



# Twitter?



hashtag: #usiale2018 #rstats #cyanobacteria

me: @jhollist

**Who, what, why, and how?**

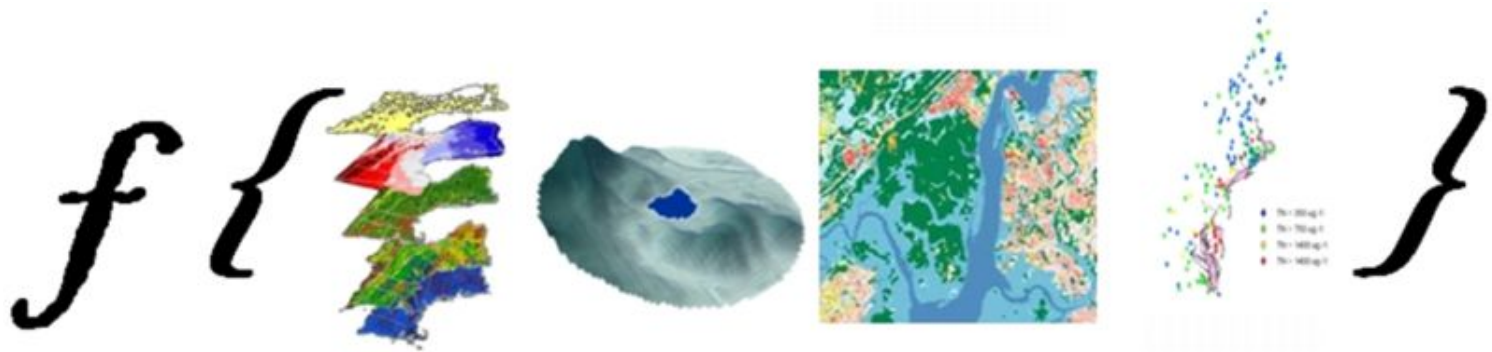
# Who are we?

- Ecologists
- Computational focus
  - Enough to be dangerous
- 3 FTE
  - Myself
  - Betty Kreakie
  - Bryan Milstead
- 1 Post-doc
  - Stephen Shivers
- Alum
  - Farnaz Nojavan



# What do we do?

- Apply computational approaches to understand water quality impacts in lakes
- Open Science



# R Packages

# Why R Packages

- Useful structure
- Infrastructure for sharing
  - GitHub
  - CRAN
- We are an R shop!



# Packages to solve common problems

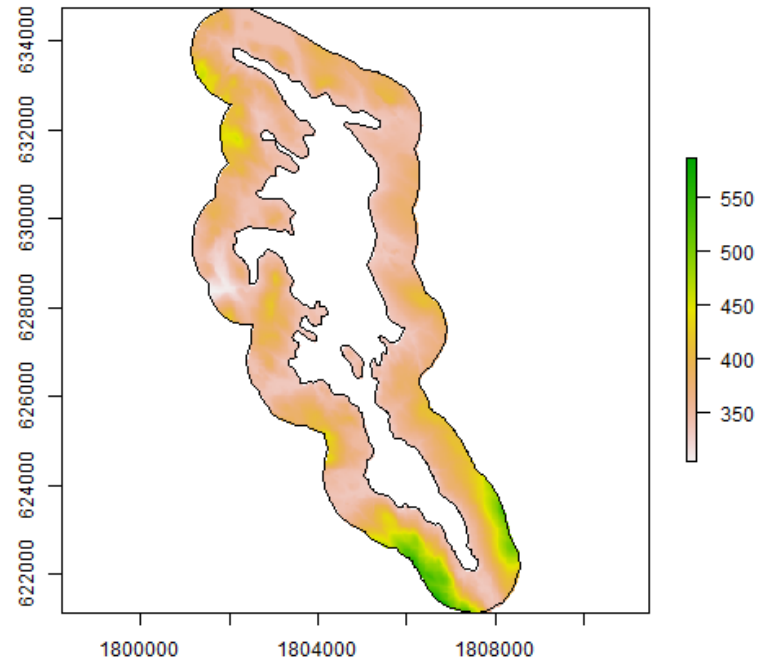
- lakemorpho
- elevatr
- goatscape (in development)



