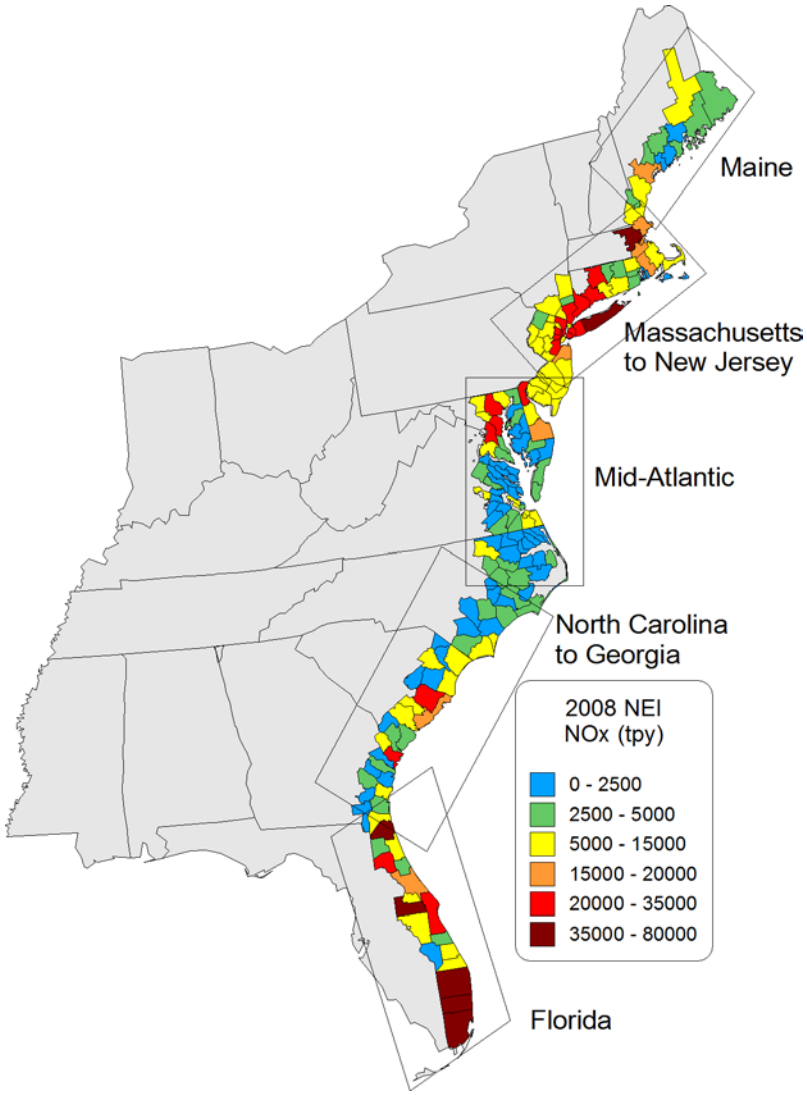
AR Study
BOEM 2014-008

Synthesis, Analysis, and Integration of Meteorological and Air Quality Data for the Atlantic Coast Region

Volume I: User's Manual for the Atlantic Region Air Quality Database (Version 1.0)



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Synthesis, Analysis, and Integration of Meteorological and Air Quality Data for the Atlantic Coast Region

Volume I: User's Manual for the Atlantic Region Air Quality Database (Version 1.0)

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ABOUT THE COVER

The graphic on the cover depicts county level emissions of nitrogen oxides (NO_x) for key port/harbor areas along the Atlantic Coast. The emission data are included in the Atlantic Region Air Quality Database (ARAQDB) tool.

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1.0 INTRODUCTION

The Atlantic Region Air Quality Database (ARAQDB) has been developed by ICF International and Air Resource Specialists, Inc. under BSEE Contract No. GS-10F-0124J**,** Synthesis, Analysis, and Integration of Meteorological and Air Quality Data Study. The ARAQDB is comprised of two primary components; an Oracle database containing meteorological, air quality, and emissions data from the Atlantic region, and a custom interactive database tool developed with Microsoft Access 2010. In addition to this manual, the ARAQDB documentation set includes:

- *The Atlantic Region Air Quality Database (Version 1.0) Technical Reference Manual*
- *The Atlantic Region Air Quality Database Online Help* (a PDF version of this manual)

This manual provides instructions for using the database tool. This section and Sections 2 through 6 are intended for general users and provide general data information, step-by-step instructions for retrieving data, and details regarding the various output products available. Section 7 provides detailed instructions to the Oracle database administrator (DBA) or other technical user for using the database tool to add data to the system.

1.1. HISTORY AND PURPOSE

The ARAQDB was developed to provide the BOEM with a synthesized and integrated database containing meteorology and air quality data collected by the Environmental Protection Agency (EPA), the National Weather Service (NWS), the National Data Buoy Center (NDBC), states, and various other agencies. The resulting database contains millions of data points collected in the region from 2000 through 2012. In addition, the database contains emissions inventories for the Atlantic coastal regions for 2008. See Appendix A for a summary of the monitoring data contained in the ARAQDB.

Quality assurance procedures were followed to ensure data were correctly loaded into the ARAQDB from the source files. In addition, suspect data were noted through visual review of time series plots, range checks, and rate of change checks.

1.2. INTERFACE FEATURES

The interactive database tool has been designed to provide users with easy-to-use query capabilities to retrieve specific subsets of the data based on a variety of criteria such as date range, location, and parameter type. The graphical user interface (GUI) consists of menus, forms, and reports developed with Microsoft Access 2010. The form controls, such as list views, drop-down list boxes, command button, etc., are standard controls used in many Microsoft Windows applications and should be familiar to most users.

1.3. NOTATION AND CONVENTIONS OF THE MANUAL

The following notation and conventions are followed throughout this manual:

- Instructions are given for users using a mouse with standard settings. Although all procedures can be carried out via key presses, instructions for doing so have not

been provided. Left-handed users or others with a re-programmed mouse will need to adjust the instructions accordingly.

- *Click* refers to pressing the left mouse button once and releasing it. *Right-click* refers to pressing the right mouse button once and releasing it.
- *Select* when referring to a check box means to *click* on an unchecked check box. A check box with a check means the item is selected.
- *Clear* refers to clicking on a checked check box. A check box without a check means the item is not selected.
- *Select* when referring to a drop-down list means to *click* on one of the items in the list to select the item.
- Procedures are presented by a bold heading following an arrow bullet. For example:
    - **To enter the date range**
- References to interface controls, such as command buttons, check boxes, etc., are in bold print. For example:

    Click the **Start Date** box.

NOTE: indicates exceptions or special conditions regarding the interface.

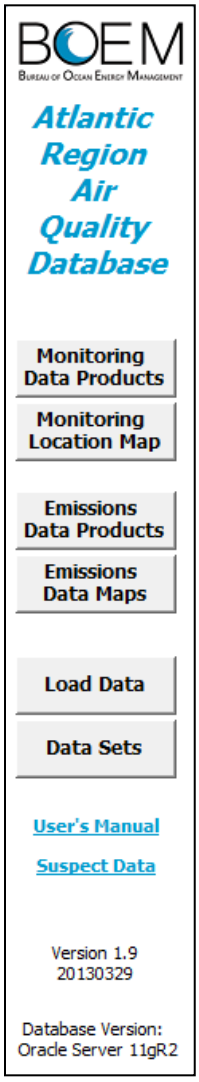
1.4. ONLINE HELP AND SUSPECT DATA SUMMARIES

Online help is available through the interface by clicking the **User's Manual** link on the Main Menu. Online help is an Adobe PDF version of this manual.

Suspect data summaries compiled from quality assurance procedures are available from the interface by clicking the **Suspect Data** link on the Main Menu.

2.0 MAIN MENU

The main menu (Figure 1) is displayed at the left side of the window within Microsoft Access when the ARAQDB database tool is opened. When clicked, each menu button opens a separate interface in the center of the window:



- The **Monitoring Data Products** button (see Section 3) provides an interface for retrieving a specific subset of data. Several output products are available such as Microsoft Excel files and line graphs displaying data points from several different parameters.
- The **Monitoring Location Map** button (see Section 4) provides a map for visual reference to the many monitoring locations.
- The **Emissions Data Products** button (see Section 5) provides an interface for retrieving a specific subset of data from the emissions inventories contained in the database. Charts summarizing the emissions are also available.
- The **Emissions Data Maps** button (see Section 6) provides a series of maps summarizing annual emissions by zone.
- The **Load Data** button (see Section 7) provides an interface for inserting new data into the system and should only be used by an Oracle DBA or other technical user.
- The **Data Sets** button (see Section 8) provides general information about the monitoring programs of the various data sets used to populate the database. In addition, it contains interfaces for configuring source data formats and adding or modifying monitoring location and parameter information.

Figure1. ARAQDB Main Menu.

3.0 MONITORING DATA PRODUCTS

The **Monitoring Data Products** interface is accessed by clicking the **Monitoring Data Products** button on the **Main Menu**. It is designed to help you select a specific subset of monitoring data based on your criteria. In addition, it provides several options for either exporting the retrieved data or presenting the retrieved data in a tabular or graphical output product. The interface is subdivided by a series of tabs that you step through to make your selections as described in the following subsections. When you are finished with the interface, click the **Close** link in the upper-right corner.

3.1. SELECT PRODUCT AND DATE RANGE

The **Select Product and Date Range** tab (Figure 2) of the **Monitoring Data Products** interface asks you two questions; what type of output do you want and what period of time are you interested in? The interface lists the Output Products with a brief description of each. See Appendix B for detailed descriptions and examples of each.

➢ **To select an output product**

- *Click to select* the box to the left of the product name. In Figure 2 the *Diurnal plot* is selected.

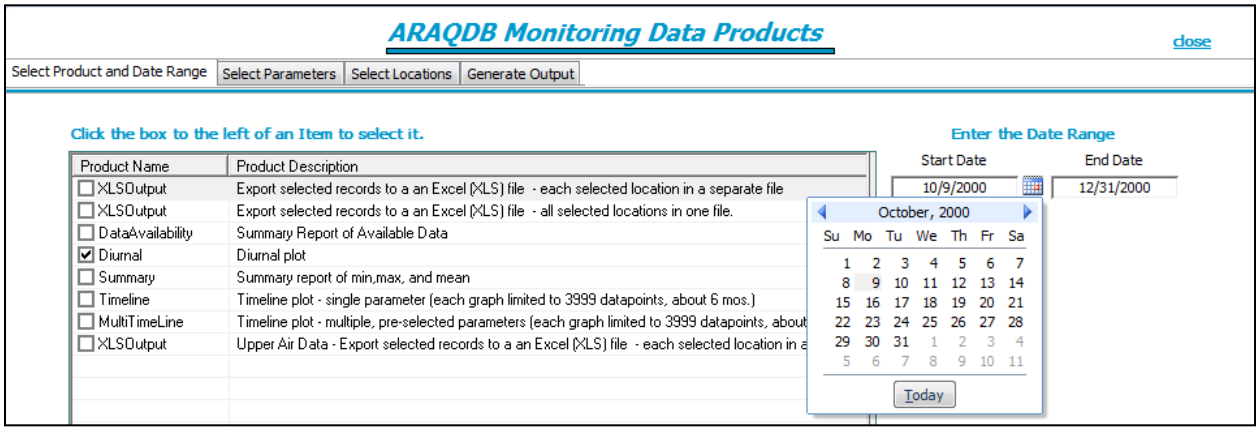


Figure 2. The Select Product and Date Range Tab of the Monitoring Data Products Interface.

➢ **To enter the date range**

1. *Click* the **Start Date** box and type the date.
2. *Click* the **End Date** box and type the date.

Make sure to enter dates in the month/day/year format.

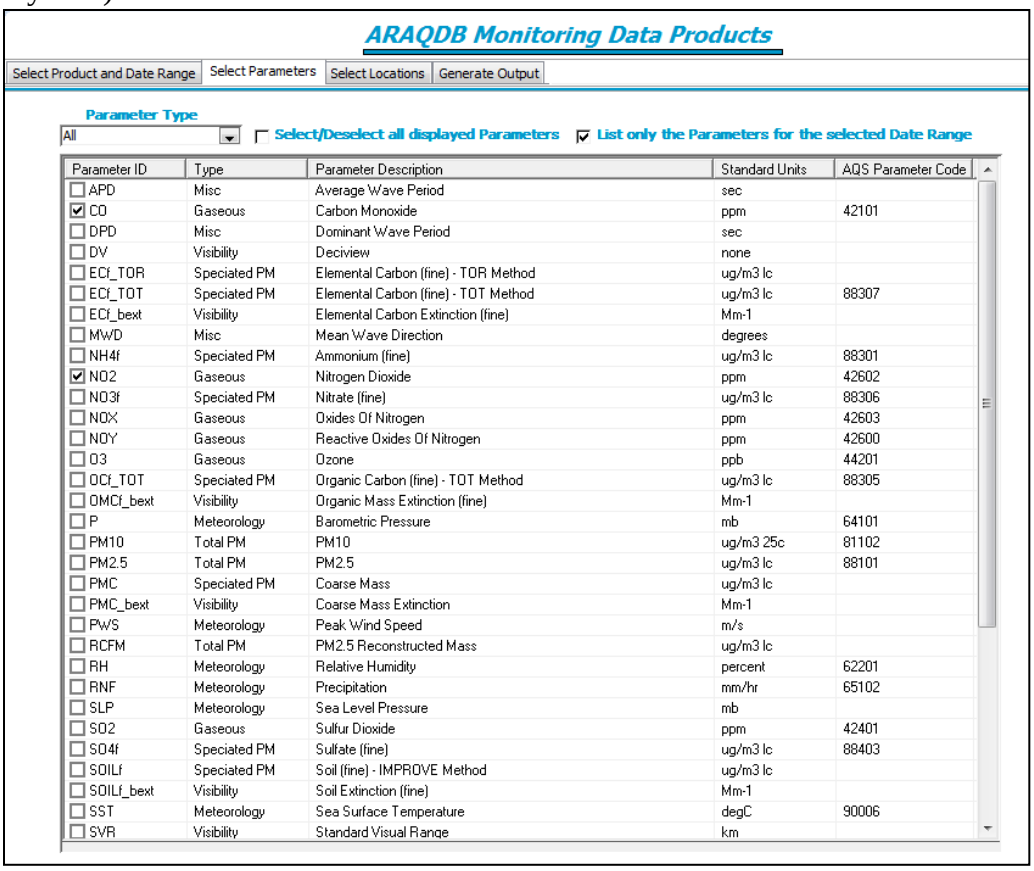
➢ **To select the date range from the calendar control**

1. *Click* the **Start Date or End Date box**. A calendar icon will appear next to the date box.
2. *Click* the calendar icon. Use the left and right arrows on the calendar control to scroll through the months. *Click* a date to select it. The date selected will appear in the date box (in Figure 2, October 9, 2000 is selected).

