2019 USEPA R User Group Workshop Agenda

On-line participation details:

There will be a remote participation option for the presentations and workshops. Details with Webinar Details are listed below.

On-site details:

The workshop is being held at the US EPA campus in Research Triangle Park, NC.

Workshop summaries:

- **Introduction to R (Full Day):** Participants in this workshop will be introduced to R through the lense of the "Tidyverse" as well as learn basics of the R Language for statistical computing. In particular we will: 1) learn the fundamentals of R including syntax, functions, and packages; 2) spend quality time with the core R data structure, the data frame; 3) learn how to manipulate our data with the `dplyr` and `tidyr` packages; and 4) gain expereince creating data visualizations with `ggplot2`. Our goal is to set learners up with a foundation for future exploration of R.
- **Working with Spatial Data in R (Half Day):** This workshop will focus on the fundamentals of working with spatial data in R â€“ reading and writing spatial data, dealing with map projections, packages for handling both vector and raster data, and visualizing and mapping spatial data in R. After covering fundamentals, weâ€™ll move through example exercise demonstrating spatial operations such as spatial joins, spatial subsetting, spatial aggregatuibm cropping raster data, and extracting raster data for points and weâ€™ll make use of packages such as sf, sp, raster, rgdal, maptools, and several others. A basic working knowledge of R will be assumed.
- **Using LaTeX and Markdown for Reproducible Research (Half Day):** Taking a modular approach and a stepwise fashion, participants will be introduced to the basics of LaTeX, Markdown, and the R package knitr. Participants will then get to use these modules synchronously to facilitate reproducible reports and research with R.
- **Network Analysis/Graph Analysis techniques (Half Day):** Networks and graphs are a flexible framework for organizing complex interactions between large number of entities. In this workshop, using the igraph package in R, we will start from scratch by building a small network. We will then import a larger more complicated network and go through the process of encoding node and edge attributes. We will discuss graph layout options and complete some standard analyses. In the end, participants will gain a familiarity with the how to build, import, visualize and analyze networks in R.
- **An Introduction to Shiny, R Markdown & htmlwidgets with Applications in Research (Half Day):** RStudio will be presenting an overview of creating interactive visualizations, dashboards and Shiny Apps. This short course will provide an introduction to flexible and powerful tools for statistical analysis, reproducible research and interactive visualizations. The hands-on course will include an overview of how to build Shiny apps and R Markdown documents.
- **Version Control, GitHub, and Bitbucket Workshop (Half Day):** The basics of using git and GitHub for version control and reproducible research at EPA, with an introduction to EPA's new Bitbucket services. An overview presentation will be followed by a hands on session.

Mon, August 12

Time	Room	Title	Speaker
11:00 AM - 1:00 PM		Registration	
1:00 PM - 1:10 PM	C111 A,B,C	Introduction	Jeff Hollister, Ann Vega and Richard Allen, US EPA, Office of Research and Development

Time	Room	Title	Speaker
1:10 PM - 1:30 PM	C111 A,B,C	Welcome	Vaughn Noga, Principal Deputy Assistant Administrator and Deputy Chief Information Officer, US EPA, OEI
Keynote Address			
1:30 PM - 2:30 PM	C111 A,B,C	Spreadsheets and *BLEEP!!* (real title: TBD)	JD Long, RenaissanceRe
2:30 PM - 3:00 PM		**Break**	
Talks			
3:00 PM - 3:20 PM	C111 A,B,C	Packaging your research problem: the case of CityWaterBalance for R	Laura Erban, US EPA, ORD/NHEERL
3:25 PM - 3:45 PM	C111 A,B,C	Package Management for Reproducible R Code	Cole Arendt, RStudio
3:50 PM - 4:10 PM	C111 A,B,C	Using R and MCMC for Amphibian Exposure Model Selection and Parameterization	Tom Purucker, US EPA, ORD/NERL
4:15 PM - 4:35 PM	C111 A,B,C	Evaluation of a numerical air quality model: Data wrangling large NetCDF files with R	Kristen Foley, US EPA, ORD/NERL
4:40 PM - 5:00 PM	C111 A,B,C	Machine Learning at EPA: Who, What, Where, When, and Why	Elizabeth Mannshardt, US EPA, OMS/IAASD
5:05 PM - 5:25 PM	C111 A,B,C	Ambient Air Monitoring Network Assessment Tools using R shiny	Benjamin Wells, US EPA, OAR/OAQPS
Evening Activities			
5:30 PM - 6:30 PM	Marriott at Research Triangle Park	Informal Social	All!