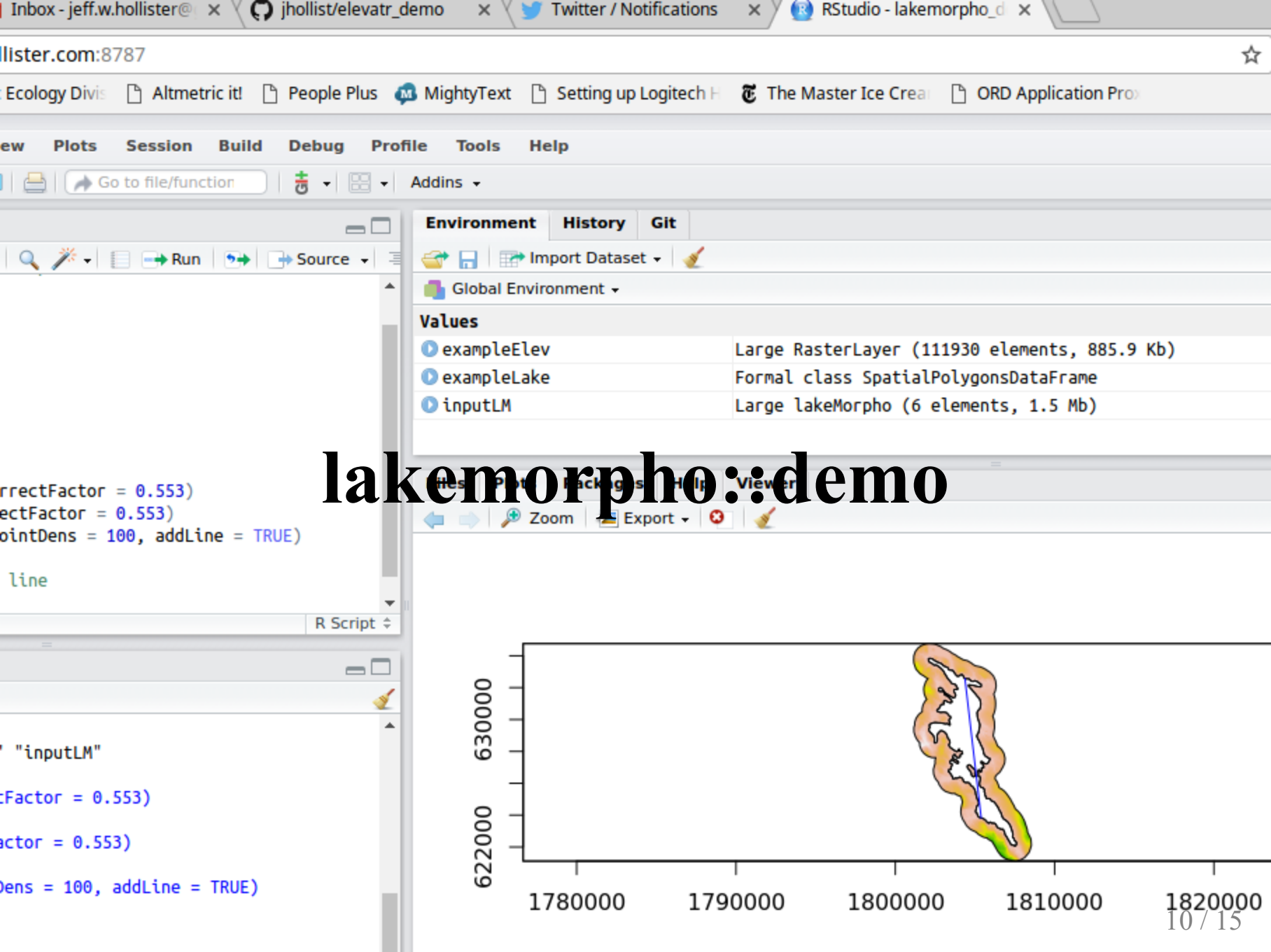


# lakemorpho

- Lake morphometry metrics in R
- Version 1.0
  - August 2014
- Version 1.1.0
  - December 2016
- `sf` support to be added
- [National Lake Morphometry](#)
- [Hollister and Milstead \(2010\)](#)
- [Hollister \*et. al.\* \(2011\)](#)
- [Hollister and Stachelek \(2017\)](#)