3.2. SELECT PARAMETERS

NOTE: This tab is not visible if the Multi Timeline plot is selected on the **Select Product and Date Range** tab. If you have selected this output product, proceed to Section 3.3.

The **Select Parameters** tab (Figure 3) allows you to select the monitoring parameters you are interested in. Parameter information includes the Parameter ID, Type (Gaseous, Meteorology, Speciated PM, Total PM, Visibility, or Misc.), Description, Standard Units (of measure), and AQS Parameter Code (the identifying coded used if the parameter exists within EPA's Air Quality System).



Parameter ID	Type	Parameter Description	Standard Units	AQS Parameter Code
APD	Misc	Average Wave Period	sec	
CO	Gaseous	Carbon Monoxide	ppm	42101
DPD	Misc	Dominant Wave Period	sec	
DV	Visibility	Deciview	none	
ECf_TOR	Speciated PM	Elemental Carbon (fine) - TOR Method	ug/m3 lc	
ECf_TOT	Speciated PM	Elemental Carbon (fine) - TOT Method	ug/m3 lc	88307
ECf_bext	Visibility	Elemental Carbon Extinction (fine)	Mm-1	
MWD	Misc	Mean Wave Direction	degrees	
NH4f	Speciated PM	Ammonium (fine)	ug/m3 lc	88301
NO2	Gaseous	Nitrogen Dioxide	ppm	42602
NO3f	Speciated PM	Nitrate (fine)	ug/m3 lc	88306
NOX	Gaseous	Oxides Of Nitrogen	ppm	42603
NOY	Gaseous	Reactive Oxides Of Nitrogen	ppm	42600
O3	Gaseous	Ozone	ppb	44201
OCf_TOT	Speciated PM	Organic Carbon (fine) - TOT Method	ug/m3 lc	88305
OMCf_bext	Visibility	Organic Mass Extinction (fine)	Mm-1	
P	Meteorology	Barometric Pressure	mb	64101
PM10	Total PM	PM10	ug/m3 25c	81102
PM2.5	Total PM	PM2.5	ug/m3 lc	88101
PMC	Speciated PM	Coarse Mass	ug/m3 lc	
PMC_bext	Visibility	Coarse Mass Extinction	Mm-1	
PWS	Meteorology	Peak Wind Speed	m/s	
RCFM	Total PM	PM2.5 Reconstructed Mass	ug/m3 lc	
RH	Meteorology	Relative Humidity	percent	62201
RNF	Meteorology	Precipitation	mm/hr	65102
SLP	Meteorology	Sea Level Pressure	mb	
SO2	Gaseous	Sulfur Dioxide	ppm	42401
SO4f	Speciated PM	Sulfate (fine)	ug/m3 lc	88403
SOILf	Speciated PM	Soil (fine) - IMPROVE Method	ug/m3 lc	
SOILf_bext	Visibility	Soil Extinction (fine)	Mm-1	
SST	Meteorology	Sea Surface Temperature	degC	90006
SVR	Visibility	Standard Visual Range	km	

Figure 3. The Select Parameters Tab of the Monitoring Data Products Interface.

- **To see a list of parameters with values available for the selected date range**
  - *Select* the **List only the Parameters for the selected Date Range** box (as shown in Figure 3 above).

- **To see a complete list of parameters contained in the database**
  - *Clear* the **List only the Parameters for the selected Date Range** box.

- **To see a list of parameters of a particular type**
  - *Click* the arrow on the **Parameter Type** drop-down list box then *click* one of the parameter types to select it.

- **To sort the list by other than the Parameter ID**
  - *Click* a column heading. For example, to sort the list by AQS code, *click* the AQS Parameter Code column heading. The parameters with no AQS code will be listed first and those with a code will follow in ascending order. *Click* the column heading again to sort the list in descending order.

- **To select a parameter to include in your query**
  - *Select* the box to the left of the Parameter ID. In Figure 3, CO (Carbon Monoxide) and NO_2 (Nitrogen Dioxide) are selected.

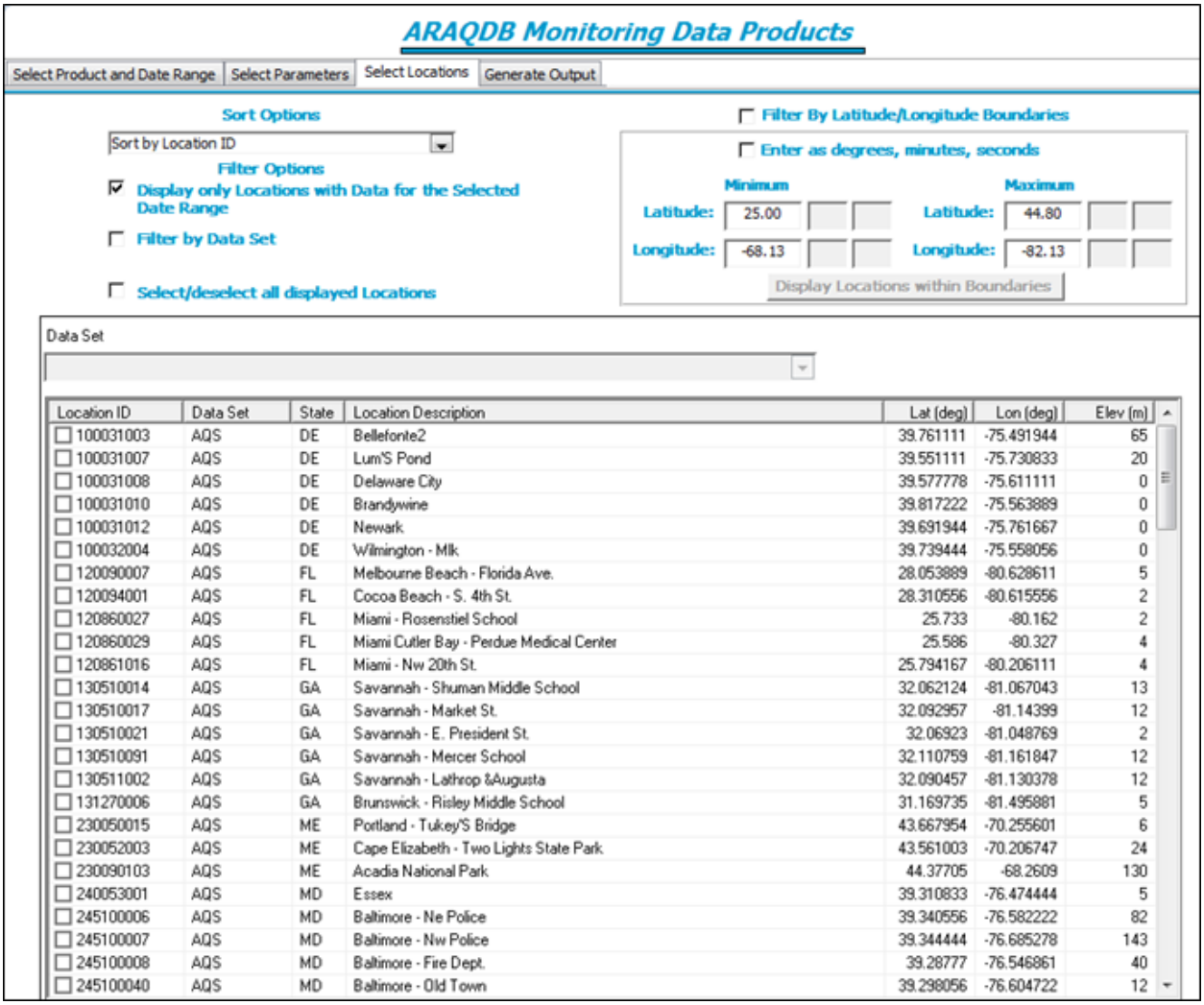
- **To deselect a parameter**
  - *Clear* the checked box to the left of the Parameter ID.

- **To quickly select all listed parameters**
  - *Select* the **Select/Deselect all displayed Parameters** box. A check will appear in the box and also in every box to the left of the Parameter ID of each displayed parameter.

- **To quickly deselect all listed parameters**
  - *Clear* the **Select/Deselect all displayed Parameters** box. The check will disappear from the box and also from every box to the left of the Parameter ID of each displayed parameter.

3.3. SELECT LOCATIONS

The **Select Locations** tab (Figure 4) allows you to select the monitoring locations you are interested in. Location information includes the Location ID, Data Set (an abbreviation for the data source prior to inclusion in this database), State, Description, Latitude, Longitude, and Elevation. Since there are many monitoring locations to choose from, there are a variety of ways to sort and filter the list.



Location ID	Data Set	State	Location Description	Lat (deg)	Lon (deg)	Elev (m)
100031003	AQS	DE	Bellefonte2	39.761111	-75.491944	65
100031007	AQS	DE	Lum'S Pond	39.551111	-75.730833	20
100031008	AQS	DE	Delaware City	39.577778	-75.611111	0
100031010	AQS	DE	Brandywine	39.817222	-75.563889	0
100031012	AQS	DE	Newark	39.691944	-75.761667	0
100032004	AQS	DE	Wilmington - Mlk	39.739444	-75.558056	0
120090007	AQS	FL	Melbourne Beach - Florida Ave.	28.053889	-80.628611	5
120094001	AQS	FL	Cocoa Beach - S. 4th St.	28.310556	-80.615556	2
120860027	AQS	FL	Miami - Rosenstiel School	25.733	-80.162	2
120860029	AQS	FL	Miami Cutler Bay - Perdue Medical Center	25.586	-80.327	4
120861016	AQS	FL	Miami - Nw 20th St.	25.794167	-80.206111	4
130510014	AQS	GA	Savannah - Shuman Middle School	32.062124	-81.067043	13
130510017	AQS	GA	Savannah - Market St.	32.092957	-81.14399	12
130510021	AQS	GA	Savannah - E. President St.	32.06923	-81.048769	2
130510091	AQS	GA	Savannah - Mercer School	32.110759	-81.161847	12
130511002	AQS	GA	Savannah - Lathrop &Augusta	32.090457	-81.130378	12
131270006	AQS	GA	Brunswick - Risley Middle School	31.169735	-81.495881	5
230050015	AQS	ME	Portland - Tukey'S Bridge	43.667954	-70.255601	6
230052003	AQS	ME	Cape Elizabeth - Two Lights State Park	43.561003	-70.206747	24
230090103	AQS	ME	Acadia National Park	44.37705	-68.2609	130
240053001	AQS	MD	Essex	39.310833	-76.474444	5
245100006	AQS	MD	Baltimore - Ne Police	39.340556	-76.582222	82
245100007	AQS	MD	Baltimore - Nw Police	39.344444	-76.685278	143
245100008	AQS	MD	Baltimore - Fire Dept.	39.28777	-76.546861	40
245100040	AQS	MD	Baltimore - Old Town	39.298056	-76.604722	12

Figure 4. The Select Locations Tab of the Monitoring Data Products Interface.

Sort Options

- **To sort by Location ID**
  - *Click* the arrow on the **Sort Options** drop-down list box then *click* Sort by Location ID. This is the default sort.

- **To sort by Data Set ID/Location ID**
  - *Click* the arrow on the **Sort Options** drop-down list box then *click* Sort by Data Set ID/Location ID. The list will be sorted first by Data Set then by Location ID in descending order.

- **To sort by Latitude/Longitude**
  - *Click* the arrow on the **Sort Options** drop-down list box then *click* Sort by Latitude/Longitude. The list will be sorted first by latitude then by longitude in descending order.

- **To sort by any other column**
  - *Click* a column heading once to sort the list in ascending order of the column value. Click the column heading a second time to sort the list in descending order of the column value. Note: all values are sorted as text and not as numeric values.

Filter Options

- **To display only those locations that have data during the selected date range for any of the selected parameters**
  - *Select* the **Show only Locations with Data for the Selected Date Range and Parameters** check box.

    NOTE: if the Multi Timeline plot is selected on the **Select Product and Date Range** tab, parameter selection is disabled and, therefore, this check box will be labeled **Show only Locations with Data for the Selected Date Range.**
- **To display only those locations from one of the data sets**
  1. *Select* the **Filter by Data Set** check box to enable the Data Set drop-down list box.
  2. *Click* the arrow on the **Data Set** drop-down list box and select one of the data sets.
- **Filter by Latitude/Longitude Boundaries:**
  1. *Select* the Filter By Latitude/Longitude Boundaries check box.
  2. *Select* the **Enter as degrees, minutes, seconds** check box to enter boundaries in this way or *clear* the check box to enter boundaries as decimal degrees.
  3. *Click* in the **Minimum Latitude** text boxes then enter the farthest south latitude of the boundary.
  4. *Click* in the **Maximum Latitude** text boxes then enter the farthest north latitude of the boundary.
  5. *Click* in the **Minimum Longitude** text boxes then enter the farthest east longitude of the boundary. Enter longitude degrees as a negative number.
  6. *Click* in the **Maximum Longitude** text boxes then enter the farthest west longitude of the boundary. Enter longitude degrees as a negative number.
  7. *Click* the Display Locations within Boundaries button.

  NOTE: This filter works in combination with the other filters but will need to be re-applied by clicking the **Display Locations within Boundaries** button if changes to other filters are made.
- **To select a location to include in your query**
  - Select the check box to the left of a Location ID.

- **To deselect a location**
  - *Clear* the check box to the left of a Location ID.

➢ **To quickly select all displayed locations**

- *Select* the **Select/Deselect all displayed Locations** check box. A check will appear in the box and also in every box to the left of the Location ID of each displayed location.

➢ **To quickly deselect all displayed locations**

- *Clear* the **Select/Deselect all displayed Locations** check box. The check will disappear from the box and also from every box to the left of the Location ID of each displayed location.

3.4. GENERATE OUTPUT

The Generate Output tab (Figure 5) allows you to set output options, run a query based on your selections from the previous tabs, and generate your selected output product.

