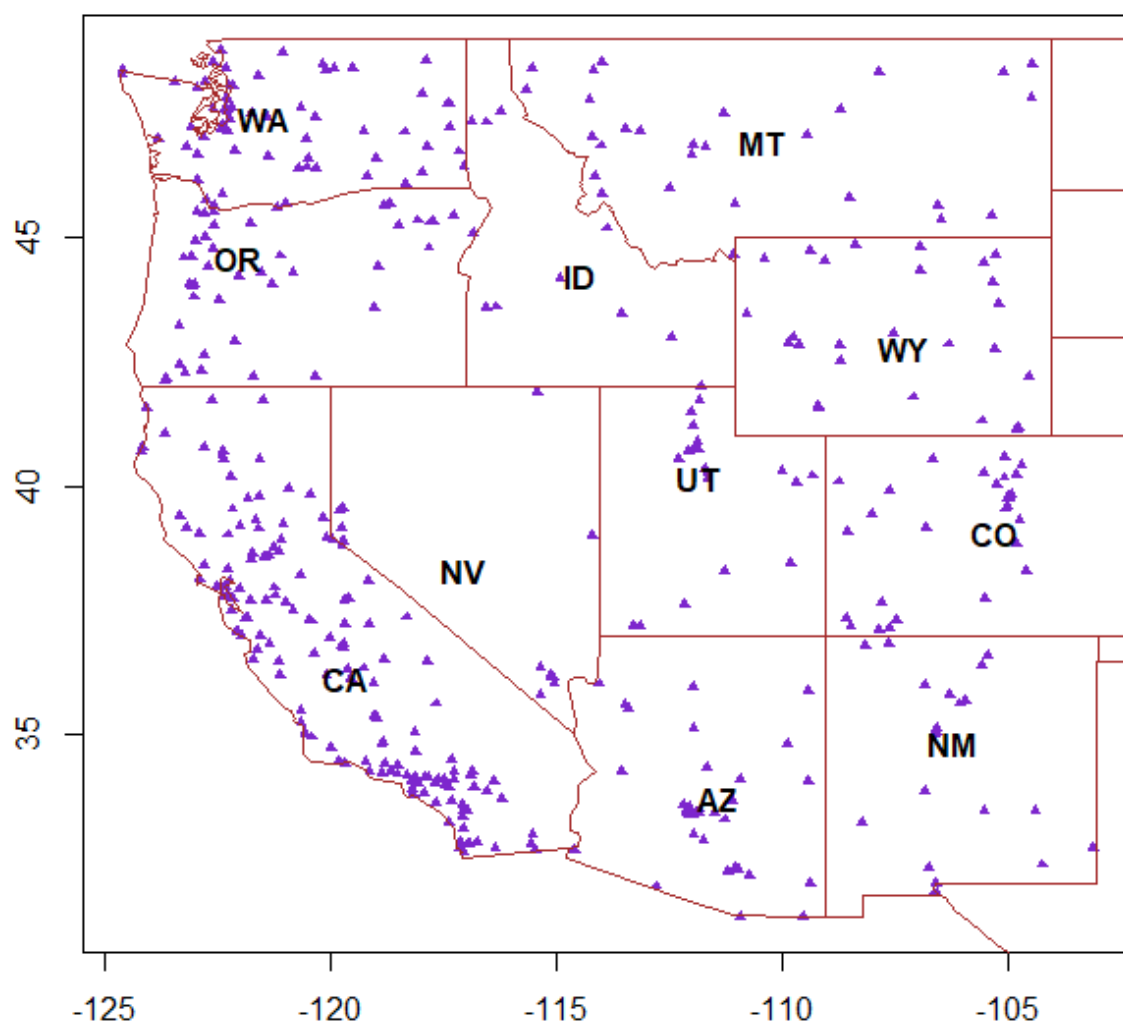
Figure 10: Map of 88101 and 88502 PM$_{2.5}$ Monitors.