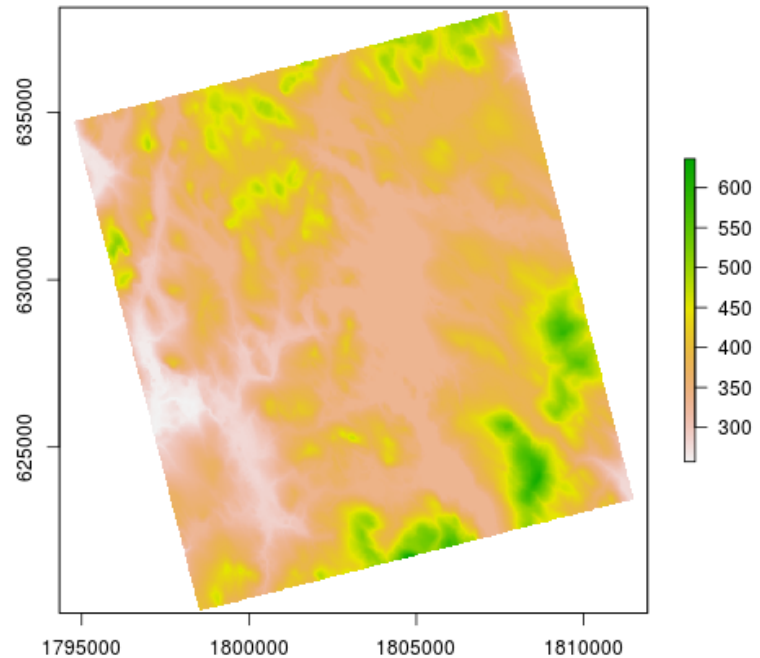


Package URL: <https://cran.r-project.org/package=lakemorpho>



# elevatr

- Access elevation data in R
  - Mapzen
  - AWS
  - USGS
- Version 0.1.1
  - January 2017
- Version 0.1.3
  - March 2017
- Will be paired with `lakemorpho`
- `sf` support to be added



Package URL: <https://cran.r-project.org/package=elevatr>

hollister.com:8787

Ecology Divis | Altmetric it! | People Plus | MightyText | Setting up Logitech H | The Master Ice Crea | ORD Application Pro

ew | Plots | Session | Build | Debug | Profile | Tools | Help

Go to file/function | Addins

pt elevations  
at +ellps=WGS84 +datum=WGS84 +no\_defs"  
point(pt\_df, prj = ll\_wgs84 )  
  
DEM  
raster(lake, z = 12, src = "aws")

R Script

514 (nrow, ncol, ncell)  
)  
, 620036.4, 638140.2 (xmin, xmax, ymi  
=20 +lat\_2=60 +lat\_0=40 +lon\_0=-96 +x\_0  
n +no\_defs +ellps=GRS80 +towgs84=0,0,0  
n, max)

Environment | History

Import Dataset

Global Environment

Data

pt\_df | 5 obs. of 2 variables

Values

lake | Formal class SpatialPolygonsDataFrame

Files | Plots | Packages | Help | Viewer

elevatr::demo

635000  
625000

1780000 1790000 1800000 1810000 1820000 1

12 / 15

# goatscape

- New effort with Bryan Milstead
- What's in a name?
- Summarizes ancillary data for a user-defined landscape polygon
  - Census (via `censusapi`)
  - Landcover
  - Impervious
- Accepts arbitrary spatial data for the landscape
- Based on `sf` and `tidy` by design
- <https://github.com/usepa/goatscape>



# **Plug for other landscape packages**

# Thanks!

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Slides created via the R package [xaringan](#).