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# Earth Data Analytics Online Certificate

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### ★ Earth analytics

**UNITS** 

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1.1 Use data for science

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#### SECTION 2 INTRO TO R & WORK WITH TIME SERIES DATA

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2.1 Get to Know R2.2 Time SeriesData in R

SECTION 3 LIDAR RASTER DATA IN R

#### Lesson 1. How to Reuse Functions That You Create In Scripts - Source a Function in R

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## R Source Functions - Efficient Programming - Earth analytics course module

Welcome to the first lesson in the **R Source Functions - Efficient Programming** module. Learn how to source a function in R by saving the function in another R script.

#### **Learning Objectives**

After completing this tutorial, you will be able to:

Calculate NDVI using NAIP multispectral imagery in R.

3. Refine R
Markdown
Reports with
Images and
Basemaps
3.1 Intro to Lidar
Data
3.2 Lidar Raster
Data in R

## SECTION 4 SPATIAL DATA IN R

4. Spatial Data in R

4.2 Custom Maps in R

#### SECTION 5 LIDAR DATA IN R - REMOTE SENSING UNCERTAINTY

5. Uncertainty in Scientific Data & Metadata

## SECTION 6 FUNCTIONS & AUTOMATION

6. Efficient
Programming
Using Functions

# ► 7. MULTISPECTRAL IMAGERY R NAIP, LANDSAT, FIRE & REMOTE SENSING ▼ 7. FIRE / SPECTRAL REMOTE SENSING DATA IN R

- Intro Multispectral Data
- Open NAIP Imagery in R
- Additive Color Models
- Calculate NDVI NAIP

• Describe what a vegetation index is and how it is used with spectral remote sensing data.

#### What You Need

You will need a computer with internet access and R / R Studio loaded to complete this lesson.

#### Where to Store Your Functions

When you create a function to use in your analysis, you often create it and store it at the top of your script or .Rmd file as a first step. However, lots of functions at the top of your code can make your code dense and harder to read.

It is good practice to create separate R scripts that you can use to store sets of related functions. You can then call those functions using the <code>source()</code> function, at the top of your script in the same way that you call an R package. R will then load those functions into memory and you can use them!

Sourcing functions is good practice because it is:

- Reusable: It allows you to reuse functions over and over using the same code (i.e. you don't have to copy and paste the function into each new analysis script).
- 2. **Easy to Maintain:** It allows you to quickly fix a function that doesn't work properly only once.
- 3. **Sharable:** In the same way that a library can be used by anyone, you can share your R script containing your functions with anyone, too. This is the first step towards creating an R package!

- Faster Raster
   Calculations
- Landsat tifs in
- ▼ 7.2 SOURCE FUNCTIONS IN R
- Source Functions R

## SECTION 8 QUANTIFY FIRE IMPACTS REMOTE SENSING

8.1 Fire / spectral remote sensing data - in R 8.2 Refine Rmarkdown Reports

SECTION 9 STUDY FIRE USING REMOTE SENSING DATA

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MIDTERM
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SECTION 11
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#### **How to Source Functions in R**

To source a set of functions in R:

- Create a new R Script (.R file) in the same working directory as your .Rmd file or R script.
   Give the file a descriptive name that captures the types of functions in the file.
- 2. Open that R Script file and add one or more functions to the file.
- 3. Save your file.

Next,

- Open your .Rmd file or R script.
- At the top of your file, add the source(path/tofile/here.R) function.

source("remote-sensing-functions.R")

If the .R script is in your main working directory, then it won't have a path element before it like week\_06/functionfile.R VS functionfile.R.

If it's in a different directory, adjust the path accordingly. Once you run the code containing the source() function, all of the functions in your .R file will load into your global environment. You can now use them in your script!

#### Additional Resources

• NicerCode.com Guide to Functions

Tags Reproducible science and programming: literate

SECTION 15 LAST CLASS: FINAL PROJECT PRESENTATIONS

expressive programming, functions

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