**EPA PM2.5 Time Series**
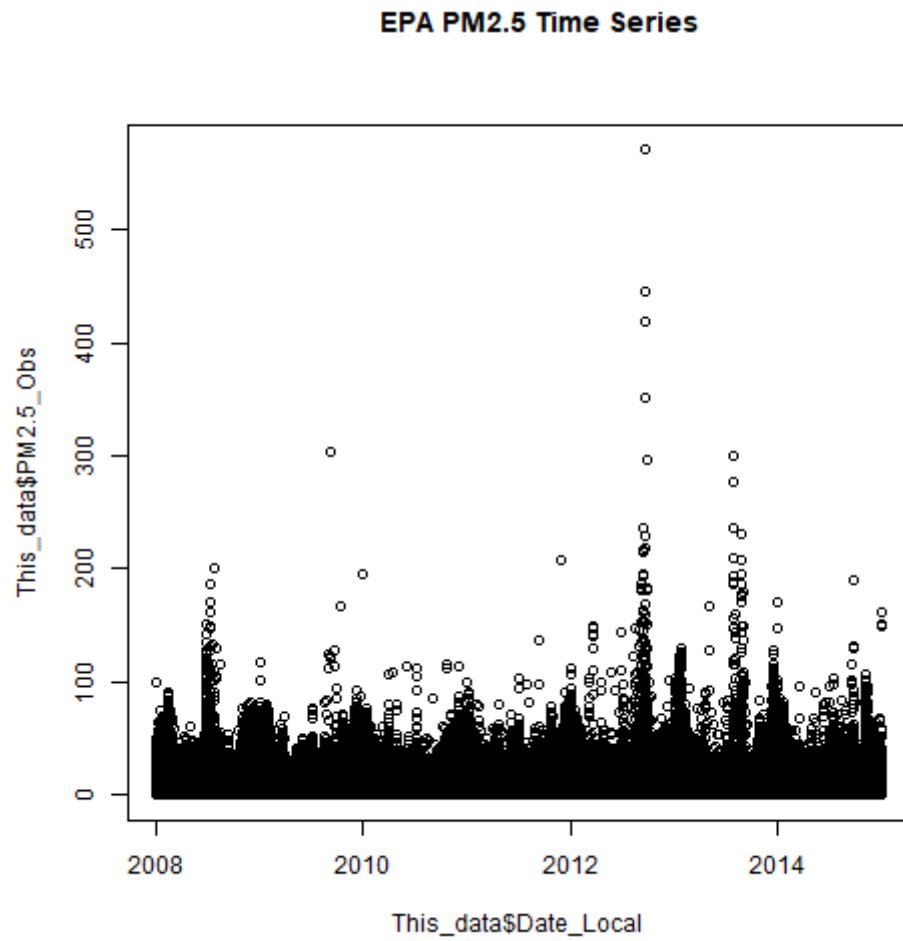


Figure 11: EPA PM2.5 time series.

## 5.2 EPA PM2.5 Plots

## 5.3    PM$_{2.5}$ data from the Federal Land Manager Environmental Database

**Data Source**

http://views.cira.colostate.edu/fed/DataWizard/Default.aspx

**Brief Description**

**Notes**

http://views.cira.colostate.edu/fed/User/Feedback.aspx

**File Formats**

**Data Filtering and Processing**
**Final Variable(s)**
**Methods**

**Quality Control**
**Script Names**

**Original Data File Names**

**Processed/Cleaned Data File Names**

## 5.4 PM$_{2.5}$ data from the Fire Cache Smoke Monitor Archive

**Data Source**

michaelbroughton@fs.fed.us
https://wrcc.dri.edu/cgi-bin/smoke.pl

**Brief Description**
**Notes**

**File Formats**

**Data Filtering and Processing**
**Final Variable(s)**
**Methods**

**Quality Control**
**Script Names**


**Original Data File Names**

**Processed/Cleaned Data File Names**

# Download instructions

https://wrcc.dri.edu/cgi-bin/smoke.pl

https://732215511434.signin.aws.amazon.com/console

**Fire Cache Smoke Monitor (DRI) Time Series**



Figure 12: Fire Cache Smoke Monitor (DRI) time series.

