

Data Analysis Session

Wednesday & Thursday, May 24-25

Particulate Mater Characterization (Wednesday 8:00am-12:00 noon)

This section of the Data Analysis Training Session will focus on particulate matter characterization. It will include analysis techniques which will aid in describing PM over time and space as well as look at the composition of the overall PM mass and the relationship PM has with other pollutants. Examples and software demonstrations will be based on data collected from the new PM_{2.5} FRM network, from continuous PM_{2.5} monitors, and from the ongoing IMPROVE study.

- 8:00-8:30 ***Welcome to Data Analysis Session***
- 8:30-9:30 ***Temporal Patterns***
C *An Exploratory Analysis of Fine Particulate matter and It's Component Constituents with Ozone and Meteorological Variables in Washington, DC - Audry Rogers, Sharon Isley, Jeff Jarlett from 8:30-8:50*
- 9:30-10:00 ***Spatial Patterns Part I***
- 10:00-10:30 Break
- 10:30-11:00 ***Spatial Patterns Part II***
- 11:00-12:00 ***Compositional Patterns***
C *An Exploratory Analysis of the Relationships Among Fine and Coarse Particulate Matter and Ozone and Meteorological Variables in North Carolina - Kristen Madsen, Brian Copeland, Michael Crotty from 11:00-11:20*
C Speciation Data
C Relationships between PM and other pollutants/meteorology
- 12:00-1:30 Lunch

Trends in PM_{2.5} (Wednesday 1:30pm-5:00pm)

This section of the Data Analysis Training Session will focus on trends in PM_{2.5}. By trends, we mean the process through which we track progress. This session will involve general information about some options that exist for discerning trends, examples of applications, and demonstrations of some techniques, as time permits.

- 1:30-1:45 ***Introduction***
C Overview of session.
C What is a Trend?
C Why should we look at Trends?
- 1:45-2:30 ***Basic Trend Calculations***
C Simple Linear Regression.
C Non-parametric Methods.
C Suggestions of Other Options in General.
- 2:30-3:00 ***Adjustment of Trends***
C Adjustment Techniques.
C Graphical Methods.
- 3:00-3:30 Break
- 3:30-4:15 ***Spatial /Temporal Trends and Handling Missing Data***
C Graphical Methods for Discerning Trends.
C Some Graphing Do's and Don'ts.
C Missing Annual Data and How to Handle It.
- 4:15-5:00 ***Open Discussion/Wrap-Up.***
C Suggestions for the Workbook.
C Solicitation for Workgroup Participation.
C Preparation for Day 2.

Source Apportionment (Thursday 8am-12 noon)

This section of the Data Analysis Training Session will focus on source apportionment. By source apportionment, we mean the process of understanding the possible sources impacting an area of concern and the approximate magnitude of those sources. In this session, we will work with data from Phoenix, Arizona. Examples will be based on data collected from the new PM_{2.5} FRM network, from continuous PM_{2.5} monitors, from the ongoing PM_{2.5} speciation minitrends study, and from ORD's National PM Research Monitoring Network.

- 8:00-8:30 ***Introduction***
- C Outline for session.
 - C What is Source Apportionment and Why Do It?
 - C What is the difference between a Primary and Secondary source?
 - C What are the sources of data?
- 8:30-8:45 ***Simple source apportionment techniques***
- C Visualization of concentrations and emissions.
 - C Histograms or pie charts to compare one season to another, one site to another, one year to another, high days to low days, weekend to weekday.
 - C Time series to look for patterns of on/off.
- 8:45-9:00 ***Not so simple source apportionment techniques***
- C Looking at wind directions using frequency distributions (Ron Henry example)
 - C Looking at wind direction and wind speed using wind roses (Mike Rizzo example, AMDAS demo, AIRS Graphics demo)
- 9:00-9:15 ***More complicated source apportionment techniques***
- C Basic (and quick) overview of receptor models, including CMB, UNMIX, PMF, Factor Analysis, RMAPS (receptor model applied to patterns in space) and describing fundamental differences in CMB and UNMIX/PMF/Factor Analysis, RMAPS [single-sample or multivariate] (source profiles up front, one day analyzed vs. multiple days analyzed, use of ambient data only)
 - C Trajectories
- 9:15-10:00 ***UNMIX Demonstration***
- C Description of what is needed to run the tool (software, data)
 - C Demo of running the tool (including viewing of plots)
 - C Description of what comes out of tool (data)

10:00-10:30 Break

10:30-11:15 ***PMF Demonstration***

- C Description of what is needed to run the tool (software, data (including MDL and uncertainty))
- C Demo of running the tool (including selection of # factors, FPEAK)
- C Description of what comes out of tool (data)

11:15-11:45 ***Issues with using source-receptor models***

- C How to know whether the fit is good?
- C How to identify sources?
- C Pros and cons of using data below MDL and filling in for missing values
- C Status of SPECIATE (what is in it and caveats about using it)
- C Need to understand monitoring issues before using data (e.g. carbon measurements, flags)
- C Implications for PM_{2.5} network design

11:45-12:00 ***Wrap-up of Data Analysis Session***

Data Analysis Section Wednesday & Thursday, May 24-25 Evaluation

1. *Educational Background (check all that apply):*

- Engineering.
- Mathematics/Statistics
- Science
- Other _____

2. *Job Responsibility (check all that apply):*

- Quality Assurance
- Data Analysis
- Monitoring
- Modeling
- Other _____

3. *Data Analysis Sections Attended (circle all that apply):*

- | | | | | |
|---|------------------------------|-----|------|------|
| C | Characterization Section | All | Some | None |
| C | Trends Section | All | Some | None |
| C | Source Apportionment Section | All | Some | None |

4. *Usefulness of Information Covered:*

		Very Useful	Neutral	Not Useful	
C	Characterization Section	5	4	3	2 1
C	Trends Section	5	4	3	2 1
C	Source Apportionment Section	5	4	3	2 1

5. *Things you liked best about the Data Analysis Section.*

6. *Things that need improvement within the Data Analysis Session.
(Please make any suggestions for improvement, as well).*

7. *Workbook comments and interest in participation on workgroup(s) in making revisions (please specify area(s) of interest).*

8. *Other Comments.*