Project 2 - Shadows in the Rain

Introduction: Focus on geographic data, in particular the paths that hurricanes (tropical cyclones) take in the Atlantic and Pacific oceans. The application should help the user investigate where are the most likely places for hurricanes to strike, where the most damaging hurricanes strike, seasonal variation, and trends over time. Investigate the paths that hurricanes take, related to the time of year and their destructive potential.

Development Pages: Set up a web page for your group project and send the URL to Andy. The final webpage for the project will be public; the in-process web pages do not need to be public as long as the course instructors have access. Each Friday of the project each team member should post on the project web site an overview of what he/she did on the project that week. This comes in handy when assigning ratings to your collaborators and making sure that everyone is contributing in a timely fashion.

Data Source:
The Atlantic hurricane database (HURDAT2) 1851-2014 and the Northeast and North Central Pacific Hurricane database (HURDAT2) 1949-2013 at http://www.nhc.noaa.gov/data/#hurdat
Information on the file format: http://www.aoml.noaa.gov/hrd/hurdat/hurdat2-format-may2015.pdf

Deliverables:
The primary visualization will be the hurricane path information superimposed over map data with additional information on the strength of the hurricane at that point. Additional graphs will show statistics. Use leaflet (http://leafletjs.com) as our map rendering library.

12th October 9pm: Alpha: Initial screen layout, some functionality of C. Ideally complete C.
26th October 9pm: Final:

- How-to and what can be done
- Description of data source and pre-processing
- Source code (document external libraries)
- Interesting discoveries
- Roles of team members
- YouTube video

Send 1920x540 jpg named p2.farooqui.jpg. Also send private email ranking co-workers on scale 1 to 5. All team members are expected to participate equally in presentation.

C	B	A
• Provide a list of Atlantic hurricanes since 2005 and let the user show all/ year/individual/top 5 or 10 max-wind-speed. The complete path information for all of the selected hurricanes should appear on a static leaflet map. Interactive toggle display of individual hurricanes. • Order hurricanes by time/name/max-wind-speed. • Pick a day and show where all the hurricanes are on that day (including those that were or will be hurricanes). • Pick a particular hurricane season and play it back on the map. Pause/Resume/Speed • Overview graphs showing the number of hurricanes per year since 2005	• Add a second linked visualization for the Northeast and North Central Pacific dataset (the wall has enough space to show maps of both the Pacific and Atlantic at the same time) • Provide a list of hurricanes since the beginning of the data files and let the user show all/year/top5or10. Note that only recent hurricanes have names so you need an appropriate way of identifying them to the user. • Allow playback of all the hurricanes back to the beginning of the files. Note that data is missing for some of the parameters before 2004 - so you will need to show that there is missing data. • Filter hurricane display based on whether it made landfall. • Filter based on max-wind-speed or minimum pressure. • Separate graphs showing the total number of hurricanes each year in the Atlantic and Pacific. • Option to show the wind speed and/or pressure overlaid on the hurricane path information (this could be changing the line color and/or thickness, or showing the data with a glyph at the different known points, or some other appropriate visualization of your choice). • Provide a line graph showing the max wind speed of the hurricanes over a given year (X axis is days of the year, Y axis is wind speed) for currently visible hurricanes. Create a similar graph for minimum pressure. • Allow the user to change the underlying map representation.	• Pan/zoom/reset the view of maps • Show a graph of overall data for each month of the year (i.e. combining September for all of the years in the dataset) showing number of hurricanes. Allow the user to filter the data based on max-wind-speed/min-pressure and Atlantic/Pacific. This should help the user find when are hurricanes most frequent and when are the most dangerous ones more frequent. • Use the remaining columns of the data file to show the extent of the different wind speeds of the hurricanes. You don't need to show each quadrant separately - come up with a reasonable way to combine the four pieces of data and defend it in your documentation. The key thing here is that a hurricane is not a point, its winds can cover a very large geographic area so your visualization should show the extent of its damaging winds. • Create a heat map style visualization showing the relative badness of places to live related to hurricanes - note that this is intentionally vague. Come up with a reasonable definition of badness and how to represent it and defend it in your documentation. • Research some particularly interesting hurricanes and create a list of your 5 favorites and use your interface to allow the user to investigate them.