## 5.5 Fire Cache Smoke Monitor (DRI) Plots

## Fire Cache Smoke Monitor (DRI) Time Series, < 1000 ug/m3
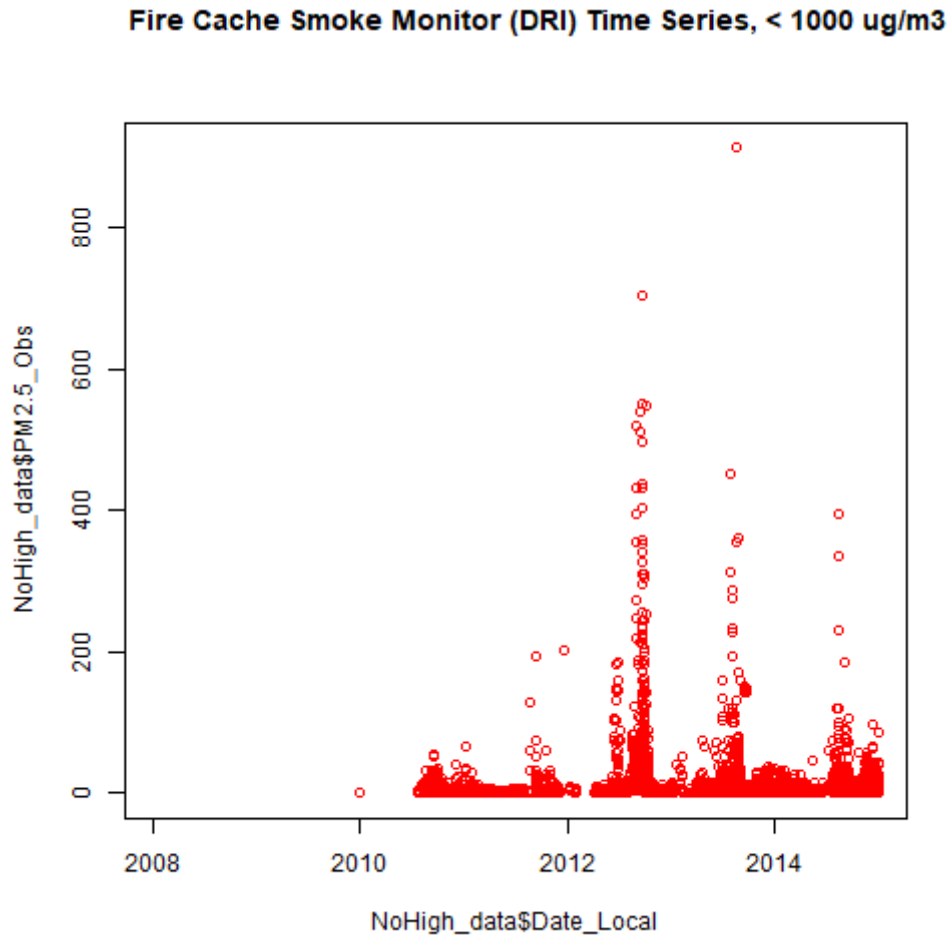


Figure 13: Fire Cache Smoke Monitor (DRI) time series without data above 1000 ug/m3 so that the majority of data can be seen.