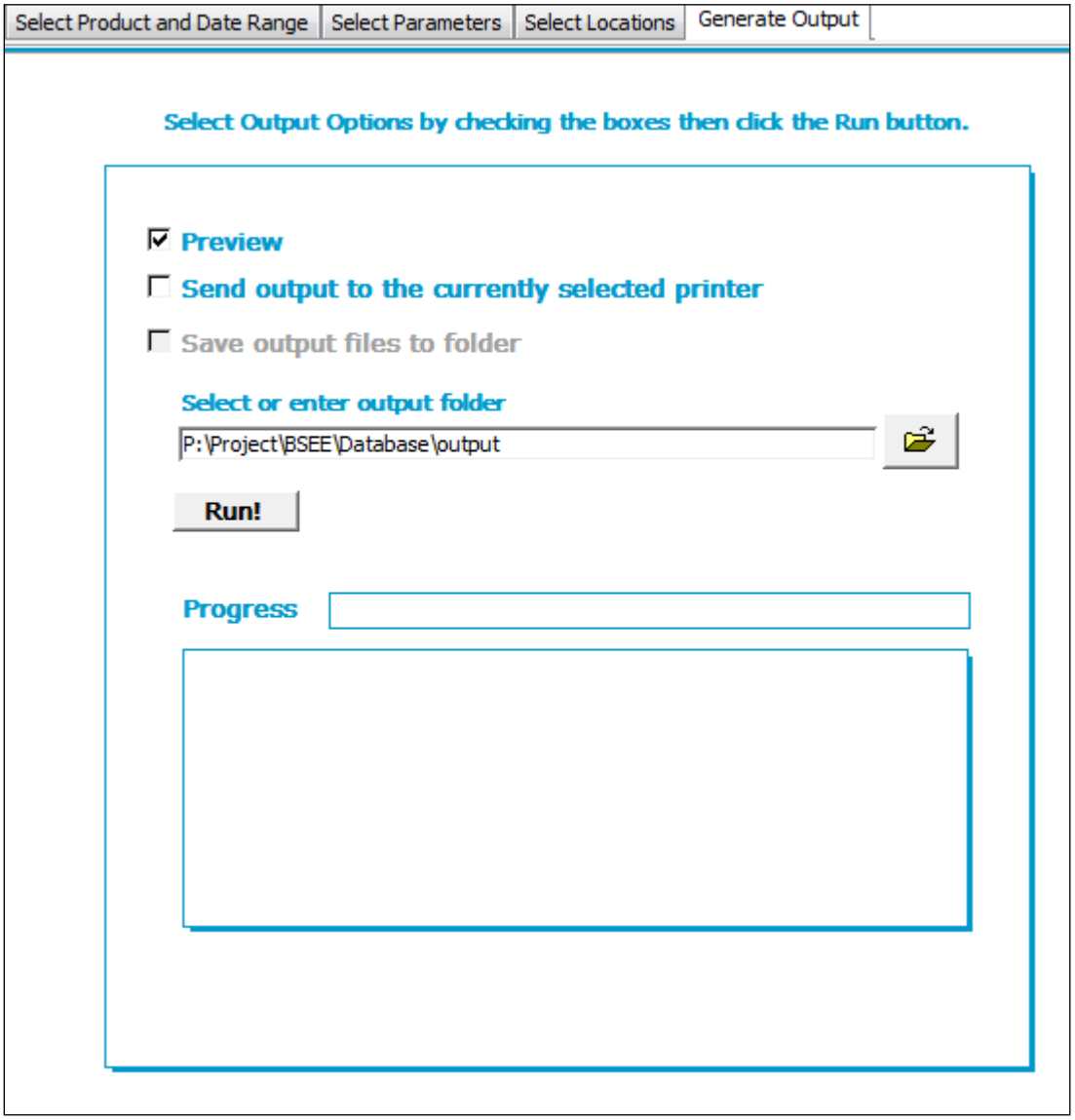


Figure 5. The Generate Output Tab of the Monitoring Data Products Interface.

NOTE: If you have selected the Multi Timeline Plot product, additional instructions are provided in Section 3.5. If you have selected Upper Air Data output, see Section 3.6.

Output Options

Preview is available and is the default option for tabular and graphical output products. It is not enabled if a file type output product is selected.

- **To preview an output product on screen**
  1. *Select* the **Preview** box.
  2. *Click* the **Run!** Button.
  3. If data meeting your query criteria are found, the selected output product is displayed on screen (see Figure 6) using Adobe Reader. If no data are found, a message will display in the **Progress** box.

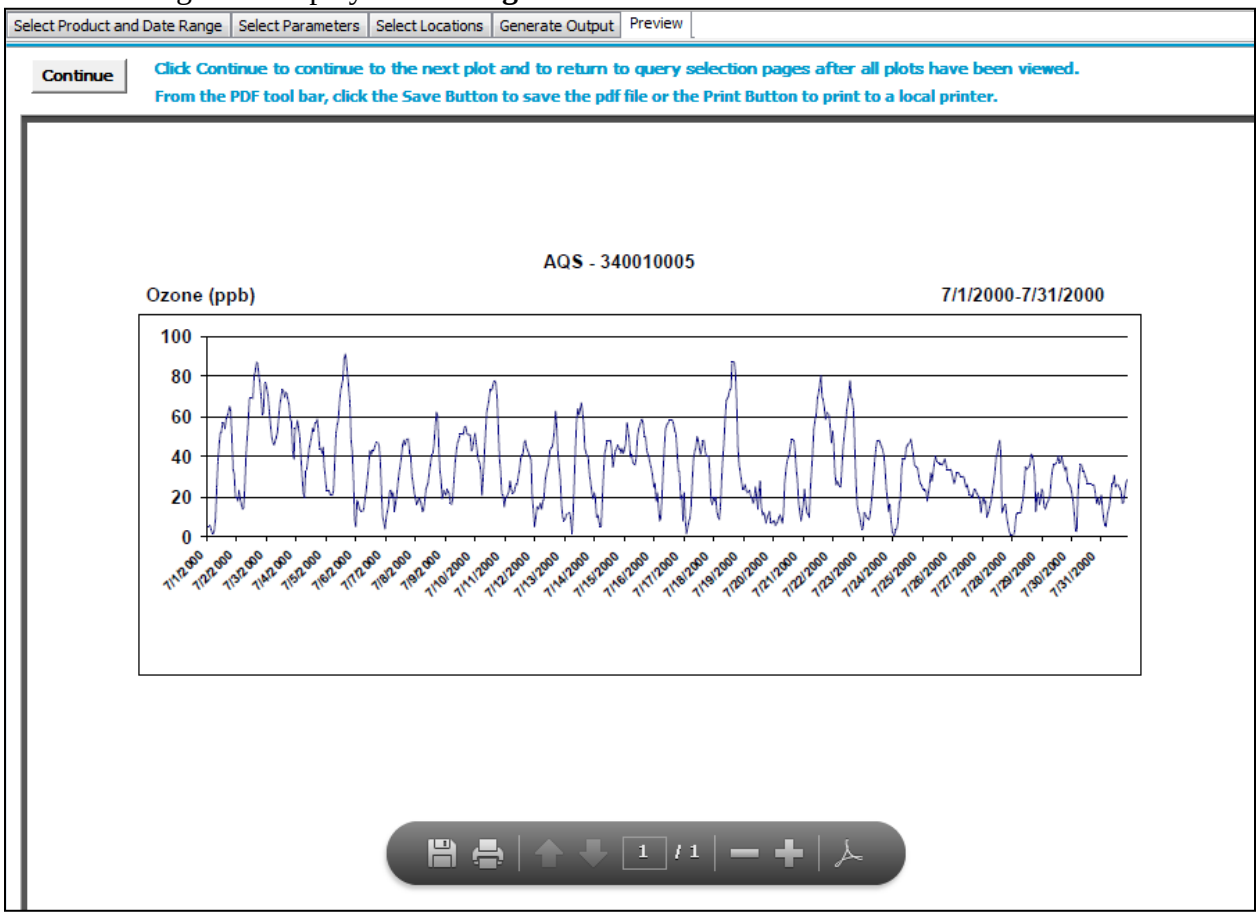


Figure 6. The Preview Screen of the Monitoring Data Products Interface with a Timeline Plot and the Adobe Reader Toolbar.

4. From the Preview screen, you can place the mouse within the Preview screen to display the Adobe Reader Toolbar as shown in Figure 6. With the toolbar, you can:
   - *Click* the **Save** button (the disk icon) to save the product as a PDF file.
   - *Click* the **Print** button (the printer icon) to send the product to the currently selected printing device
   - **Zoom** in and out using the **+** and **-** buttons.

- *Click* the **Continue** button to close the preview and continue with the next task.

  If additional locations and/or parameters have been selected, the program will loop through them, displaying each in the preview screen.
  When all selections have been previewed, the **Generate Output** tab will be displayed again. You can either re-run the selected queries or click on any of the previous tabs.

Print is available for tabular and graphical output products. It is not enabled if a file type output product is selected.

➢ **To print an output product to the currently selected printer device**

1. *Select* the **Print** checkbox.
2. *Click* the **Run!** Button.
3. If data meeting your query criteria are found, the selected output product is sent to the currently selected printer device. If no data are found, a message will display in the **Progress** box.
   If additional locations and/or parameters have been selected, the program will loop through them, sending each to the printer device.
   When all selections have been printed, the **Generate Output** tab will be displayed again. You can either re-run the selected queries or click on any of the previous tabs.

Save Output Files to Folder is enabled and is the only option for output files. It is not enabled for tabular and graphical output products.

➢ **To save output files to a folder**

1. The **Select or enter output folder** text box is initially set to the default output folder. To choose a different folder, *click* in the text box and type the path or *click* the open folder icon to display a **Browse for Folder** dialog box and select a folder. Files are automatically named by the program.
2. *Click* the **Run!** Button.
3. If data meeting your query criteria are found, a Microsoft Excel file is created. If no data are found, a message will display in the **Progress** box.
   If the selected output file product is one designed to generate a separate file for each selected location and if additional locations have been selected, the program will loop through them, creating a file for each.
   When all files have been created, the **Generate Output** tab will be displayed again. You can either re-run the selected queries or click on any of the previous tabs.

3.5. MULTI TIMELINE PLOT

The Multi Timeline Plot output product allows you to see timeline graphs of several monitoring parameters from one location on a single graph. When the Multi Timeline Plot is the selected output product, the Monitoring Data Products Interface functions differently in the following ways:

- The **Parameters** tab is not visible because the parameter selection is pre-defined by the report definition.
- The pre-defined parameters are based on the most commonly monitored parameters at the locations associated with each Data Set. Not all locations within a dataset have monitoring data for each parameter and date range. Therefore, some graphs might contain no data.

- Two plots have been developed for data sets with a large number of commonly monitored parameters. In this case, the program will generate two plots for each selected location.
- When an AQS location is selected, you are also given the option to plot meteorological data from a nearby National Climatic Data Center (NCDC) location.

➢ **To plot data from an AQS location along with a NCDC location** (refer to Figure 7)

1. *Click* **Yes** in response to the displayed message box that asks "Do you want to plot Met data from a nearby met site with the AQS data?"
2. *Click* the arrow on the drop-down list box in the **Select a nearby Met Site** dialog box and *select* one of the locations from the list then *click* the **Plot AQS and Met** button (or if you've changed your mind, click the **Plot AQS data only** button).

NOTE: The NCDC locations listed are within +/- 1^0 latitude and +/- 1^0 longitude of the selected AQS location.

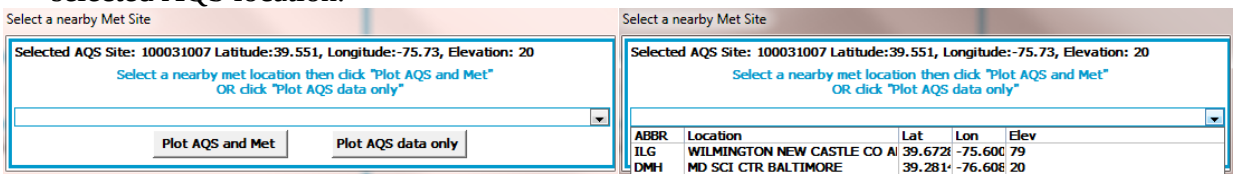


Figure 7. The Select a Nearby Met Site Dialog Window.

3.6. UPPER AIR DATA

The Upper Air Data Export output product is the only way to retrieve upper air data. No other products provide display of these data or information about these data.

4.0 MONITORING LOCATION MAP

The **Monitoring Location Map** interface is accessed by clicking the **Monitoring Location Map** button on the **Main Menu**. It is simply a reference tool that provides a graphical representation of the monitoring locations represented in the ARAQDB. The map displayed shows all locations from all data sets. When you are finished with the interface, click the **Close** link in the upper-right corner.

5.0 EMISSIONS DATA PRODUCTS

The **Emissions Data Products** interface is accessed by clicking the **Emissions Data Products** button on the **Main Menu**. When you are finished with the interface, click the **close** link in the upper-right corner.

The **Select Product** drop-down box (Figure 8) of the **Emissions Data Products** interface lists several options for viewing emissions data. See Appendix B for detailed descriptions and examples of each.

➢ **To select an emissions data output product**

- *Click* the arrow on the **Select Product** drop-down box and *Click* a product name to *select* it.

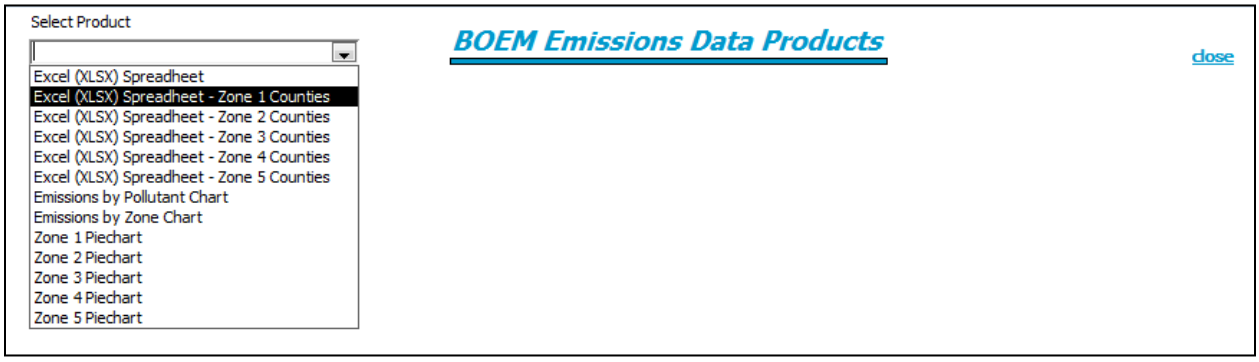


Figure 8. The Select Product Drop-down of the Emissions Data Products Interface.

If the selected product is an Excel (XLSX) Spreadsheet, a **Select Folder** dialog box will appear. Navigate to a folder then click **OK**. The file will be automatically named and written to the selected folder. When selecting one of the other products, it will be displayed on screen using Adobe Reader. You can place the mouse within the display screen to display the Adobe Reader Toolbar as shown in Figure 9. With the toolbar, you can:

- *Click* the **Save** button (the disk icon) to save the product as a PDF file.
- *Click* the **Print** button (the printer icon) to send the product to the currently selected printing device
- **Zoom** in and out using the + and - buttons.

