Lakes, Landscapes, and R: : A framework for open research on freshwater cyanobacteria

“US-IALE 2018”

Chicago, IL

Jeff Hollister and Bryan Milstead

2018-04-11

Twitter?

hashtag: #usiale2018 #rstats #cyanobacteria

me: @jhollist

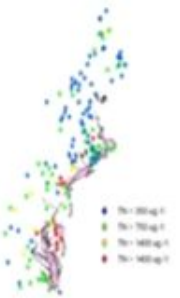
Who, what, why, and how?

Who are we?

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

What do we do?

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

$f\{$     $\}$

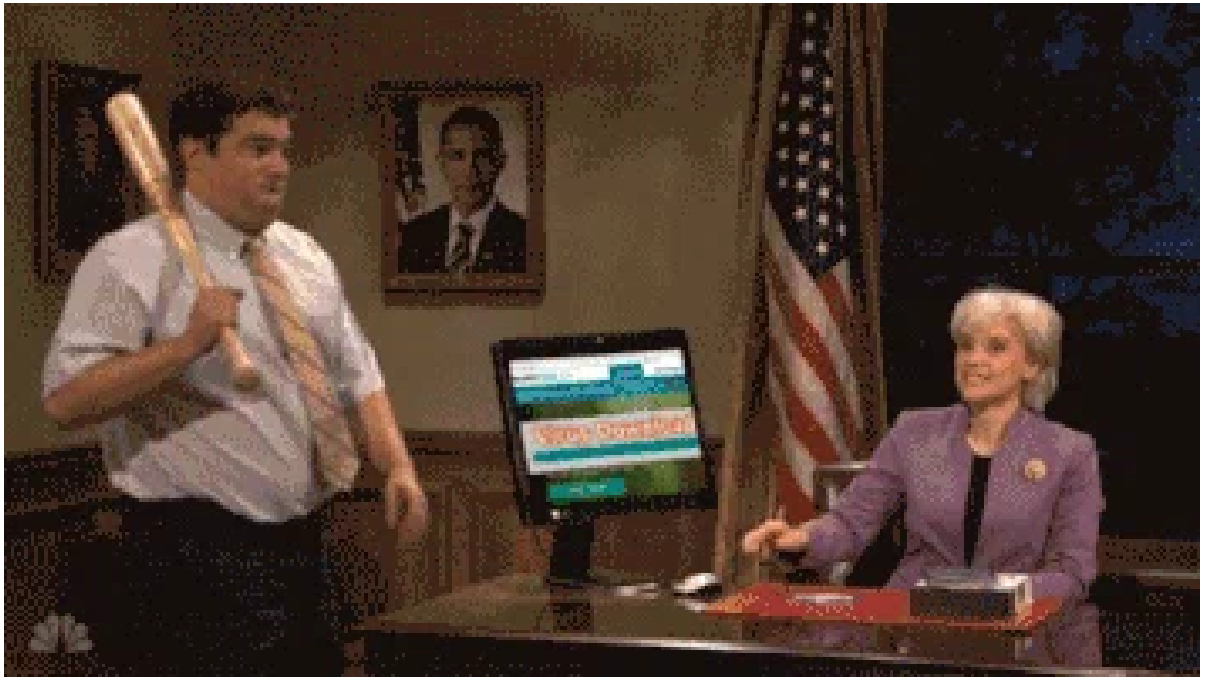
R Packages

Why R Packages

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

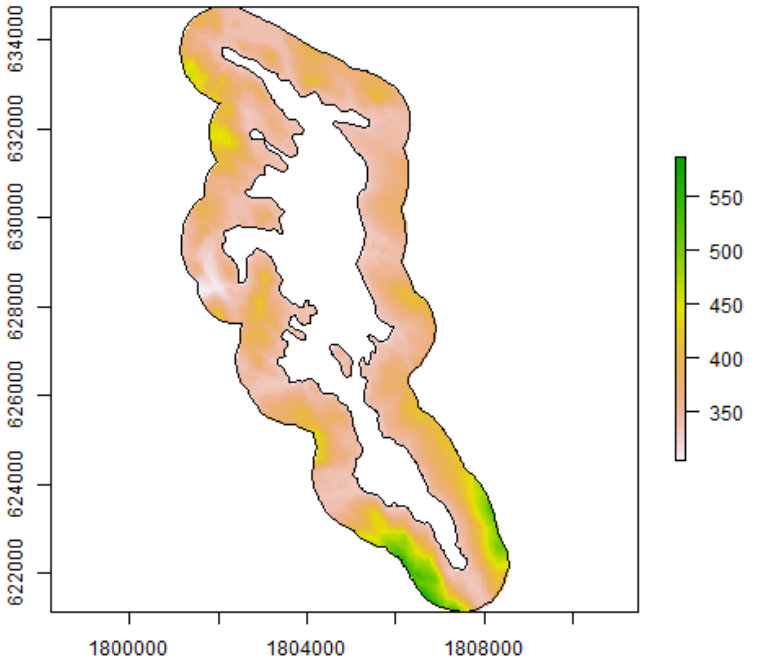
Packages to solve common problems

- `lakemorpho`
- `elevatr`
- `goatscape` (in development)