## 5.6 California State Air Quality and Meteorological Information System (AQMIS)

**Data Source**

https://www.arb.ca.gov/aqmis2/aqmis2.php

**Brief Description**

**Notes**

**File Formats**

**Data Filtering and Processing**
**Final Variable(s)**
**Methods**

**Quality Control**
**Script Names**

**Original Data File Names**

**Processed/Cleaned Data File Names**
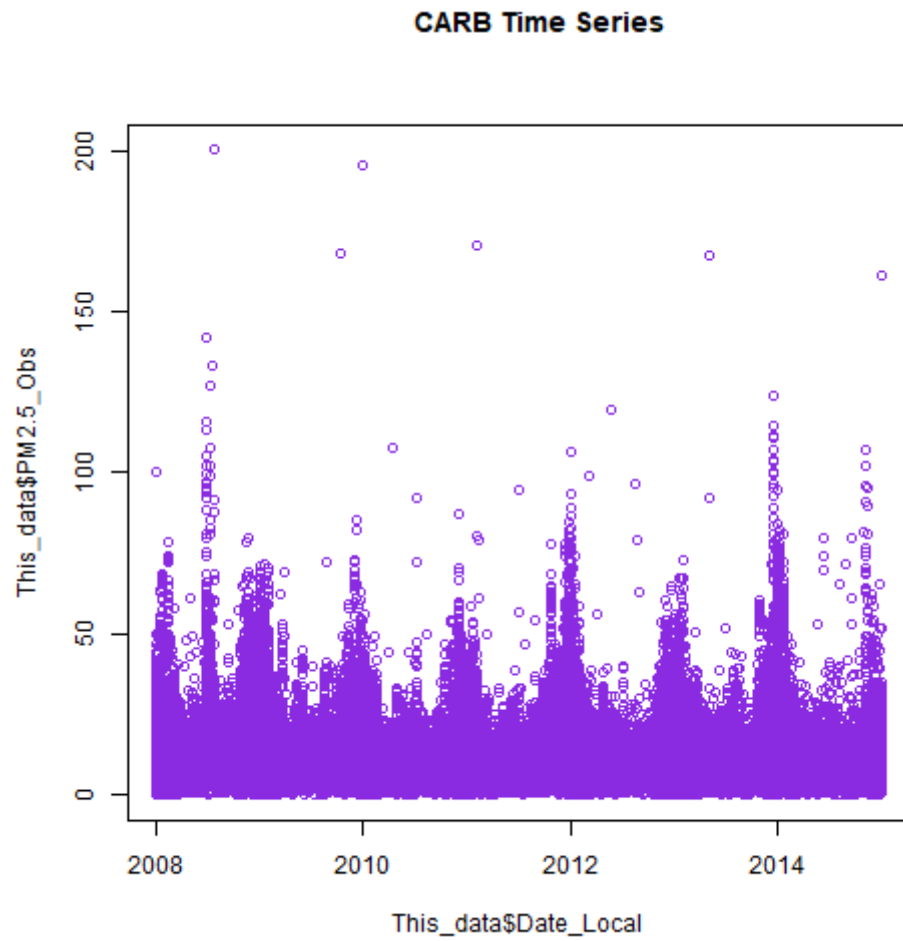
**CARB Time Series**



Figure 14: CARB time series.