Figure 9. The Display Screen of the Emissions Data Products Interface.

6.0 EMISSIONS DATA MAPS

The **Emissions Data Maps** interface is accessed by clicking the **Emissions Data Maps** button on the **Main Menu**. Several maps are included showing the Emission Zones. When you are finished with the interface, click the **Close** link in the upper-right corner.

- **To select a map to view**
  - *Click* the arrow on the **Select Product** drop-down box and *Click* a map name to *select* it.

The selected map will be displayed on screen using Adobe Reader. You can place the mouse within the display screen to display the Adobe Reader Toolbar as shown above in Figure 9. With the toolbar, you can:

- *Click* the **Save** button (the disk icon) to save the product as a PDF file.
- *Click* the **Print** button (the printer icon) to send the product to the currently selected printing device
- **Zoom** in and out using the **+** and **-** buttons.

7.0 LOAD DATA

The **Load Data** interface (Figure 10) is accessed by clicking the **Load Data** button from the **Main Menu** and can be used to add monitoring data to the system from several types of source files. See Appendix C for a list of standard data formats and examples of each.

NOTE: Emissions inventory data cannot be loaded through this interface. See the ARAQDB Technical Reference for more information.

Although the interface is simple, successful data loading is contingent on the following requirements:

- The selected data format configuration must match the source data file. See Section 8.2 for details.
- Some data formats require the source file to have a specific file extension such as .txt or .csv. See Section 8.2 for details.
- The data loading programs require various Active Data Objects (ADO) drivers in order to work. See Section 4.3.2 of the *ARAQDB Technical Reference Manual* for details.

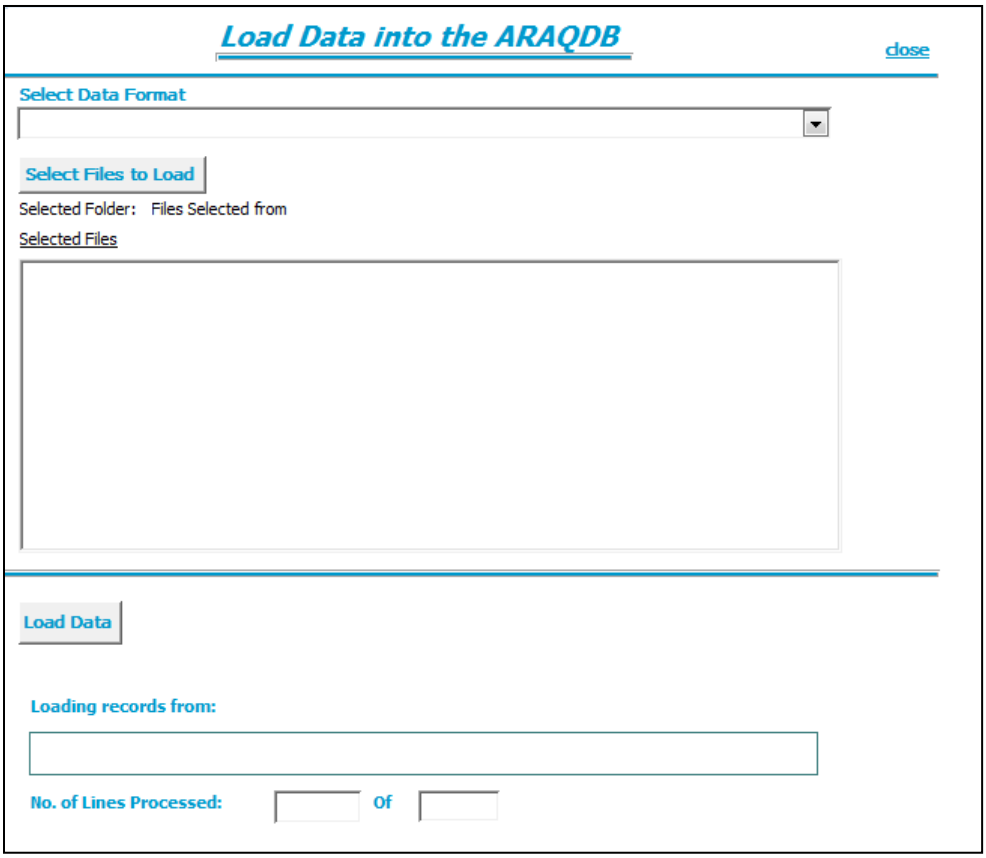


Figure 10. The Load Data Interface.

- Any new monitoring locations contained in a source data file must be added to the system prior to loading the data file. See Section 8.3 for details.

- Any new monitoring parameters contained in a source data file must be added to the system prior to loading the data file. See Section 8.4 for details.
- The data loading program must have read, create, write and delete privileges to the folder containing the source files.

➢ **To load monitoring data**

1. *Click* the arrow on the **Select Data Format** drop-down box and *select* the data format matching the file(s) to be loaded.
2. *Click* the **Select Files to Load** button.
3. *Select* the files to be loaded from the dialog box. Multiple files can be selected by pressing the ***Ctrl*** key while clicking on a file name. All files must be of the format selected in Step 1.
4. *Click* the **Open** button. The files selected will be listed in the **Selected Files** list box.
5. *Click* the **Load Data** button beneath the **Selected Files** list box.

- The data loading program will loop through each selected file.
- The file currently being processed will be listed in the **Loading records from** text box.
- Progress on the file currently being processed can be seen in the **No. of Lines Processed** boxes.
- Overall success or failure will be noted next to the file name in the Selected Files box after processing on the file is complete.
- Records that cannot be loaded will be written to a file named with the source data file name and a prefix of **ERR_**. A data loading error log named ERR_LOADING.txt will be created in the folder containing the source data file and used to store error messages encountered during the loading process. Critical errors will cause loading of a file to be suspended while other errors, such as undefined parameters, will simply prevent loading of individual records.

8.0 DATA SETS

The **Data Sets** interface is accessed by clicking the **Data Sets** button on the **Main Menu**. This interface contains a series of tabs providing access to general data set information, data format configurations, monitoring location information, and monitoring parameters information. If you have insert and/or update privileges to the database use this interface cautiously.

8.1. DATA SETS TAB

The Data Sets tab (Figure 11) contains general information about each Data Set and the associated source Data Set Formats. To scroll through the Data Sets, use the record scroll buttons at the bottom of the interface.

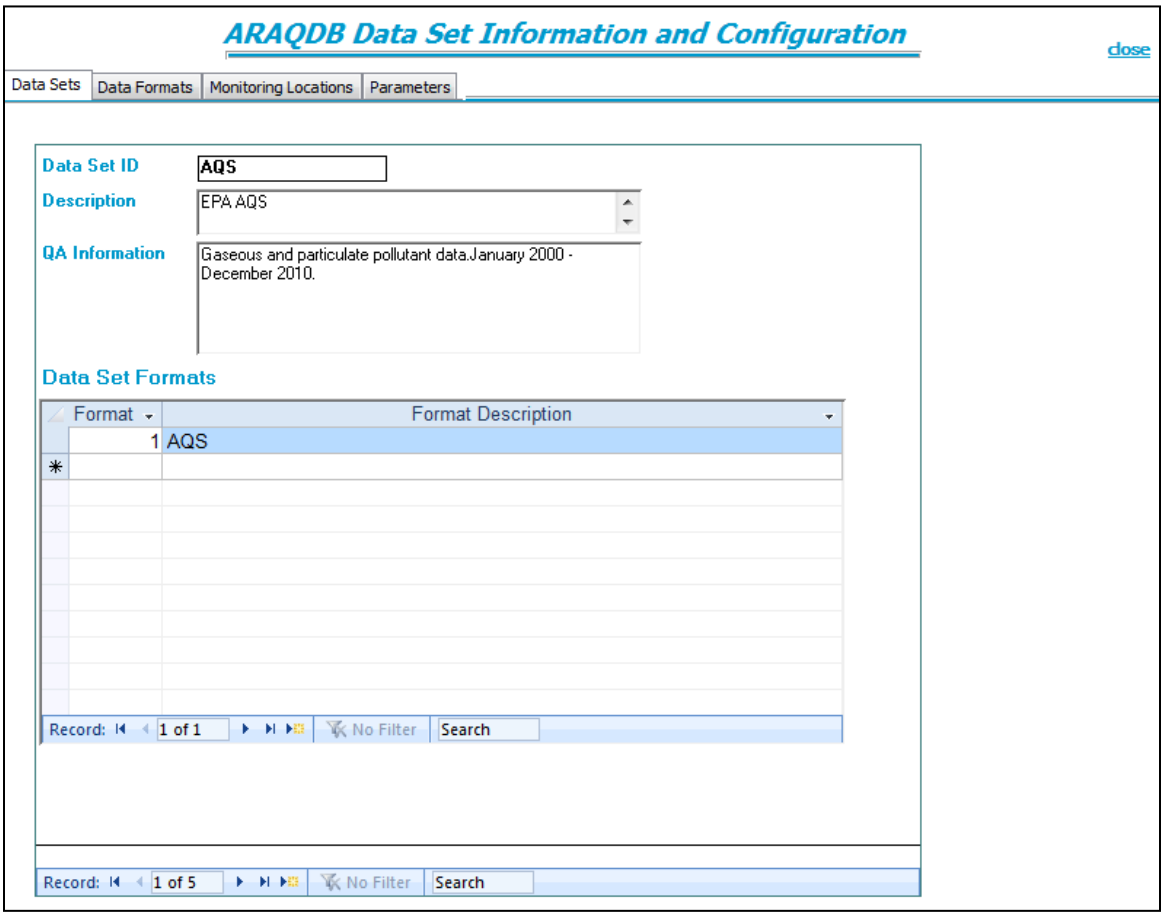


Figure 11. The Data Sets Tab of the Data Sets Interface.

8.2. DATA FORMATS TAB

The **Data Formats** tab of the **Data Sets** interface provides specific information regarding data source file formats required by the data loading programs discussed in Section 7. The information contained in a data format configuration should be changed only if directed by Air Resource Specialists, Inc. (ARS) technical support or if verified changes have been made to a type of data source since data were initially loaded by ARS using these formats.

8.3. MONITORING LOCATIONS

The **Monitoring Locations** tab of the **Data Sets** interface provides a list of all monitoring locations contained in the database. Monitoring location information can be updated and new monitoring locations added through this interface. Monitoring locations can also be deleted but only if the deletion will not result in orphaned records within the database.

- **To update information for a monitoring location**
  1. Find the monitoring location record to update. The list in this interface is displayed using the standard Microsoft Access table view. Therefore the list can be sorted by individual or multiple fields.
  2. *Click* in the field of the record to update and modify the contents of the field. Changes will be automatically saved to the database.
- **To add a new monitoring location**
  1. *Click* on the **Add New Record** button at the bottom of the list. An empty record will be created at the bottom of the list.
  2. Enter the monitoring location information. Required fields include the Data Set ID and Data Set Abbr. A unique system id number will be automatically assigned to the location and the record automatically saved.

NOTE: If a unique constraint error is raised when the program attempts to save the new record, this means a location with the same Data Set ID and Data Set Abbr already exists. If the monitoring location being entered has moved to a new physical location but maintains an existing Data Set Abbr, enter the effective start and end dates for the location's specific physical coordinates.

8.4. PARAMETERS

The **Parameters** tab of the **Data Sets** interface provides specific information regarding monitoring parameters contained in the database. Parameter information can be updated and new monitoring parameters added through this interface. Monitoring parameters can also be deleted but only if the deletion will not result in orphaned records within the database.

- **To update information for a parameter**
  1. Find the parameter record to update. The list in this interface is displayed using the standard Microsoft Access table view. Therefore the list can be sorted by individual or multiple fields.
  2. *Click* in the field of the record to update and modify the contents of the field. Changes will be automatically saved to the database.
- **To add a new monitoring parameter**
  1. *Click* on the **Add New Record** button at the bottom of the list. An empty record will be created at the bottom of the list.
  2. Enter the monitoring parameter information. Required fields include a unique Parameter ID, Parameter Type, Unit ID, and Decimal Precision. An AQS code is required if data for the parameter are to be loaded from an AQS formatted file.

9.0 REFERENCES

Davis-Noland, B., J. Ward, J. Adlhoch. The Atlantic Region Air Quality Database: Technical Reference Manual (Version 1.0).

APPENDIX A: MONITORING DATA SUMMARIES

This appendix presents a summary of the monitoring data contained in the ARAQDB when delivered by ARS. The parameter abbreviations used in this appendix and throughout the ARAQDB system are defined by parameter type in Tables A-1 through A-6. Tables A-7 through A-16 list the monitoring locations for each source data set, the start and end dates where data exist in the database for each location and the number of valid data points for each parameter from each location.

Table A-1.
Gaseous Parameters

Abbr	Description
CO	Carbon Monoxide
NO2	Nitrogen Dioxide
NOX	Oxides Of Nitrogen
NOY	Reactive Oxides Of Nitrogen
O3	Ozone
SO2	Sulfur Dioxide

Table A-2.
Meteorology Parameters.

Abbr	Description
P	Barometric Pressure
PWS	Peak Wind Speed
RH	Relative Humidity
RNF	Precipitation
SLP	Sea Level Pressure
SST	Sea Surface Temperature
T	Temperature
TD	Dew Point
TW	Wet Bulb Temperature
TV	Virtual Temperature
WD	Wind Direction
WS	Wind Speed

Table A-3.
Speciated PM Parameters.

Abbr	Description
ammNO3f	Ammonium Nitrate (fine)
ammSO4f	Ammonium Sulfate (fine)
ECf_TOR	Elemental Carbon (fine) - TOR Method
ECf_TOT	Elemental Carbon (fine) - TOT Method
NH4f	Ammonium (fine)
NO3f	Nitrate (fine)
OCf_TOT	Organic Carbon (fine) - TOT Method
OMCf	Organic Mass (fine)
PMC	Coarse Mass
SO4f	Sulfate (fine)
SOILf	Soil (fine) - IMPROVE Method
SSf	Sea Salt (fine)

Table A-4.
Miscellaneous Parameters.

Abbr	Description
APD	Average Wave Period
DPD	Dominant Wave Period
MWD	Mean Wave Direction
TIDE	Water Level
WVHT	Significant Wave Height

Table A-5.
Total PM Parameters.

Abbr	Description
PM10	PM10
PM2.5	PM2.5
RCFM	PM2.5 Reconstructed Mass

Table A-6.
Visibility Parameters.