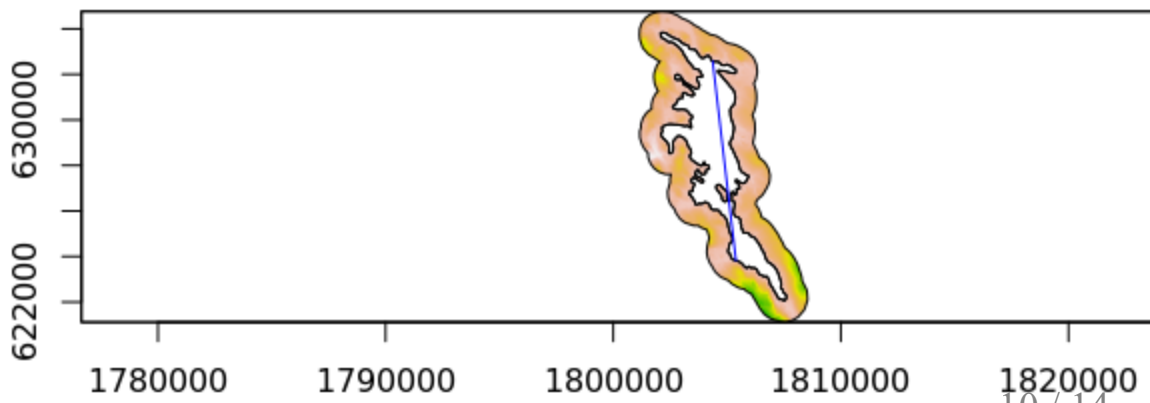
`lakemorpho`

- 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)



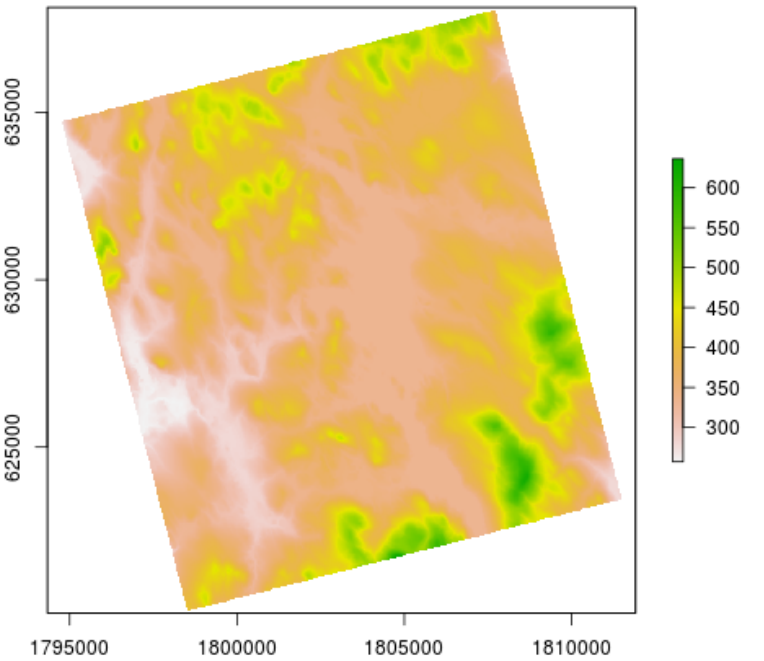
Package URL: https://cran.r-project.org/package=lakemorpho

lakemorpho::demo



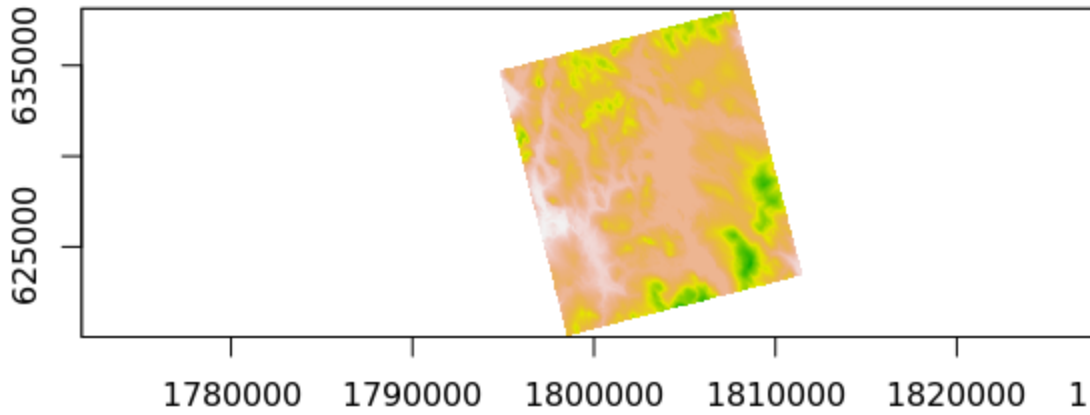
elevatr

- 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

elevatr::demo



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

Thanks!

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Slides created via the R package **xaringan**.