STi | Sonoma Technology

Remote and In-Person Air Quality and Data Analysis Training Courses Offered

Sonoma Technology offers a wide array of air quality- and data analysis-related training courses to help your team build institutional knowledge and capacity. Our scientists have presented webinars and in-person training to government agencies, private industry clients, and decision makers around the world. We tailor courses to fit the needs of each client, and can conduct any training through remote platforms such as Zoom and Google Classroom.

Examples of Sonoma Technology courses are shown in the table below; if you do not see the specific course content you are seeking, please contact Steven Brown at sbrown@sonomatech.com.

We develop custom training to meet your needs. If you do not see what you are looking for, contact Steve Brown at Sonoma Technology: **sbrown@sonomatech.com.** Cost estimates are provided upon request. Our estimates are based on the course selected, length of training, extent of material to be distributed to participants, and customization requested from our standard course material.

Sample training courses we offer.

Summary	Form	Training Hours	Homework Hours	Notes/Learning Objectives
R for Beginners				
Basics of using R; data structures; programming	Twice-a-week 2-hr online class for 4 weeks	16 hours	16 hours	After successful completion of this course, participants will be able to: 1. Install and load R software 2. Describe, create, and manipulate the common data types and data structures in R 3. Apply Tidyverse commands for advanced manipulation and cleaning of data 4. Import and export data in the R interface (I/O) 5. Create figures and plots using the ggplot2 package 6. Use common statistical techniques with data, including linear modeling 7. Use looping and conditional statements for advanced programming 8. Write R functions 9. Combine the above elements in an R script to complete data analyses
R for Air Quality Data Analysis				

Importing air quality data; openair R package for air quality data visualization; advanced tools for air quality analysis	Twice a week 2-hr online class for 2 weeks	8 hours	16 hours	After successful completion of this course, participants will be able to:
				1. Interact with the R environment
				2. Import and export air quality data in the R environment
				3. Use the openair R package to produce a variety of analysis outputs, including:
				  a. Time averaging
				  b. Calendar plots
				  c. Wind roses and pollution roses
				  d. Trajectory plots
				4. Understand applications of additional R tools for air quality analysis, such as:
				  a. ropenaq
				  b. SplitR

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Data Validation (can be modular)				
Approach to data validation; criteria pollutants; CSN data; PAMS VOC data; using DART	Twice-a-week 2-hr online class for 4 weeks	16 hours	8-16 hours	After successful completion of this course, participants will be able to: 1. Apply data validation principles and tools to air quality measurements 2. Assemble validated datasets to facilitate comprehensive air quality assessments
Developing a Successful Community Air Monitoring Program				
Air toxics-based curriculum; however, training is relevant to the full spectrum of community-based pollutant monitoring	Two 2-hour seminars with discussion	4 hours	2 hours	View sample recorded course content on the web at https://www.apti-learn.net/LMS/EPAPlanPage.aspx?c=4&t=APTI?m=3&n=0&c=4&t=APTI%20V-202 This class makes use of quizzes during the lectures to assess student engagement. Instruction is adjusted in real time, as needed, to ensure understanding of community-based monitoring concepts.
AQ Sensors I				
Low-cost air sensor training	Four 2-hour classes with discussion	8 hours	4-8 hours	Course provides an overview of air quality sensors and information air agencies need to navigate what the data may mean (or not). Topics include sensors and regulatory monitors; how sensors operate; sensor uses; data storage, retrieval, processing; quality assurance and control; study design
AQ Sensors II				
Low-cost air sensor training	Four 2-hour classes with discussion	8 hours	4-8 hours	As a follow on to AQ Sensors I, this course dives deeper into advanced topics such as data analysis and handling; use of tools (EPA's RETIGO, R) to explore data; and available resources to support sensor use

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Exceptional Event (EE) Analysis				
Understand the form of the EE rule, and learn how to apply resources to assess exceptional events	Four 2-hour classes with discussion	8 hours	4-8 hours	After successful completion of this course, participants will be able to: 1. Name the types of events that can be eligible for exceptional event demonstrations 2. Explain various aspects of the wildfire smoke EE rule, including: a. The three wildfire smoke EE tiers and selection of each tier b. Elements required for a demonstration in each EE tier c. Calculation of the Q/d smoke emissions impact 3. Explain aspects of the stratospheric exceptional event rule 4. Discuss previous successful exceptional event demonstrations 5. Describe data and model resources available to agencies in preparation of an exceptional event, including: a. Surface monitor data b. Satellite data c. Trajectory modeling results d. Meteorological and photochemical model results, including operational models and historical re-analyses e. Radiosonde data 6. Use the tools covered in the course to complete a mock exceptional event demonstration for an event of the student's choosing
AQ Forecasting				
Improving AQ forecasting when smoke is in the area	Two 2-hour seminars with discussion	4 hours		This course offers a virtual workshop on air quality forecasting during smoke events.