Abbr	Description
aerosol_bext	Aerosol Extinction
ammNO3f_bext	Ammonium Nitrate Extinction (fine)
ammSO4f_bext	Ammonium Sulfate Extinction (fine)
DV	Deciview
ECf_bext	Elemental Carbon Extinction (fine)
OMCf_bext	Organic Mass Extinction (fine)
PMC_bext	Coarse Mass Extinction
SOILf_bext	Soil Extinction (fine)
SSf_bext	Sea Salt Extinction (fine)
SVR	Standard Visual Range
total_bext	Total Extinction
VR	Station Visibility

Table A-7.
AQS Summary of Locations, Parameters, and Number of Data Points.

			GASEOUS						SPECIATED PM					TOTAL PM	
LOCATION ABBR	START DATE	END DATE	CO	NO2	NOX	NOY	O3	SO2	ECf_TOT	NH4f	NO3f	OCf_TOT	SO4f	PM10	PM2.5
100031003	1/1/2000	12/29/2012	0	2853	2854	0	27157	26470	0	0	0	0	0	25	1464
100031007	1/1/2000	12/31/2012	0	0	0	11139	105849	66548	0	0	0	0	0	0	1452
100031008	1/1/2000	12/31/2012	107258	0	0	0	0	105001	0	0	0	0	0	0	0
100031010	1/1/2000	12/6/2012	0	0	0	0	64267	0	0	0	0	0	0	0	0
100031012	1/1/2000	12/29/2012	0	0	0	0	0	0	0	0	0	0	0	0	2039
100032004	1/1/2000	12/31/2012	110487	86049	81079	16112	16078	108491	347	538	536	347	536	59087	28528
120090007	3/1/2000	12/31/2012	0	0	0	0	109145	0	0	0	0	0	0	5549	1494
120090011	11/1/2006	4/30/2012	0	0	0	0	0	35365	0	0	0	0	0	47004	0
120094001	1/1/2000	12/31/2012	0	0	0	0	110772	0	0	0	0	0	0	0	0
120860027	1/1/2000	12/31/2012	0	108914	52173	0	108470	0	0	0	0	0	0	0	0
120860029	1/1/2000	12/31/2012	0	0	0	0	110996	0	0	0	0	0	0	0	0
120860033	5/4/2005	12/29/2012	0	0	0	0	0	0	0	0	0	0	0	0	867
120861016	1/1/2000	12/31/2012	0	0	0	0	0	0	478	477	477	478	477	778	4452
130510014	1/1/2000	12/29/2012	0	0	0	0	0	0	0	0	0	0	0	729	0
130510017	1/1/2000	12/29/2012	0	0	0	0	0	0	119	161	161	119	161	0	1396
130510021	1/1/2000	12/31/2012	0	0	0	0	73733	108218	0	0	0	0	0	0	0
130510091	1/1/2000	12/29/2012	0	0	0	0	0	0	0	0	0	0	0	0	1365
130511002	1/1/2000	12/31/2012	0	0	0	0	0	86127	0	0	0	0	0	49952	0
131270006	1/1/2000	12/31/2012	0	0	0	0	74937	66129	0	0	0	0	0	0	1247
230050015	1/1/2000	12/29/2012	0	0	0	0	0	0	0	0	0	0	0	716	730
230050029	1/18/2008	12/31/2012	40201	41111	41112	0	42587	42652	0	0	0	0	0	0	580
230052003	1/1/2000	9/30/2012	25014	0	0	45737	68723	0	0	0	0	0	0	0	252
230090103	1/1/2000	12/31/2012	72282	0	0	72841	110935	73547	0	0	0	0	0	352	1503
240053001	1/1/2000	12/31/2012	75692	102006	102010	0	103720	79778	588	927	927	588	927	16892	3646
245100006	1/1/2000	12/29/2011	0	0	0	0	0	0	0	0	0	0	0	111	1327
245100007	1/1/2000	12/29/2012	0	0	0	0	0	0	0	0	0	0	0	0	1708

			GASEOUS						SPECIATED PM					TOTAL PM	
LOCATION ABBR	START DATE	END DATE	CO	NO2	NOX	NOY	O3	SO2	ECf_TOT	NH4f	NO3f	OCf_TOT	SO4f	PM10	PM2.5
245100008	1/1/2000	12/29/2012	0	0	0	0	0	0	0	0	0	0	0	739	1519
245100040	1/1/2000	12/31/2012	109425	104136	104208	0	0	0	0	0	0	0	0	103	40993
245100054	8/21/2006	10/31/2012	0	0	0	0	30782	0	0	0	0	0	0	0	0
250010002	4/1/2000	9/30/2012	0	32903	32738	33689	65996	0	0	0	0	0	0	0	0
250051002	4/1/2000	4/30/2012	0	4016	4016	0	54233	0	0	0	0	0	0	0	0
250051004	1/1/2000	12/31/2012	0	0	0	0	4979	109038	0	0	0	0	0	0	1145
250070001	4/1/2004	9/30/2012	0	0	0	0	39349	0	0	0	0	0	0	0	0
250094005	7/7/2010	12/31/2012	0	13588	13588	9435	12122	0	0	0	0	0	0	0	0
250095005	1/1/2000	12/31/2012	0	70762	70762	0	38894	0	0	0	0	0	0	0	1377
250096001	1/1/2000	12/29/2012	0	0	0	0	0	0	0	0	0	0	0	0	1313
250250002	1/1/2000	12/31/2012	100585	101727	102394	0	0	105509	0	0	0	0	0	692	1401
250250027	1/1/2000	12/29/2012	0	0	0	0	0	0	0	0	0	0	0	656	2054
250250041	4/1/2000	10/31/2012	0	60768	60635	0	53955	0	0	0	0	0	0	0	0
250250042	1/1/2000	12/31/2012	95401	100579	100559	13653	109324	104996	950	1101	1101	949	1101	712	2174
250250043	1/1/2000	12/31/2012	0	0	0	0	0	0	0	0	0	0	0	0	3286
340010005	1/1/2000	12/18/2007	0	0	0	0	66727	67744	0	0	0	0	0	0	0
340010006	1/6/2007	12/31/2012	0	0	0	0	46514	40489	0	0	0	0	0	0	666
340011006	7/27/2001	12/26/2012	0	0	0	0	0	0	0	0	0	0	0	441	1188
340130003	6/1/2009	12/31/2012	30799	16621	16622	17032	28838	26048	87	90	90	87	90	0	408
340130015	1/1/2000	7/23/2008	0	0	0	0	0	0	0	0	0	0	0	0	917
340130016	7/6/2001	6/5/2003	15546	14950	0	0	15072	14511	0	0	0	0	0	104	206
340131003	1/1/2000	12/31/2012	0	110716	0	0	0	0	0	0	0	0	0	0	0
340170006	1/1/2000	10/29/2012	0	105553	0	0	103951	104138	0	0	0	0	0	0	0
340390003	1/1/2000	12/31/2012	98432	0	0	0	0	96093	0	0	0	0	0	0	0
340390004	1/1/2000	12/31/2012	33914	110450	0	0	0	109034	820	941	941	820	941	173	4214
340390006	1/1/2000	12/29/2012	0	0	0	0	0	0	0	0	0	0	0	0	1452
340392003	1/1/2000	12/29/2012	0	0	0	0	0	0	0	0	0	0	0	0	1610
360050080	1/1/2000	6/2/2012	0	2831	2831	0	746	2881	8	8	8	8	8	0	1548
360050083	1/1/2000	12/29/2007	60780	58121	58137	0	60633	57713	655	682	682	655	682	0	951

			GASEOUS						SPECIATED PM					TOTAL PM	
LOCATION ABBR	START DATE	END DATE	CO	NO2	NOX	NOY	O3	SO2	ECf_TOT	NH4f	NO3f	OCf_TOT	SO4f	PM10	PM2.5
360050133	1/1/2007	12/31/2012	52325	50932	50908	0	51985	51578	0	0	0	0	0	0	598
360470122	11/20/2000	12/23/2012	0	0	0	0	0	0	0	0	0	0	0	229	1356
360590005	1/1/2000	12/31/2012	3494	88541	88604	0	0	108019	0	0	0	0	0	303	0
360590008	1/1/2000	12/29/2011	0	0	0	0	0	0	0	0	0	0	0	0	1374
360610079	1/13/2000	12/29/2012	0	0	0	0	0	0	0	0	0	0	0	0	1509
360610128	10/13/2001	12/29/2012	0	0	0	0	0	0	0	0	0	0	0	0	1163
360610134	3/25/2007	12/29/2012	0	0	0	0	0	0	45	432	432	45	432	0	660
360610135	6/13/2007	12/31/2012	37744	0	0	0	46448	0	0	0	0	0	0	0	0
360810124	1/1/2001	12/31/2012	93558	90752	90753	16672	96043	96331	1014	1097	1097	1014	1097	0	3884
360850055	1/1/2000	12/29/2012	0	0	0	0	0	0	0	0	0	0	0	0	1436
360850067	1/1/2000	12/31/2012	0	0	0	0	83527	3095	0	0	0	0	0	280	1356
361030002	1/1/2000	12/31/2012	0	0	0	0	108590	2735	0	0	0	0	0	0	800
361030004	4/6/2000	11/13/2012	0	0	0	0	66084	0	0	0	0	0	0	0	0
361030009	1/1/2000	12/31/2012	88784	88975	0	0	102084	108375	0	0	0	0	0	0	0
371290002	4/1/2000	12/31/2012	0	0	0	0	61528	7992	0	0	0	0	0	8	8217
440070012	1/1/2000	12/31/2012	0	103818	104120	0	0	104983	0	0	0	0	0	0	0
440070022	1/1/2000	12/31/2012	0	0	0	0	0	0	589	761	761	589	761	680	7113
440070026	3/2/2001	12/29/2012	0	0	0	0	0	0	0	0	0	0	0	652	1237
440070027	1/4/2004	12/29/2012	0	0	0	0	0	0	0	0	0	0	0	505	0
440070028	1/1/2004	12/29/2012	0	0	0	0	0	0	0	0	0	0	0	0	934
440071010	1/1/2000	12/31/2012	104614	31605	31828	14878	62686	15381	103	137	137	103	137	61	17530
450150002	3/22/2000	11/2/2012	0	0	0	0	93006	0	0	0	0	0	0	0	0
450190003	1/1/2000	12/31/2012	0	102281	0	0	0	111797	0	0	0	0	0	104138	0
450190046	1/1/2000	12/31/2012	62769	77388	0	18424	104824	109495	0	0	0	0	0	435	184
450190048	1/1/2000	12/31/2012	0	0	0	0	0	0	0	0	0	0	0	0	4468
450190049	1/1/2000	12/31/2012	0	0	0	0	0	0	1004	1141	1141	1004	1141	0	4422
516500008	4/2/2010	12/31/2012	21733	23378	23378	0	14975	21525	0	0	0	0	0	145	302
517000013	1/1/2000	6/14/2010	9906	2692	2692	0	4696	9874	0	0	0	0	0	64	573
517100024	1/1/2000	12/31/2012	42252	40144	40144	0	0	41097	0	0	0	0	0	757	1537

			GASEOUS						SPECIATED PM					TOTAL PM	
LOCATION ABBR	START DATE	END DATE	CO	NO2	NOX	NOY	O3	SO2	ECf_TOT	NH4f	NO3f	OCf_TOT	SO4f	PM10	PM2.5
518000004	4/1/2000	10/31/2012	0	0	0	0	64992	0	0	0	0	0	0	0	0

Table A-8.
BUOY Summary of Locations, Parameters, and Number of Data Points.

			METEOROLOGY							MISCELLANEOUS				
LOCATION ABBR	START DATE	END DATE	P	PWS	SST	T	TD	WD	WS	APD	DPD	MWD	TIDE	WVHT
41004	12/31/1999	9/30/2012	103627	101801	103958	104009	73330	102035	102032	102650	102650	0	0	102650
41008	12/31/1999	12/31/2012	111564	111488	105077	99015	76160	111723	111742	109864	109711	24671	0	109864
41009	12/31/1999	12/31/2012	106589	105842	106479	106054	56290	105881	105879	104129	104060	10	0	104128
41012	6/25/2002	12/31/2012	85400	84162	80274	85477	77535	84385	84394	78054	78040	52116	0	78059
41013	11/10/2003	12/31/2012	72576	72492	72493	72672	62374	69544	72738	67804	67775	64328	0	67773
41025	3/28/2003	9/23/2012	69587	66463	69342	62443	50920	66171	66595	68837	68832	1338	0	68836
41036	7/6/2006	12/31/2012	48187	42304	48130	48260	44681	41829	42362	46501	45071	45130	0	46501
44007	12/31/1999	12/31/2012	108194	104793	108161	108241	87049	104854	104849	106293	105530	22497	0	106292
44009	12/31/1999	12/2/2012	109869	100754	109785	105914	81627	98783	100391	108005	107981	0	0	108005
44013	12/31/1999	12/31/2012	108104	107981	107895	108114	98325	103601	108097	107032	106172	4176	0	107032
44014	12/31/1999	12/31/2012	99656	92982	97875	100242	52402	90187	93056	103181	103178	103662	0	103181
44017	8/31/2002	12/10/2012	67788	67272	62869	71544	58772	53984	67326	75794	73479	13614	0	75800
44018	7/30/2002	3/31/2012	77357	74428	54861	76795	62859	75097	75092	70644	70645	35504	0	70644
44025	12/31/1999	12/31/2012	106382	100243	106403	106168	96606	100260	100170	103515	103489	103546	0	103515
44065	10/30/2008	12/31/2012	35634	35611	35619	35664	35609	35683	35681	34600	34493	34493	0	34600
ALSN6	12/31/1999	7/28/2008	58335	59988	41089	50868	31481	60033	60034	7222	7222	54	0	4144
BUZM3	12/31/1999	12/31/2012	101829	100137	57855	93943	43818	100170	100307	28879	28493	0	0	28755
CHLV2	12/31/1999	12/31/2012	108124	108229	32016	110528	55315	105385	108227	29251	29251	0	0	29245
CLKN7	12/31/1999	12/31/2012	108727	110494	0	108761	75324	104349	110582	0	0	0	0	0
DSLN7	12/31/1999	9/30/2003	27051	24356	1009	28806	25154	21169	24417	8318	8308	0	0	8306
FBIS1	1/12/2000	12/31/2012	112247	112224	0	112262	99417	112305	112305	0	0	0	0	0
FPSN7	12/31/1999	9/12/2008	66403	26870	0	41589	0	26875	26876	28657	28656	0	0	28650
FWYF1	12/31/1999	12/31/2012	111755	109773	111393	109775	73	109233	109801	0	0	0	0	0
IOSN3	12/31/1999	12/31/2012	101362	103533	0	103583	86706	103609	103601	0	0	0	0	0
MDRM1	12/31/1999	12/31/2012	99060	102108	0	103876	80804	99392	102386	0	0	0	0	0
MISM1	12/31/1999	12/31/2012	100417	96367	0	100345	83525	95757	95753	0	0	0	0	0

			METEOROLOGY							MISCELLANEOUS				
LOCATION ABBR	**START DATE**	**END DATE**	**P**	**PWS**	**SST**	**T**	**TD**	**WD**	**WS**	**APD**	**DPD**	**MWD**	**TIDE**	**WVHT**
MLRF1	12/31/1999	12/31/2012	96985	109371	109018	109525	0	109503	109515	0	0	0	0	0
NTKM3	5/31/2005	12/31/2012	35482	35414	49615	35482	0	35393	35323	0	0	0	0	0
SAUF1	12/31/1999	12/31/2012	105501	104802	82271	104436	65204	104957	105326	0	0	0	16064	0

Table A-9.
IMPROVE Data Summary of Locations, Parameters, and Number of Data Points.