Tues, August 13

Time	Room	Title	Speaker
Morning Workshops			
8:00 AM - 11:30 AM	C111A	Introduction to R - Part 1	Jeff Hollister, US EPA, ORD/NHEERL, Clinton McCrowey, US EPA, Region 3
8:00 AM - 11:30 AM	C112	Working with Spatial Data in R	Marc Weber, US EPA, ORD/NHEERL and Michael McManus, US EPA, ORD/NCEA
8:00 AM - 11:30 AM	C111C	Using LaTeX and Markdown for Reproducible Research	Eric Beck, US EPA, Region 1 and Emily Li, US EPA, ORD/NRMRL
Lunch			

Time	Room	Title	Speaker
11:30 AM - 1:30 PM		On your own	
Afternoon Workshops			
1:30 PM - 5:00 PM	C111A	Introduction to R - Part 2	Jeff Hollister, US EPA, ORD/NHEERL, Clinton McCrowey, US EPA, Region 3
1:30 PM - 5:00 PM	C114	Network Analysis/Graph Analysis techniques	Nate Pollesch, US EPA, ORD/NHEERL and Jennifer Olker, US EPA, ORD;NHEERL
1:30 PM - 5:00 PM	C111C	An Introduction to Shiny, R Markdown & htmlwidgets with Applications in Research	Phil Bowsher, RStudio

Wed, August 14

Time	Room	Title	Speaker
8:00 AM - 8:15 AM		Welcome Day 2 and Welcome to DDES Folks	
Workshop			
8:15 AM - 11:50 AM	C111 A,B,C	Version Control, GitHub, and Bitbucket Workshop	Jameel Alsalam, Terry Brown, Sharon Kenny
11:50 AM - Noon		Wrap-up	Ann Vega

Webinar Links

Date	Time	Title	Link	Call-in
Mon, Sep 10	1:00 PM - 5:25 PM	Keynote and Presentations	Skype Webinar Link	Call-in number: 1-202-991-0477, Access code/Conference ID: 8603858
Tues, Sep. 11	8:00 AM - 11:30 AM	Introduction to R - Part 1	Skype Webinar Link	Call-in number: 1-202-991-0477, Access code/Conference ID: 7404609
Tues, Sep. 11	8:00 AM - 11:30 AM	Working with Spatial Data in R	Skype Webinar Link	Call-in number: 1-202-991-0477, Access code/Conference ID: 3802797
Tues, Sep. 11	8:00 AM - 11:30 AM	Using LaTeX and Markdown for Reproducible Research	Skype Webinar Link	Call-in number: 1-202-991-0477, Access code/Conference ID: 8603858
Tues, Sep. 11	1:30 PM - 5:00 PM	Introduction to R - Part 2	Skype Webinar Link	Call-in number: 1-202-991-0477, Access code/Conference ID: 7404609

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Tues, Sep. 11	1:30 PM - 5:00 PM	Network Analysis/Graph Analysis techniques	Skype Webinar Link	Call-in number: 1-202-991-0477, Access code/Conference ID: 3802797
Tues, Sep. 11	1:30 PM - 5:00 PM	An Introduction to Shiny, R Markdown & htmlwidgets with Applications in Research	Skype Webinar Link	Call-in number: 1-202-991-0477, Access code/Conference ID: 8603858
Wed, Sep. 12	8:15 AM - 11:50 AM	Version Control, GitHub, and BitBucket Workshop	Skype Webinar Link	Call-in number: 1-202-991-0477, Access code/Conference ID: 8603858