## 5.7 CARB Plots

## 5.8 PM$_{2.5}$ Monitor data from Uintah Basin

**Data Source**

**Brief Description**

**Notes**

**File Formats**

**Data Filtering and Processing**

**Final Variable(s)**
**Methods**

**Quality Control**
**Script Names**

**Original Data File Names**

**Processed/Cleaned Data File Names**
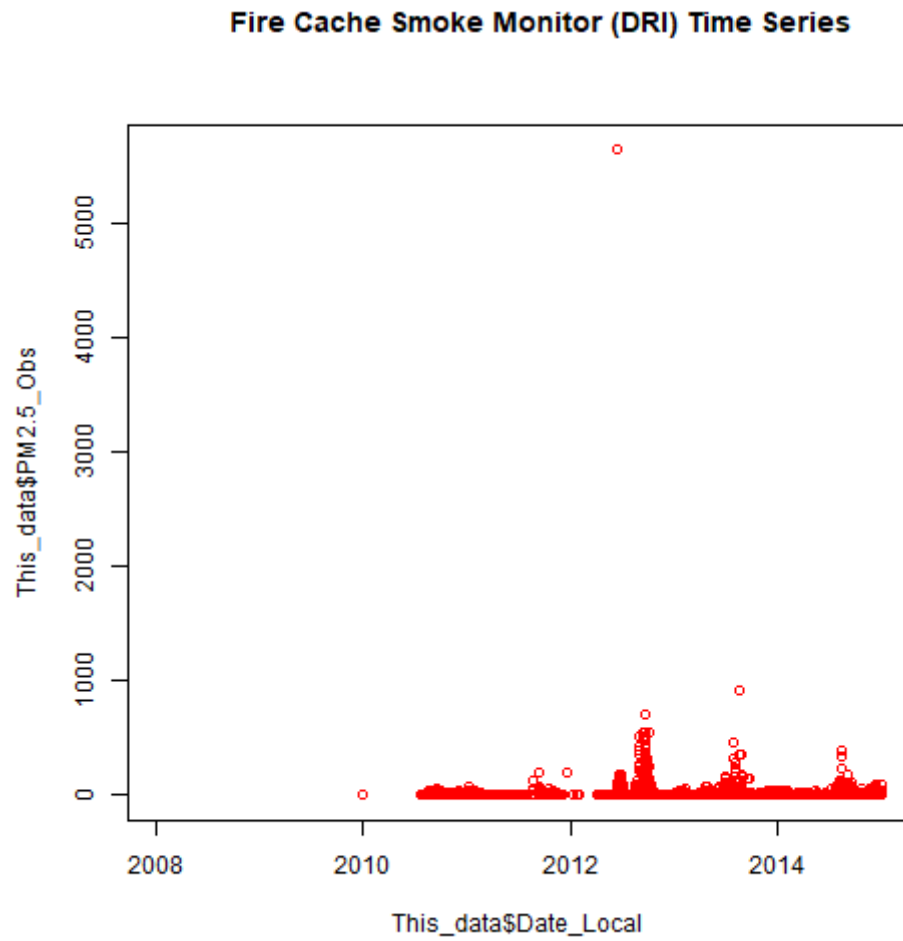
## 5.9  PM$_{2.5}$ data from PCAPS in the Salt Lake Valley

**Data Source**

geoff@chemeng.utah.edu
https://www.sciencedirect.com/science/article/pii/S1352231011011204

**Brief Description**
**Notes**
**File Formats**

**Data Filtering and Processing**

**Final Variable(s)**
**Methods**

**Quality Control**
**Script Names**

**Original Data File Names**

**Processed/Cleaned Data File Names**

## 5.10 Utah Department of Environmental Quality

**Data Source**

http://www.airmonitoring.utah.gov/dataarchive/archpm25.htm

**Brief Description**

**Notes**

http://www.airmonitoring.utah.gov/network/Counties.htm
http://www.airmonitoring.utah.gov/dataarchive/2016DailyMaxPM25.pdf