			SPECIATED PM									TOTAL PM				VISIBILITY										
LOCATION ABBR	START DATE	END DATE	ammNO3f	ammSO4f	ECf_TOR	NH4f	NO3f	OMCf	SO4f	SOILf	SSf	PM10	PM2.5	PMC	RCFM	aerosol_bext	ammNO3f_bext	ammSO4f_bext	DV	ECf_bext	OMCf_bext	PMC_bext	SOILf_bext	SSf_bext	SVR	total_bext
ACAD1	1/1/2000	12/29/2012	1523	1555	1541	0	1417	951	1417	1547	935	1519	1546	1529	1535	1517	1556	1561	1517	1552	1552	1529	1547	935	949	949
BRIG1	1/1/2000	12/29/2012	1494	1502	1422	0	1315	857	1315	1494	931	1466	1414	1473	1428	1413	1505	1509	1413	1445	1445	1473	1494	931	868	868
CABA1	1/3/2001	12/29/2012	1331	1367	1303	0	1278	857	1278	1363	884	1349	1363	1356	1349	1349	1370	1370	1349	1359	1359	1356	1363	883	906	906
CACO1	1/3/2001	12/29/2012	1291	1323	1324	0	1213	892	1213	1318	862	1293	1304	1292	1302	1285	1329	1339	1285	1333	1333	1292	1318	828	881	881
EVER1	1/1/2000	12/29/2012	1261	1420	1381	194	1012	868	1012	1414	743	1414	1409	1411	1399	1399	1425	1427	1399	1412	1412	1413	1416	643	889	889
MAVI1	1/2/2002	12/29/2012	1142	1133	1129	0	1088	909	1088	1126	928	1138	1145	1119	1129	1125	1145	1156	1125	1154	1154	1138	1145	896	918	918
NEYO1	8/1/2004	12/31/2010	674	667	566	0	674	515	674	666	621	686	676	666	665	665	682	694	665	694	694	677	677	621	615	615
OKEF1	1/1/2000	12/29/2012	1442	1525	1476	0	1208	897	1208	1518	869	1476	1482	1512	1509	1507	1531	1536	1507	1533	1533	1514	1520	868	941	941
ROMA1	1/1/2000	12/29/2012	812	812	812	0	222	240	222	807	240	805	807	238	807	807	812	812	807	812	812	807	807	222	807	238
SWAN1	1/1/2000	12/29/2012	1328	1354	1361	205	1208	855	1208	1201	821	1347	1122	1200	1188	1187	1379	1382	1187	1370	1370	1200	1201	817	835	835

Table A-10.
NCDC Summary of Locations, Parameters, and Number of Data Points.

LOCATION ABBR	START DATE	END DATE	P	RH	RNF	SLP	T	TD	TW	WD	WS
ACK	1/1/2000	12/31/2012	113654	112981	113849	113608	113031	112988	112981	113249	113249
ACY	1/1/2000	12/31/2012	113725	112991	113879	112480	113069	113004	112991	112108	112108
BGR	1/1/2000	12/31/2012	113788	113644	112267	113331	113704	113671	113644	111999	111999
BOS	1/1/2000	12/31/2012	113844	113743	113891	113657	113786	113770	113743	113279	113279
BVY	1/1/2000	12/31/2012	113602	113375	113721	113269	113530	113440	113375	112554	112554
BWI	1/1/2000	12/31/2012	113884	113843	113923	113757	113871	113867	113843	111255	111255
CDW	1/1/2000	12/31/2012	113445	112887	113673	113001	113249	112939	112887	104405	104405
CHS	1/1/2000	12/31/2012	113837	113809	113924	113687	113848	113844	113809	112324	112324
CQX	1/1/2000	12/31/2012	113683	113328	113785	113118	113428	113371	113328	106025	106025
DMH	1/1/2000	12/31/2012	112178	111762	112421	112179	111977	111835	111762	0	0
EWB	1/1/2000	12/31/2012	113461	112104	113755	111895	112461	112382	112104	110394	110394
EWR	1/1/2000	12/31/2012	113844	113782	113904	113709	113828	113820	113782	112264	112264
FRG	1/1/2000	12/31/2012	113414	112665	113849	112588	113255	112948	112665	112497	112497
HSE	1/1/2000	12/31/2012	113693	113105	105098	113709	113298	113166	113105	109297	109297
HWV	1/1/2000	12/31/2012	113587	113220	113826	113033	113344	113249	113220	108755	108755
HYA	1/1/2000	12/31/2012	113471	113208	113877	112984	113570	113528	113208	112563	112563
ILG	1/1/2000	12/31/2012	113236	112953	113859	112851	113635	113540	112953	112719	112719
ILM	1/1/2000	12/31/2012	113622	113432	113813	113568	113653	113570	113432	112382	112382
ISP	1/1/2000	12/31/2012	113810	113317	113873	113201	113430	113318	113317	113125	113125
JFK	1/1/2000	12/31/2012	113886	113741	113923	113581	113767	113762	113741	113481	113481
LGA	1/1/2000	12/31/2012	113923	113883	113955	113834	113914	113909	113883	112672	112672
LWM	1/1/2000	12/31/2012	113563	113097	113895	112919	113406	113352	113097	109992	109992
MIA	1/1/2000	12/31/2012	113781	113744	113823	113657	113745	113739	113744	110802	110801
MLB	2/1/2001	12/31/2012	104070	103876	104245	104077	104046	104006	103876	103456	103456
MRH	4/26/2000	12/31/2012	110717	110307	110946	110713	110379	110379	110307	109986	109986
MVY	1/1/2000	12/31/2012	113399	113009	113727	112845	113305	113232	113009	113036	113036
NYC	1/1/2000	12/31/2012	113618	112724	113940	112755	113197	112958	112724	94665	94657
ORF	1/1/2000	12/31/2012	113655	113306	113893	113442	113633	113348	113306	111656	111656
OXB	1/1/2000	12/31/2012	113181	111571	105089	113170	112168	111790	111571	109529	109529
PHF	11/30/2000	12/31/2012	105339	104462	105803	104162	104894	104510	104462	103781	103781

LOCATION ABBR	START DATE	END DATE	P	RH	RNF	SLP	T	TD	TW	WD	WS
PVD	1/1/2000	12/31/2012	113906	113788	113947	113717	113854	113817	113788	112823	112823
PWM	1/1/2000	12/31/2012	113627	113215	113788	113121	113546	113344	113215	112551	112551
SAV	1/1/2000	12/31/2012	113836	113730	113909	113662	113807	113779	113730	110057	110057
SSI	10/1/2000	12/31/2012	106854	106444	107067	106666	106637	106601	106444	105612	105612
TAN	1/1/2000	12/31/2012	113470	113210	113598	113104	113417	113292	113210	110255	110255
WAL	1/1/2000	12/31/2012	113642	112549	113922	113428	113276	112727	112549	112753	112753

Table A-11
NCDC Upper Air Data Summary of Locations, Parameters, and Number of Data Points.

LOCATION ABBR	START DATE	END DATE	P	T	TD	WD	WS
CHH	12/31/1999	12/31/2012	390076	389082	386617	165572	165572
WAL	12/31/1999	12/31/2012	306761	306360	305615	141375	141375
GYX	12/31/1999	12/31/2012	447336	442518	429920	163227	163227
OKX	12/31/1999	12/31/2012	391964	391398	383357	168692	168692
MHX	12/31/1999	12/31/2012	458818	458513	451612	162584	162584
CHS	12/31/1999	12/31/2012	371348	370527	366095	125266	125265
MFL	12/31/1999	12/31/2012	474927	474758	473605	177280	177280
JAX	12/31/1999	12/31/2012	436996	436844	433443	155217	155217

APPENDIX B: OUTPUT PRODUCT EXAMPLES

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1	DataSetID	DataSetAbbr	RecordDate	APD	DPD	MWD	P	PWS	SST	T	TD	WD	WS	WVHT
2	BUOY	41004	01/01/2000 00:00	4.64	10	-999	1021.6	4.6	21	17	12.8	345	4.1	0.5
3	BUOY	41004	01/01/2000 01:00	4.84	10	-999	1021.8	3.8	21	16.8	12.8	9	2.8	0.5
4	BUOY	41004	01/01/2000 02:00	5.11	10	-999	1022	4.2	20.9	17	12.6	40	3.4	0.5
5	BUOY	41004	01/01/2000 03:00	5.25	10	-999	1022.3	2.9	20.9	17.3	10.8	49	1.8	0.5
6	BUOY	41004	01/01/2000 04:00	4.92	11.11	-999	1022.4	1.9	20.8	17.3	11	81	0.8	0.5
7	BUOY	41004	01/01/2000 05:00	4.95	11.11	-999	1022.9	1.7	20.3	17.6	10.9	33	1.1	0.6
8	BUOY	41004	01/01/2000 06:00	4.71	10	-999	1023.4	2	19.7	17.7	11	40	1.4	0.5
9	BUOY	41004	01/01/2000 07:00	5.21	10	-999	1024.1	1.1	19.7	17.7	10.7	34	0.2	0.5
10	BUOY	41004	01/01/2000 08:00	5.3	11.11	-999	1025.1	3.2	19.8	18.1	10.9	302	2.2	0.5
11	BUOY	41004	01/01/2000 09:00	5.78	11.11	-999	1025.4	3	19.9	17.4	13	343	2.5	0.5
12	BUOY	41004	01/01/2000 10:00	5.96	10	-999	1025.3	2.9	20	17.4	12.7	6	2.1	0.5
13	BUOY	41004	01/01/2000 11:00	5.85	10	-999	1025.1	4.6	20.1	17.4	13.2	341	3.7	0.5
14	BUOY	41004	01/01/2000 12:00	6.21	10	-999	1024.4	3.4	20.1	17	12.5	8	2.5	0.5
15	BUOY	41004	01/01/2000 13:00	6.6	10	-999	1023.7	3	20.2	17.5	12	19	2.3	0.5
16	BUOY	41004	01/01/2000 14:00	6.46	10	-999	1023.4	2.9	20.4	18	12.9	20	2.4	0.4
17	BUOY	41004	01/01/2000 15:00	6.78	11.11	-999	1023.5	2.6	20.5	18.4	12.2	31	2	0.5
18	BUOY	41004	01/01/2000 16:00	7.05	10	-999	1024.1	2.8	20.6	18.6	12.3	41	2.5	0.4
19	BUOY	41004	01/01/2000 17:00	7.61	10	-999	1024.4	2.3	20.6	18.7	11.4	53	1.8	0.5
20	BUOY	41004	01/01/2000 18:00	7.38	11.11	-999	1024.9	2.3	20.5	18.7	12.4	53	1.9	0.5
21	BUOY	41004	01/01/2000 19:00	7.09	10	-999	1025.1	3.1	20.5	18.9	12.1	85	2.4	0.5
22	BUOY	41004	01/01/2000 20:00	7.11	10	-999	1025.3	4.1	20.5	19.1	12	99	3.3	0.4
23	BUOY	41004	01/01/2000 21:00	7.58	10	-999	1025.6	2.9	20.5	19.2	12.3	92	2.2	0.5
24	BUOY	41004	01/01/2000 22:00	7.58	11.11	-999	1025.5	3.7	20.5	19.4	12.6	94	3.1	0.5
25	BUOY	41004	01/01/2000 23:00	7.39	11.11	-999	1024.9	5.1	20.5	19.5	13.8	93	4.3	0.4
26	BUOY	41004	01/02/2000 00:00	8.06	11.11	-999	1024.6	4.9	20.4	20	14	125	4.1	0.5
27	BUOY	41004	01/02/2000 01:00	8.17	10	-999	1024.4	4.5	20.3	20.3	15	128	3.8	0.5
28	BUOY	41004	01/02/2000 02:00	7.59	11.11	-999	1024.5	4.8	20.2	20.5	14	149	4	0.5
29	BUOY	41004	01/02/2000 03:00	7.19	10	-999	1024.3	4.5	20.3	20.6	13.9	147	3.5	0.5
30	BUOY	41004	01/02/2000 04:00	7.91	11.11	-999	1024.3	4	20.3	20.7	13.9	159	3.4	0.5
31	BUOY	41004	01/02/2000 05:00	7.89	11.11	-999	1024.4	3.9	20.3	20.8	14.1	157	3.2	0.6
32	BUOY	41004	01/02/2000 06:00	7.67	11.11	-999	1024.8	4.3	20.3	20.9	14.4	155	3.7	0.5
33	BUOY	41004	01/02/2000 07:00	7.61	11.11	-999	1025.2	3.9	20.3	21	14.9	167	3.4	0.5
34	BUOY	41004	01/02/2000 08:00	7.91	10	-999	1025.7	3.2	20.4	21.3	15.1	159	2.7	0.6
35	BUOY	41004	01/02/2000 09:00	7.76	10	-999	1026.3	3.6	20.4	21.5	15.3	167	3.1	0.5
36	BUOY	41004	01/02/2000 10:00	7.37	10	-999	1026.3	3.2	20.6	21.5	15.5	184	2.7	0.5
37	BUOY	41004	01/02/2000 11:00	6.68	10	-999	1025.7	2.9	20.7	21.5	16.2	200	2.5	0.5
38	BUOY	41004	01/02/2000 12:00	6.89	10	-999	1024.8	2.7	20.9	21.5	16.4	214	2.3	0.5
39	BUOY	41004	01/02/2000 13:00	6.32	10	-999	1024.2	1.7	21.2	21.6	16.5	231	1.6	0.4
40	BUOY	41004	01/02/2000 14:00	5.86	10	-999	1023.8	1.3	21.7	21.8	16.6	237	1.1	0.5
41	BUOY	41004	01/02/2000 15:00	6.03	10	-999	1023.6	1.6	21.5	21.3	16.5	271	1.3	0.4
42	BUOY	41004	01/02/2000 16:00	6.76	11.11	-999	1023.8	1.9	21.3	21	16.1	293	1.7	0.5
43	BUOY	41004	01/02/2000 17:00	6.57	10	-999	1023.7	1.6	21.1	20.1	17.5	322	1.3	0.5
44	BUOY	41004	01/02/2000 18:00	7.05	11.11	-999	1023.9	0.8	20.9	19.9	16.9	185	0.6	0.5

Figure B-1. Export Records to an Excel (XLS) File.

