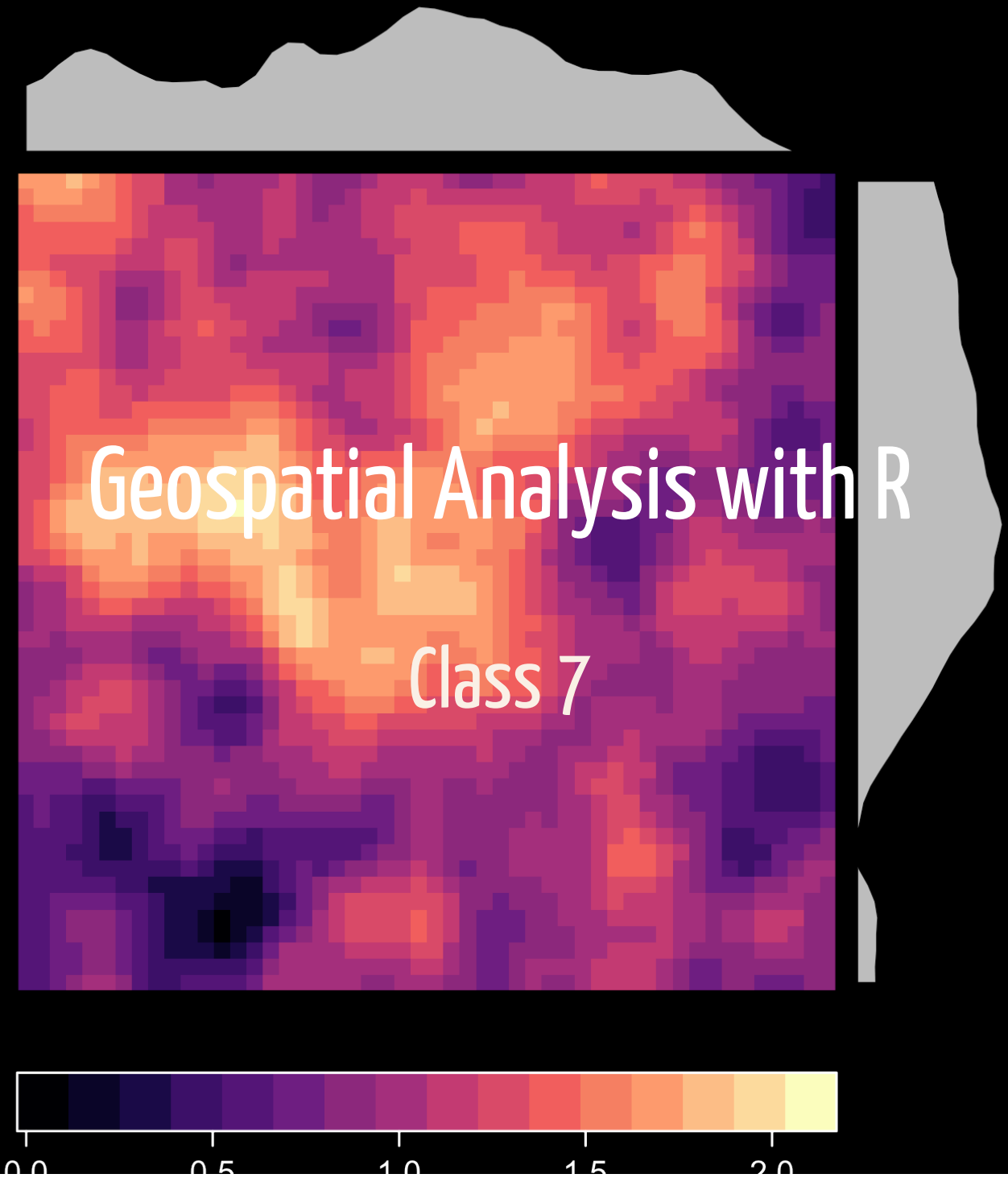
Geospatial Analysis with R

Class 7



Today

- Coding practice

Create your own data

- Create the following:
  - `a`: a random vector of integers with 10 elements drawn from 1-20:
  - Use the `sample` function with `set.seed(10)`
  - Name the elements of `a` with a vector of names starting with "V1" and ending with "V10".
    - Use the `paste0` function to create those names.
    - Create the identical vector of names using the `paste` function.
  - `b`: Using `a` as an index to select from `letters`
  - `d`: Use `rnorm` with a mean = 100 and an sd of 20
  - Why did I skip `c`?
  - Create a list `l` from `a`, `b`, `d`.
  - Assign the names of the vectors in `l` to the `l`'s elements

2-d structures

- Create the following:
  - `m`: a matrix with three integer columns named "V1", "V2", "V3"
  - Create each column first as its own vector, then combine
  - `V1` = 1:10
  - `V2` is a random sample between 1:100
  - `V3` is drawn from a random uniform distribution between 0 and 50 - Use the same `set.seed(50)` as before
  - Inspect the `str` and `class` of `m`
  - `dat`, a data.frame built from `V1`, `V2`, `V3`, and `V4`
  - `V4` is a random selection of the letters A-E

1-d Indexing/subsetting/replacing

- Select the 1st, 2nd, and 10th elements from `a`
- Select the elements of `a` named V1, V2, V3 (use the names)
- Replace the second to last value of `a` with the word "sasquatch"
    - Use code to find the index value, not the actual integer value of the index
- Select from `b` the values "c", "d", "e"
- Identify the index position in `b` of values "c", "d", "e"
- Select the first 5 values of `d` and the last 5 values of `c` into two separate vectors and multiply them.
- Select from `d` all values > 100:
    - How many values are there?
- Select from `d` all values between 95 and 105, and replace them with 100
- Repeat steps 1, 3, 4, and 8 above, but do it by accessing `a`, `b`, and `d` from `l`

2-d Indexing/subsetting/replacing

- Select the first 10 values from `m`, using a single vector and no row or column information
- Use a single vector to select the last row, column value from `m`
- Replace the value selected in 2 above with -99
- Now select row 3, columns 1:2 from `m`, and replace them with their values multiplied by 10
- Do the same, but select the columns by their name, and reset the new values by dividing by 10
- Select from `dat` the values of V3, and square them. Do it using index notation, column name in `[]`, and `$`
- Subset the first two rows and columns of `dat` into a new data.frame `datss`.
- Replace `dat` rows 1:2, column 1:2 with the values -1:-4
- Reset the part of `dat` you just changed with the values in `datss`

Summarizing datasets

- Calculate the row and column sums of both `m` and `dat`.
- Calculate the overall means and sums of all values in each dataset
- From `dat`, use both the base `aggregate` function and `dplyr` function to calculate the group mean, using `V4` as the grouping variable.