**File Formats**
**Data Filtering and Processing**
**Final Variable(s)**
**Methods**

**Quality Control**
**Script Names**

**Original Data File Names**

**Processed/Cleaned Data File Names**

**Utah DEQ Time Series**
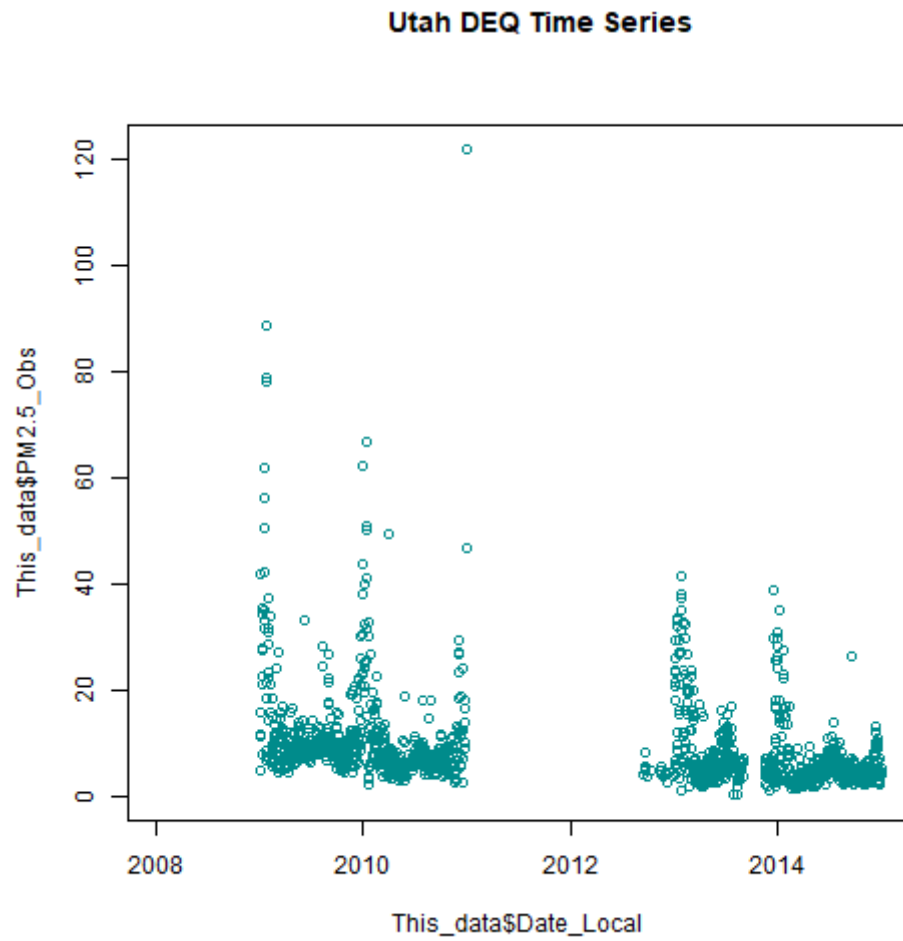


Figure 15: Utah DEQ time series.