ARAQDB Data Availability

Site: NCDC - HSE

Selected Date Range: 1/1/2004 - 12/31/2004

Parameter	Valid Observations		
	Begin DateTime	End DateTime	No.
WS - Wind Speed	01/01/04 00:00	12/31/04 23:00	8085
WD - Wind Direction	01/01/04 00:00	12/31/04 23:00	8085
TW - Wet Bulb Temperature	01/01/04 00:00	12/31/04 23:00	8680
T - Temperature (Dry Bulb Temperature)	01/01/04 00:00	12/31/04 23:00	8680
SLP - Sea Level Pressure	01/01/04 00:00	12/31/04 23:00	8724
RH - Relative Humidity	01/01/04 00:00	12/31/04 23:00	8680
RNF - Precipitation	01/01/04 00:00	12/31/04 23:00	8723
TD - Dew Point	01/01/04 00:00	12/31/04 23:00	8680
P - Barometric Pressure	01/01/04 00:00	12/31/04 23:00	8724

Figure B-2. Summary Report of Available Data.

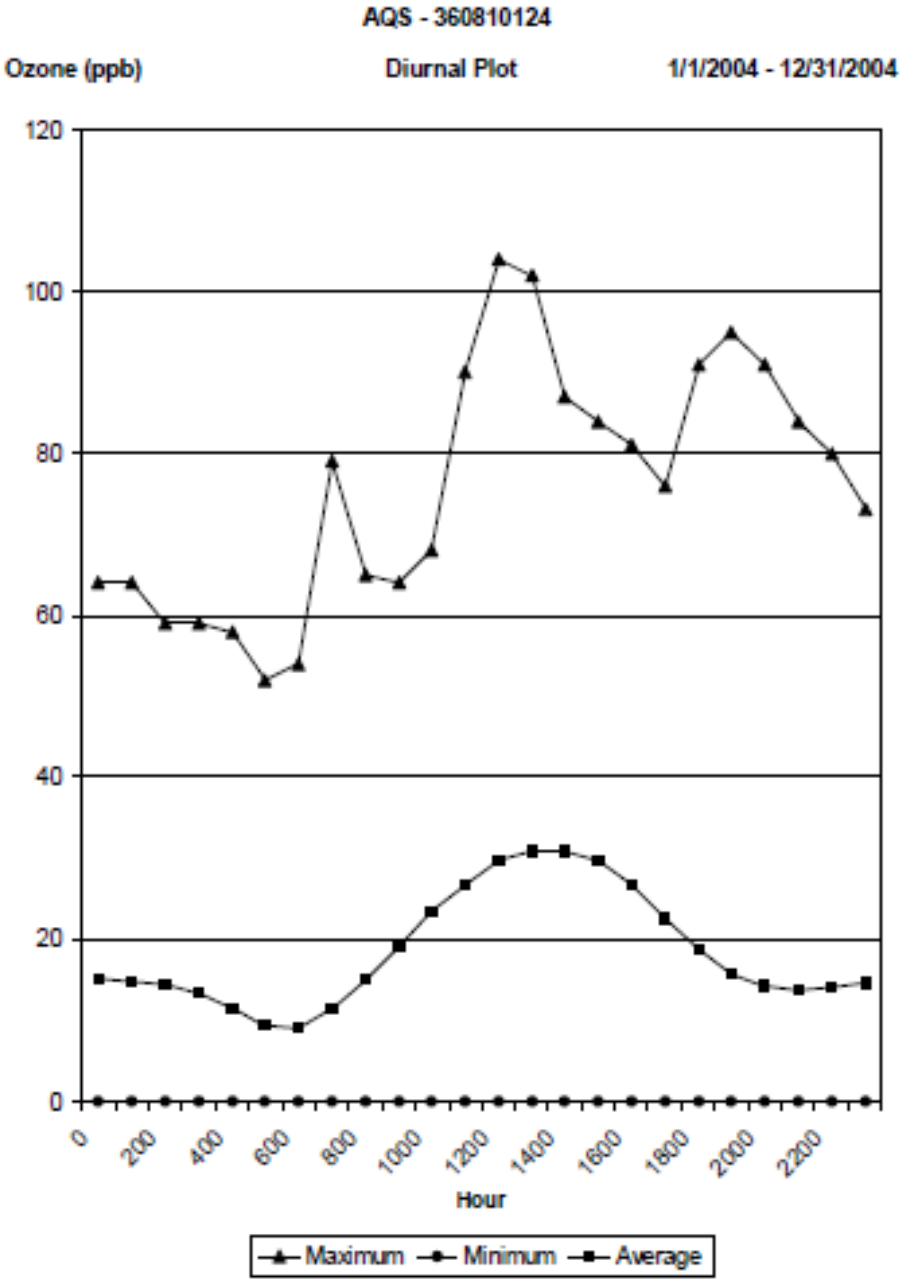


Figure B-3. Diurnal Plot.

Summary of Selected Data

Site: NCDC - FRG
1/1/2000 - 1/31/2000

Parameter	Date	Value	Units	Number	Std Dev
P					
Average		1014.40	mb	744	10.60
Minimum	01/25/2000 17:00	983.40	mb		
Maximum	01/15/2000 09:00	1036.60	mb		
RH					
Average		61.10	percent	744	19.60
Minimum	01/29/2000 15:00	20.00	percent		
Maximum	01/02/2000 03:00	100.00	percent		
RNF					
Average		.10	mm/hr	744	.50
Minimum	01/01/2000 00:00	.00	mm/hr		
Maximum	01/10/2000 12:00	4.60	mm/hr		
SLP					
Average		1018.10	mb	713	10.30
Minimum	01/25/2000 18:00	986.30	mb		
Maximum	01/15/2000 09:00	1039.60	mb		
T					
Average		-1.20	degC	725	7.00
Minimum	01/18/2000 03:00	-15.00	degC		
Maximum	01/03/2000 12:00	16.10	degC		
TD					
Average		-8.50	degC	725	9.00
Minimum	01/17/2000 08:00	-24.40	degC		
Maximum	01/04/2000 18:00	12.80	degC		

Figure B-4. Summary Report of Min, Max, and Mean

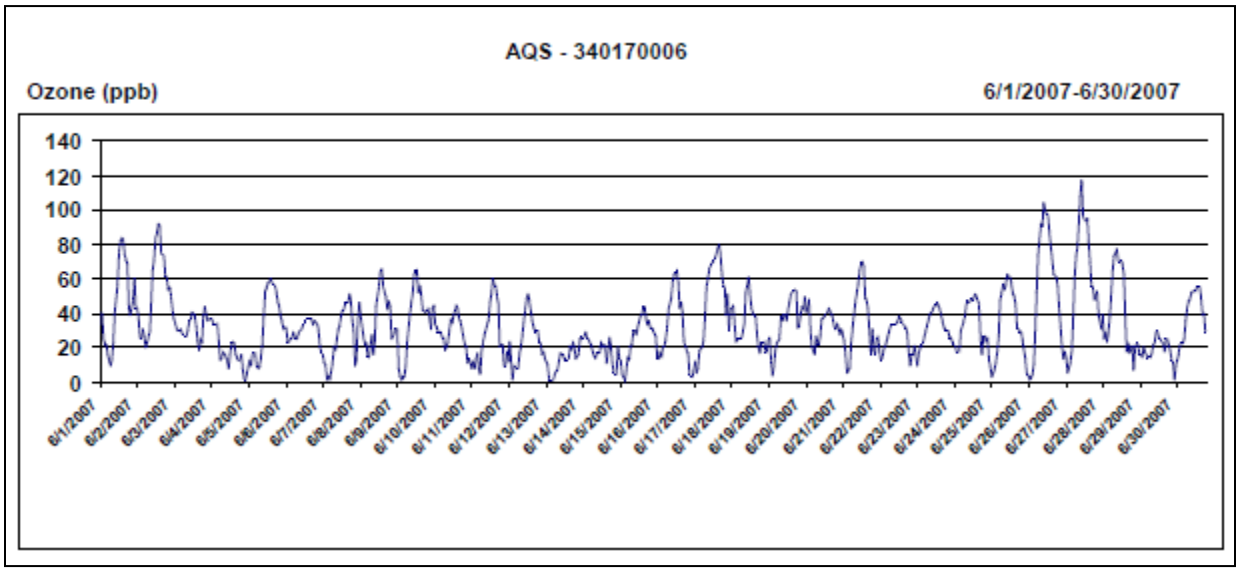


Figure B-5. Timeline Plot - Single Parameter.

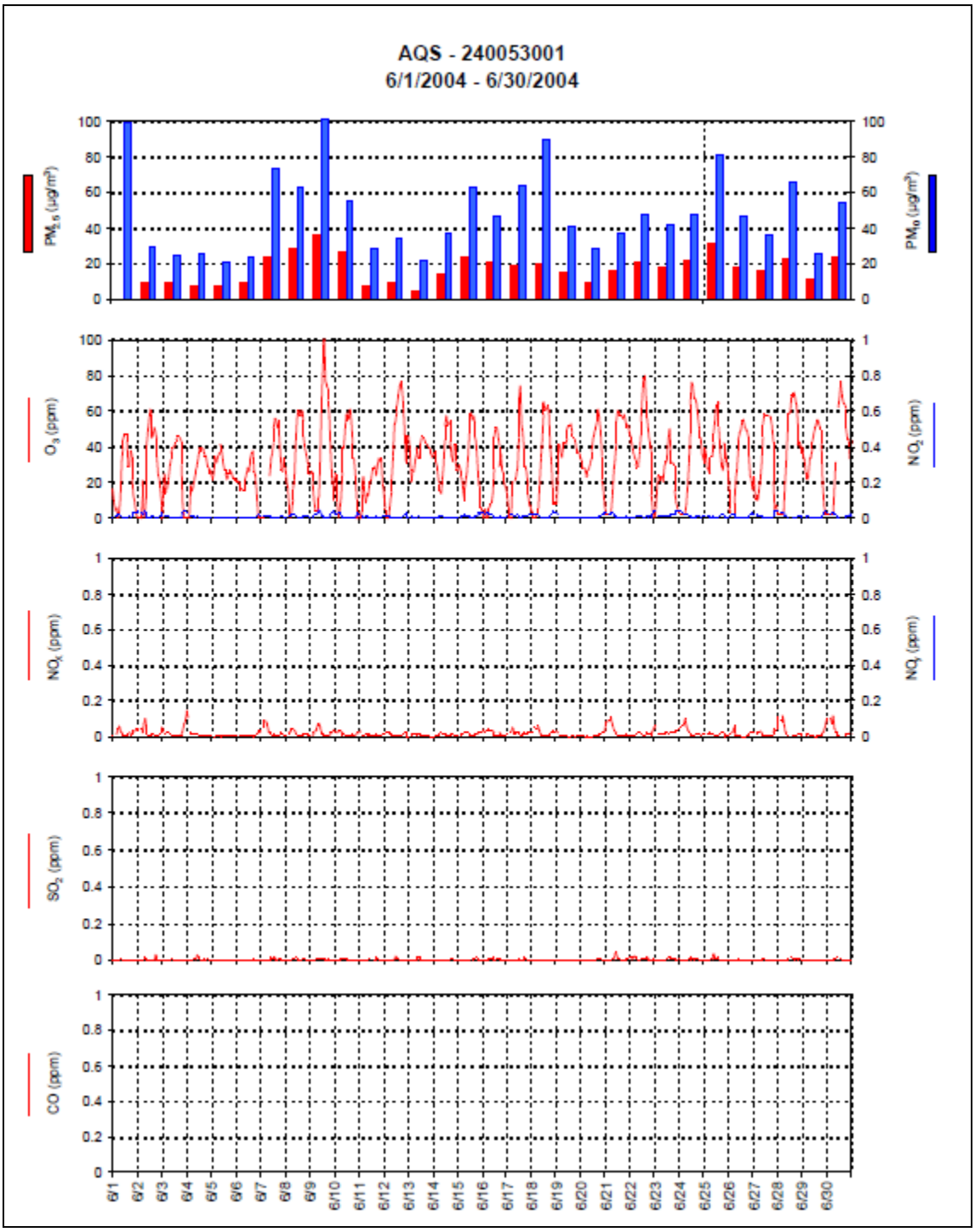


Figure B-6. Timeline Plot - Multiple, Pre-selected Parameters (AQS Data Set).

APPENDIX C: SOURCE DATA FORMAT EXAMPLES

The following examples pertain to data loading only. Data are exported as Excel or CSV files as shown in Appendix B.

```
RD|I|10|003|1008|42101|1|1|007|054|20050101|00:00|0.80|||||||||||||||
RD|I|10|003|1008|42101|1|1|007|054|20050101|01:00|0.66|||||||||||||||
RD|I|10|003|1008|42101|1|1|007|054|20050101|02:00|0.75|||||||||||||||
RD|I|10|003|1008|42101|1|1|007|054|20050101|03:00|0.73|||||||||||||||
RD|I|10|003|1008|42101|1|1|007|054|20050101|04:00|0.69|||||||||||||||
RD|I|10|003|1008|42101|1|1|007|054|20050101|05:00|0.65|||||||||||||||
RD|I|10|003|1008|42101|1|1|007|054|20050101|06:00|0.68|||||||||||||||
RD|I|10|003|1008|42101|1|1|007|054|20050101|07:00|0.69|||||||||||||||
RD|I|10|003|1008|42101|1|1|007|054|20050101|08:00|0.73|||||||||||||||
RD|I|10|003|1008|42101|1|1|007|054|20050101|09:00|0.78|||||||||||||||
RD|I|10|003|1008|42101|1|1|007|054|20050101|10:00|0.75|||||||||||||||
RD|I|10|003|1008|42101|1|1|007|054|20050101|11:00|0.69|||||||||||||||
RD|I|10|003|1008|42101|1|1|007|054|20050101|12:00|0.55|||||||||||||||
RD|I|10|003|1008|42101|1|1|007|054|20050101|13:00|0.54|||||||||||||||
RD|I|10|003|1008|42101|1|1|007|054|20050101|14:00|0.52|||||||||||||||
RD|I|10|003|1008|42101|1|1|007|054|20050101|15:00|0.60|||||||||||||||
RD|I|10|003|1008|42101|1|1|007|054|20050101|16:00|0.73|||||||||||||||
RD|I|10|003|1008|42101|1|1|007|054|20050101|17:00|0.59|||||||||||||||
RD|I|10|003|1008|42101|1|1|007|054|20050101|18:00|0.73|||||||||||||||
RD|I|10|003|1008|42101|1|1|007|054|20050101|19:00|0.74|||||||||||||||
RD|I|10|003|1008|42101|1|1|007|054|20050101|20:00|0.70|||||||||||||||
RD|I|10|003|1008|42101|1|1|007|054|20050101|21:00|0.63|||||||||||||||
RD|I|10|003|1008|42101|1|1|007|054|20050101|22:00|0.57|||||||||||||||
RD|I|10|003|1008|42101|1|1|007|054|20050101|23:00|0.61|||||||||||||||
RD|I|10|003|1008|42101|1|1|007|054|20050102|00:00|0.57|||||||||||||||
RD|I|10|003|1008|42101|1|1|007|054|20050102|01:00|0.57|||||||||||||||
RD|I|10|003|1008|42101|1|1|007|054|20050102|02:00|0.57|||||||||||||||
RD|I|10|003|1008|42101|1|1|007|054|20050102|03:00|0.62|||||||||||||||
RD|I|10|003|1008|42101|1|1|007|054|20050102|04:00|0.62|||||||||||||||
RD|I|10|003|1008|42101|1|1|007|054|20050102|05:00|0.60|||||||||||||||
RD|I|10|003|1008|42101|1|1|007|054|20050102|06:00|0.61|||||||||||||||
RD|I|10|003|1008|42101|1|1|007|054|20050102|07:00|0.62|||||||||||||||
RD|I|10|003|1008|42101|1|1|007|054|20050102|08:00|0.62|||||||||||||||
RD|I|10|003|1008|42101|1|1|007|054|20050102|09:00|0.62|||||||||||||||
RD|I|10|003|1008|42101|1|1|007|054|20050102|10:00|0.61|||||||||||||||
RD|I|10|003|1008|42101|1|1|007|054|20050102|11:00|0.61|||||||||||||||
RD|I|10|003|1008|42101|1|1|007|054|20050102|12:00|0.69|||||||||||||||
```

Figure C-1. AQS Data Format.

