CPTR 420

November 7 Assignment

Due November 9

This assignment uses the storms dataset found in the dplyr package.

The storms dataset is a subset of the National Oceanic and Atmospheric Administration (NOAA). It contains data on Atlantic weather events from 1975 to 2021.

Each observation includes data about a given weather activity as measured at a specific time. Measurement is done every 6 hours

Variables are:

name – the name of the activity measured

year, month, day – when the measurement was done

hour – the relative hour when measurement was taken

lat, long – coordinates at measurement time

status – classification of the activity at the time the measurement as taken

category – based on scale used for measuring the winds

wind – at the time of measurement

pressure – at the time of measurement

tropicalstorm_force_diameter – area covered at the time of measurement (storm status)

tropicalhurricane_force_diameter – area covered at the time of measurement (hurricane status)

Use your r visualization tools to tell the weather story by answering the following questions. You should include a combination of column/bar charts, line, points, maps, interactives, animated, etc

Note that you may have to wrangle the data somewhat. You should examine the data and read the entire exercise requirements before beginning the exercises

Prepare an appropriate visualization for each exercise, except #1. Your plots should be well documented (but not overcrowded) with titles, labels, legends, colors, sizes, tooltips, popups as needed.

1. What are the names assigned to these weather activities (just list the names, no special visualization required. No repetitions please)
2. How many tropical storms, hurricanes occurred each year? Compare tropical storms and hurricanes by year.
3. For 2004 to 2021 data only, how long did each hurricane last (days), what was the maximum max wind speed.
4. What is the relationship between wind and pressure
5. For 2004 to 2021 hurricanes only what is the correlation between each pair: wind, pressure, tropicalhurricane_force_diameter (see corplot)
6. What are the different types of activity status measured. Show also the wind speed range for each status
7. Which month (name) seem to be most prone to these weather activities
8. Are the weather activities concentrated in certain areas/states (map it, use only hurricanes and storms combined)
9. Track an event or two over time showing the path it took and how the status and wind speed changed (you select the event e.g. Maria in 2017)

Submit your completed script and any additional data you might have used (e.g. mapping data) to learningHub.