## 5.11   Utah DEQ Plots

## 5.12 MODIS AOD

**Data Source**

**Brief Description**

**Notes**

**File Format**

**Data Filtering and Processing**

**Final Variable(s)**

**Methods**

**Quality Control**
**Script Names**


**Data File Names**

## 5.13   GASP-West AOD

**Data Source**

**Brief Description**

**Notes**

**File Format**
**Data Filtering and Processing**
**Final Variable(s)**
**Methods**

**Quality Control**
**Script Names**

**Data File Names**

## 5.14   MERRA-2

**Data Source**

**Brief Description**
**Notes**
**File Formats**
**Data Filtering and Processing**
**Final Variable(s)**
**Methods**

**Quality Control**
**Script Names**

**Original Data File Names**

**Processed/Cleaned Data File Names**

## 5.15   MAIAC

**Data Source**

**Brief Description**
**Notes**
**File Format**
**Data Filtering and Processing**
**Final Variable(s)**
**Methods**

**Quality Control**
**Script Names**

**Data File Names**

## 5.16 MODIS Thermal Anomalies/Fire Daily L3 Global 1km (MOD14 and MYD14)

**Data Source**

**Brief Description**

**Notes**
**File Format**

**Data Filtering and Processing**
**Final Variable(s)**
**Methods**

**Quality Control**
**Script Names**

**Data File Names**

## 5.17  Landsat-derived burned area essential climate variable (BAECV) fire activity data

**Data Source**

**Brief Description**

**Notes**
**File Format**

**Data Filtering and Processing**
**Final Variable(s)**
**Methods**

**Quality Control**
**Script Names**

**Data File Names**

## 5.18 MODIS/Terra and Aqua Burned Area Monthly L3 Global 500 m SIN Grid V006 (MCD64A1)

**Data Source**

**Brief Description**

**Notes**
**File Format**

**Data Filtering and Processing**
**Final Variable(s)**
**Methods**

**Quality Control**
**Script Names**

**Data File Names**

## 5.19    Visible Infrared Imaging Radiometer Suite (VIIRS) (VNP14IMGTDL_NRT)

**Data Source**

**Brief Description**

**Notes**
**File Format**

**Data Filtering and Processing**
**Final Variable(s)**
**Methods**

**Quality Control**
**Script Names**

**Data File Names**

## 5.20 Classified land cover information from the Landsat-derived NLCD 2011

**Data Source**

**Brief Description**

**Notes**
**File Format**

**Data Filtering and Processing**
**Final Variable(s)**
**Methods**

**Quality Control**
**Script Names**

**Data File Names**

## 5.21 MODIS Snow Cover Daily L3 Global 500m Grid, Version 6 (MOD10A1 and MYD10A1)

**Data Source**

**Brief Description**

**Notes**
**File Format**
**Data Filtering and Processing**
**Final Variable(s)**
**Methods**

**Quality Control**
**Script Names**

**Data File Names**

## 5.22 Elevation
**Data Source**

**Brief Description**

**Notes**
**File Format**
**Data Filtering and Processing**
**Final Variable(s)**
**Methods**

**Quality Control**
**Script Names**

**Data File Names**

## 5.23 Meteorological Data

**Data Source**

https://rda.ucar.edu

**Brief Description**

**Notes**

http://strawberryperl.com/https://www.perl.org/https://www.gnu.org/software/wget/

**File Format**

http://www.cpc.ncep.noaa.gov/products/wesley/reading_grib.html

https://labcit.ligo.caltech.edu/~ethrane/Resources/UNIX/

ftp://ftp.cpc.ncep.noaa.gov/wd51we/wgrib2/wgrib2.tgzhttp://www.cpc.ncep.noaa.gov/products/wesley/wgrib2/compile_questions.html

https://dev.openttdcoop.org/projects/home/wiki/Setting_up_a_Windows_compile_environment_using_WSL

http://opengrads.org/

https://cran.r-project.org/web/packages/rNOMADS/rNOMADS.pdfhttp://www.cpc.ncep.noaa.gov/products/wesley/wgrib2/http://www.cpc.ncep.noaa.gov/products/wesley/wgrib.html