YYYY	MM	DD	hh	WD	WSPD	GST	WVHT	DPD	APD	MWD	BAR	ATMP	WTMP	DEWP	VIS	TIDE
2003	01	01	00	154	9.3	11.2	2.68	7.14	5.99	999	1015.0	21.5	18.8	18.0	99.0	99.00
2003	01	01	01	154	9.6	11.2	2.90	8.33	6.34	999	1014.7	21.6	18.8	18.3	99.0	99.00
2003	01	01	02	147	10.7	13.0	2.76	7.69	6.07	999	1014.5	21.0	18.8	18.3	99.0	99.00
2003	01	01	03	159	11.5	14.3	3.10	8.33	6.42	999	1013.7	22.1	18.8	18.1	99.0	99.00
2003	01	01	04	164	10.6	12.7	3.49	8.33	6.48	999	1013.5	22.0	18.8	18.5	99.0	99.00
2003	01	01	05	166	11.1	14.7	3.68	8.33	6.69	999	1012.7	21.9	18.8	18.7	99.0	99.00
2003	01	01	06	262	10.1	12.1	3.45	8.33	6.63	999	1013.5	16.8	18.7	15.8	99.0	99.00
2003	01	01	07	286	5.3	7.0	3.14	8.33	6.55	999	1012.7	16.6	18.7	15.5	99.0	99.00
2003	01	01	08	326	1.1	3.0	3.16	9.09	7.09	999	1012.6	16.5	18.8	15.4	99.0	99.00
2003	01	01	09	88	8.6	10.3	2.99	9.09	7.17	999	1009.5	17.0	18.9	16.2	99.0	99.00
2003	01	01	10	103	10.0	11.9	2.57	9.09	6.61	999	1007.7	17.7	19.0	16.8	99.0	99.00
2003	01	01	11	131	5.8	7.3	2.52	9.09	6.75	999	1008.0	18.2	19.1	17.1	99.0	99.00
2003	01	01	12	118	5.0	6.4	2.51	9.09	6.82	999	1006.9	18.2	19.2	17.4	99.0	99.00
2003	01	01	13	230	11.0	14.2	2.42	9.09	6.85	999	1007.3	18.5	19.1	17.8	99.0	99.00
2003	01	01	14	237	11.0	13.3	2.63	8.33	6.60	999	1007.9	19.0	19.4	16.8	99.0	99.00
2003	01	01	15	242	11.1	13.1	2.51	9.09	6.18	999	1008.6	18.1	19.3	16.0	99.0	99.00
2003	01	01	16	240	11.8	14.4	2.93	9.09	6.40	999	1008.6	18.5	19.1	15.3	99.0	99.00
2003	01	01	17	234	12.2	14.4	2.90	9.09	6.22	999	1007.6	18.6	18.9	15.8	99.0	99.00

Figure C-2. Buoy Data Format – Prior to 2005.

YYYY	MM	DD	hh	mm	WD	WSPD	GST	WVHT	DPD	APD	MWD	BAR	ATMP	WTMP	DEWP	VIS	TIDE
2006	01	01	00	00	250	3.7	5.1	99.00	99.00	99.00	999	1014.5	14.2	999.0	13.0	99.0	99.00
2006	01	01	01	00	252	4.1	5.4	99.00	99.00	99.00	999	1015.1	14.3	999.0	13.1	99.0	99.00
2006	01	01	02	00	254	3.5	4.7	99.00	99.00	99.00	999	1015.7	14.3	999.0	13.3	99.0	99.00
2006	01	01	03	00	270	2.1	2.8	99.00	99.00	99.00	999	1015.8	14.1	999.0	13.1	99.0	99.00
2006	01	01	04	00	246	2.1	2.7	99.00	99.00	99.00	999	1016.0	13.9	999.0	13.1	99.0	99.00
2006	01	01	05	00	235	3.8	4.0	99.00	99.00	99.00	999	1015.5	12.9	999.0	12.1	99.0	99.00
2006	01	01	06	00	265	2.5	3.1	99.00	99.00	99.00	999	1015.8	13.4	999.0	12.6	99.0	99.00
2006	01	01	07	00	277	1.6	2.1	99.00	99.00	99.00	999	1016.2	13.2	999.0	12.5	99.0	99.00
2006	01	01	08	00	307	1.5	1.7	99.00	99.00	99.00	999	1016.8	12.3	999.0	11.6	99.0	99.00
2006	01	01	09	00	340	2.9	3.7	99.00	99.00	99.00	999	1017.1	11.8	999.0	9.7	99.0	99.00
2006	01	01	10	00	338	2.5	3.2	99.00	99.00	99.00	999	1017.6	11.2	999.0	7.1	99.0	99.00
2006	01	01	11	00	330	1.5	2.0	99.00	99.00	99.00	999	1018.0	10.7	999.0	5.9	99.0	99.00
2006	01	01	12	00	321	1.8	1.9	99.00	99.00	99.00	999	1018.7	10.5	999.0	5.3	99.0	99.00
2006	01	01	13	00	354	1.8	2.1	99.00	99.00	99.00	999	1019.5	10.1	999.0	5.3	99.0	99.00
2006	01	01	14	00	42	0.4	0.7	99.00	99.00	99.00	999	1020.7	11.8	999.0	5.1	99.0	99.00
2006	01	01	15	00	47	1.1	1.4	99.00	99.00	99.00	999	1021.4	12.2	999.0	3.0	99.0	99.00
2006	01	01	16	00	48	1.6	1.9	99.00	99.00	99.00	999	1021.3	12.3	999.0	3.7	99.0	99.00
2006	01	01	17	00	89	1.8	2.5	99.00	99.00	99.00	999	1020.5	12.8	999.0	5.0	99.0	99.00

Figure C-3. Buoy Data Format – Since 2005.

USAF	WBAN	YR--MODAHRMN	DIR	SPD	VSB	TEMP	DEWP	SLP	ALT	STP	PCP01
690190	*****	200401010000	200	36	11265	160	60	1018.4	30.09	******	*****
690190	*****	200401010100	180	46	11265	150	70	1018.7	30.09	******	*****
690190	*****	200401010200	190	26	11265	140	80	1019.1	30.10	******	*****
690190	*****	200401010300	190	57	11265	150	70	1019.3	30.11	******	*****
690190	*****	200401010400	190	57	11265	150	100	1019.2	30.11	******	*****
690190	*****	200401010500	200	82	11265	140	100	1018.3	30.09	******	*****
690190	*****	200401010600	190	57	11265	160	90	1017.7	30.08	******	*****
690190	*****	200401010700	190	51	11265	150	110	1017.7	30.07	******	*****
690190	*****	200401010800	290	41	11265	140	110	******	30.11	******	*****
690190	*****	200401010900	210	51	11265	150	90	******	30.10	******	*****
690190	*****	200401011000	210	51	11265	150	110	1017.6	30.09	******	*****
690190	*****	200401011100	190	51	11265	150	120	1016.5	30.05	******	*****
690190	*****	200401011200	190	36	11265	150	130	1017.4	30.07	******	*****
690190	*****	200401011300	190	26	11265	150	140	1017.7	30.08	******	*****
690190	*****	200401011500	230	41	11265	180	120	1019.0	30.12	******	*****
690190	*****	200401011600	240	41	11265	190	120	1020.4	30.17	******	*****
690190	*****	200401011700	210	62	11265	190	130	1019.9	30.15	******	*****
690190	*****	200401011800	220	72	11265	200	130	1019.1	30.13	******	*****
690190	*****	200401011900	240	67	11265	210	130	1018.2	30.11	******	*****
690190	*****	200401012000	230	77	11265	220	120	1017.0	30.07	******	*****
690190	*****	200401012100	230	67	11265	220	110	1016.4	30.05	******	*****
690190	*****	200401012200	230	57	11265	210	110	1016.6	30.06	******	*****
690190	*****	200401012300	210	36	11265	200	110	1016.7	30.06	******	*****
690190	*****	200401020000	210	26	11265	190	120	1016.9	30.07	******	*****
690190	*****	200401020100	240	26	11265	170	110	1017.2	30.07	******	*****
690190	*****	200401020200	220	41	11265	160	110	1017.6	30.08	******	*****
690190	*****	200401020300	210	41	11265	160	110	1017.5	30.08	******	*****
690190	*****	200401021700	250	62	11265	200	110	1016.4	30.05	******	*****
690190	*****	200401021800	230	82	11265	220	110	1014.8	30.01	******	*****
690190	*****	200401021900	220	82	11265	250	110	1012.6	29.95	******	*****
690190	*****	200401031500	210	77	11265	180	130	1009.3	29.84	******	*****
690190	*****	200401031600	210	77	11265	190	150	1010.1	29.87	******	*****
690190	*****	200401031700	210	67	11265	190	150	1009.7	29.86	******	*****
690190	*****	200401031800	210	98	11265	210	150	1008.7	29.83	******	*****
690190	*****	200401031900	210	82	11265	220	150	1007.6	29.80	******	*****
690190	*****	200401032000	220	72	11265	220	150	1006.8	29.78	******	*****
690190	*****	200401032100	230	62	11265	230	150	1006.0	29.75	******	*****
690190	*****	200401032200	200	62	11265	230	150	1005.4	29.74	******	*****
690190	*****	200401032300	210	51	11265	240	140	1005.0	29.73	******	*****

Figure C-4. NCDC Surface Data Format.

254	0	1	JAN	2004		
1	3937	72240	30.12N	93.22W	5	99999
2	200	1390	1580	76	99999	3
3		LCH			52	ms
9	10250	5	174	128	100	26
4	10000	212	160	113	105	46
6	9891	304	99999	99999	110	51
5	9680	485	134	108	99999	99999
6	9538	609	99999	99999	155	46
5	9380	749	144	128	99999	99999
4	9250	871	140	129	200	67
6	9203	914	99999	99999	200	57
6	8873	1219	99999	99999	195	87
5	8800	1288	118	118	99999	99999
5	8680	1403	138	91	99999	99999
4	8500	1584	142	82	190	82
6	8255	1828	99999	99999	190	93
5	8020	2069	110	50	99999	99999
6	7958	2133	99999	99999	195	103
6	7669	2438	99999	99999	195	108
6	7391	2743	99999	99999	200	108
4	7000	3192	30	30	210	103
5	6730	3508	14	2	99999	99999
6	6606	3657	99999	99999	225	103
5	6500	3786	0	-60	99999	99999
6	6357	3962	99999	99999	230	113
6	6116	4267	99999	99999	225	118
5	6070	4327	-45	-135	99999	99999
5	5950	4484	-29	-329	99999	99999
5	5720	4794	-41	-441	99999	99999
6	5661	4876	99999	99999	200	82
6	5237	5486	99999	99999	215	93
6	5038	5791	99999	99999	205	123
4	5000	5850	-117	-487	205	118
6	4839	6096	99999	99999	210	134
5	4330	6933	-189	-499	99999	99999
6	4112	7315	99999	99999	245	129
4	4000	7520	-235	-505	245	149
6	3944	7620	99999	99999	240	149
6	3471	8534	99999	99999	230	149
5	3420	8640	-333	-563	99999	99999
6	3181	9144	99999	99999	230	190
4	3000	9550	-391	-561	230	237
5	2930	9711	-395	-455	99999	99999
5	2840	9923	-413	-453	99999	99999

Figure C-5. NCDC Upper Air Data Format.

The Department of the Interior Mission

As the Nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering sound use of our land and water resources; protecting our fish, wildlife, and biological diversity; preserving the environmental and cultural values of our national parks and historical places; and providing for the enjoyment of life through outdoor recreation. The Department assesses our energy and mineral resources and works to ensure that their development is in the best interests of all our people by encouraging stewardship and citizen participation in their care. The Department also has a major responsibility for American Indian reservation communities and for people who live in island territories under U.S. administration.

BOEM
Bureau of Ocean Energy Management

The Bureau of Ocean Energy Management Mission

The Department of the Interior's Bureau of Ocean Energy Management (BOEM) manages the exploration and development of the nation's offshore resources. It seeks to appropriately balance economic development, energy independence, and environmental protection through oil and gas leases, renewable energy development and environmental reviews and studies. The Office of Renewable Energy Programs (OREP) is responsible for the renewable energy activities and alternate energy-related programs on the OCS. The OREP oversees the development and implementation of renewable energy leases and provides policy direction, coordination, and oversight. The OREP embraces a "cradle to grave" approach for managing renewable energy projects to ensure orderly, safe, and environmentally responsible renewable energy development on the OCS. The OREP and BOEM together strive to fulfill its responsibilities through the general guiding principles of: (1) being responsive to the public's concerns and interests by maintaining a dialogue with all potentially affected parties and (2) carrying out its programs with an emphasis on working to enhance the quality of life for all Americans by lending BOEM assistance and expertise to economic development and environmental protection.