

GEOG 4/5/7 9073: Environmental Analysis in R

Week 10.02: Raster processing (Wildcard Thursday)

Dr. Bitterman

Today's schedule

- Open discussion
- A note on attendance
- Raster activity

Anything to discuss? Questions?

A note on attendance

Today's task: a real world example of raster processing

You'll be using resources from your readings and the code we worked through last class.

In the github repo:

```
./data/wildcard_thursday/erie_raster_ex/
```

Here you will find:

1. weekly composites of cyanobacteria blooms in Lake Erie
2. a set of shapefiles representing areas of interest within Lake Erie
3. a metadata file

Tasks (in groups)

1. Write a function that takes a raster image and calculates the total size of the cyanobacteria blooms
2. Create a binary raster that shows where cyanobacteria were present in the Sept 20-26th image, but NOT in the August 16-22nd image.
3. Using the areas of interest, for which dates was the bloom in Sandusky Bay the "worst"? I leave you define "worst"
4. Using raster algebra and a local operation, write a function that transforms the raster from its original (DN) values to the index values.
5. What combination of area-of-interest AND date(s) did a bloom take up the greatest portion of that area-of-interest. Bonus points if you write a script/function(s) to automate

Some tips:

- AS ALWAYS, think about the general process(es) before starting to write code
- Check the data, the metadata
- Rely on Tuesday's notebook, your readings, and other resources we've used this semester
- `terra::crop()` will likely prove useful, but understand what vector data structures you'll need
- in some spatial operations, it might be easier to do overlay analyses if you convert raster cells to points (but not always)

For NEXT week

- Readings posted on Canvas (Lovelace ch 9)
- DO THE READINGS AND PRACTICE. WE WILL BE DOING IN-CLASS GROUP ACTIVITIES
- Work on your projects