**Data Filtering and Processing**
**Final Variable(s)**
**Methods**

**Quality Control**
**Script Names**

**Data File Names**

## 5.24   Dust Storms

**Data Source**

**Brief Description**

**Notes**
**File Format**
**Data Filtering and Processing**
**Final Variable(s)**
**Methods**

**Quality Control**
**Script Names**

**Data File Names**

# 6   Data Sources for CAMx Modeling of Source-Attributed Air Quality Modeling

http://www.weather.gov/spot/monitor/

# 7 CAMx Modeling

# 8 Compiling Data

## 8.1 Processing PM2.5 data

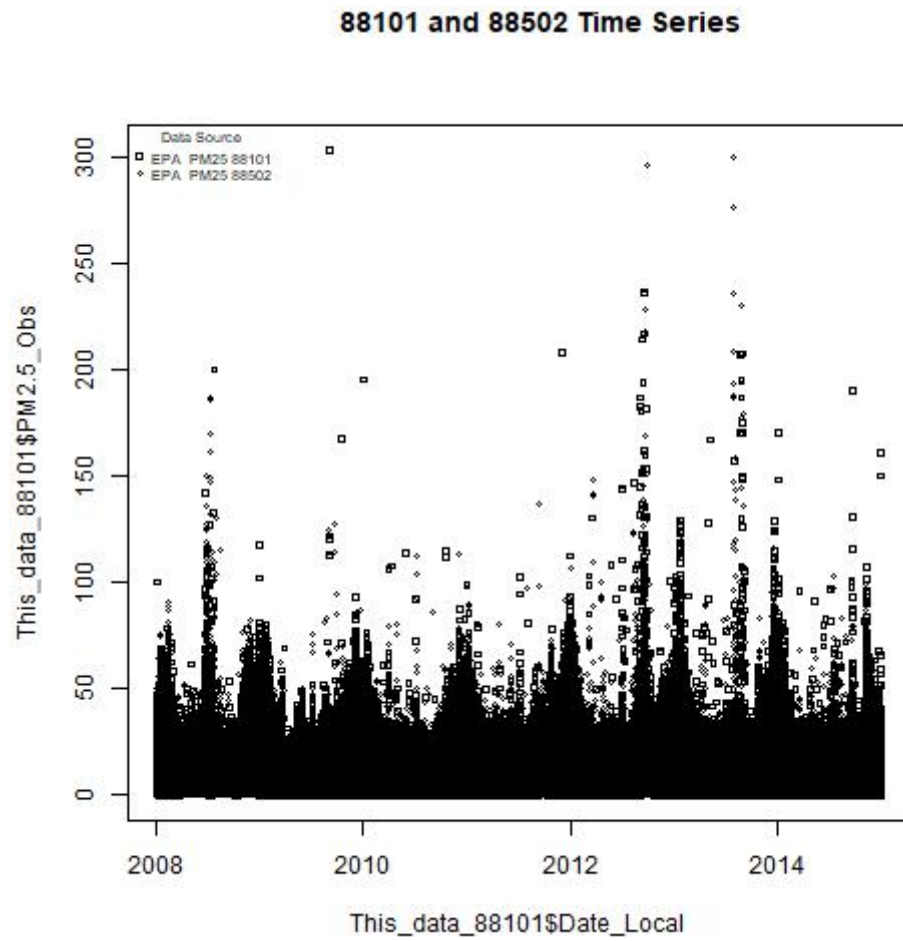### 8.1.1 Notes about very high data points

Figure 16: Time series of 88101 and 88502 PM2.5 data.

## 8.2    Compare 88101 to 88502 PM2.5

# 9 Machine Learning Methods

http://www.cvent.com/events/nasa-aist-machine-learning-workshop/event-summary-1f5144a5d1734ca394
aspxhttps://global.gotomeeting.com/public/recording-player.html?id=owZDmUustOjaW9sJGQ5u9cUG2pBa4D

# 10   Machine Learning Results

# References

https://modis.gsfc.nasa.gov/data/dataprod/mod14.php

http://dx.doi.org/10.5067/MODIS/MYD10A1.006

https://www.mrlc.gov/nlcd2011.php

http://www.ssd.noaa.gov/PS/FIRE/GASP/gasp.html

https://lpdaac.usgs.gov/dataset_discovery/modis/modis_products_table/mcd64a1_v006

http://wfeis.mtri.org/

https://ladsweb.modaps.eosdis.nasa.gov/api/v1/productPage/product=MOD04_L2

https://ladsweb.modaps.eosdis.nasa.gov/api/v1/productPage/product=MYD04_L2

http://rda.ucar.edu/datasets/ds608.0/

https://www.ncdc.noaa.gov/data-access/satellite-data/satellite-data-access-datasets

http://www.ospo.noaa.gov/Products/land/hms.html

https://www.epa.gov/outdoor-air-quality-data/download-daily-data

https://www3.epa.gov/ttnamti1/visdata.html

https://aqs.epa.gov/aqsweb/documents/codetables/methods_all.html

https://www.epa.gov/air-emissions-inventories/national-emissions-inventory-nei

https://www.ncdc.noaa.gov/stormevents/pd01016005curr.pdf

https://www.ncdc.noaa.gov/stormevents/

https://www.ncdc.noaa.gov/stormevents/details.jsp