Part1

- This is a sample submission of a visualization of the data from the CSV data file **ExcelFormattedGISTEMPDataCSV.csv**.
- The **entire data** was used for the visualization, no subset.
- Every line in **figure 1** corresponds to a decade, with every point on the line being a year.
- The **Y Axis** is the deviation from the 1951 – 1980 mean in 0.01 degrees (corresponding to the **J.D.** (January-December) column for each of the years that represented the mean of the deviations for each of the years).
- The **X Axis** then goes from the start to end of each of the 14 decades (from 1880-2010).
- 14 different colors (hues) were used to represent 14 decades.
- The resulting graph shows a clear increasing mean temperature over the decades.
- The decade 1940 (World War II) is clearly shows some different pattern, since the mean increase in temperature for this decade is higher than 1960s or 1970s decade.
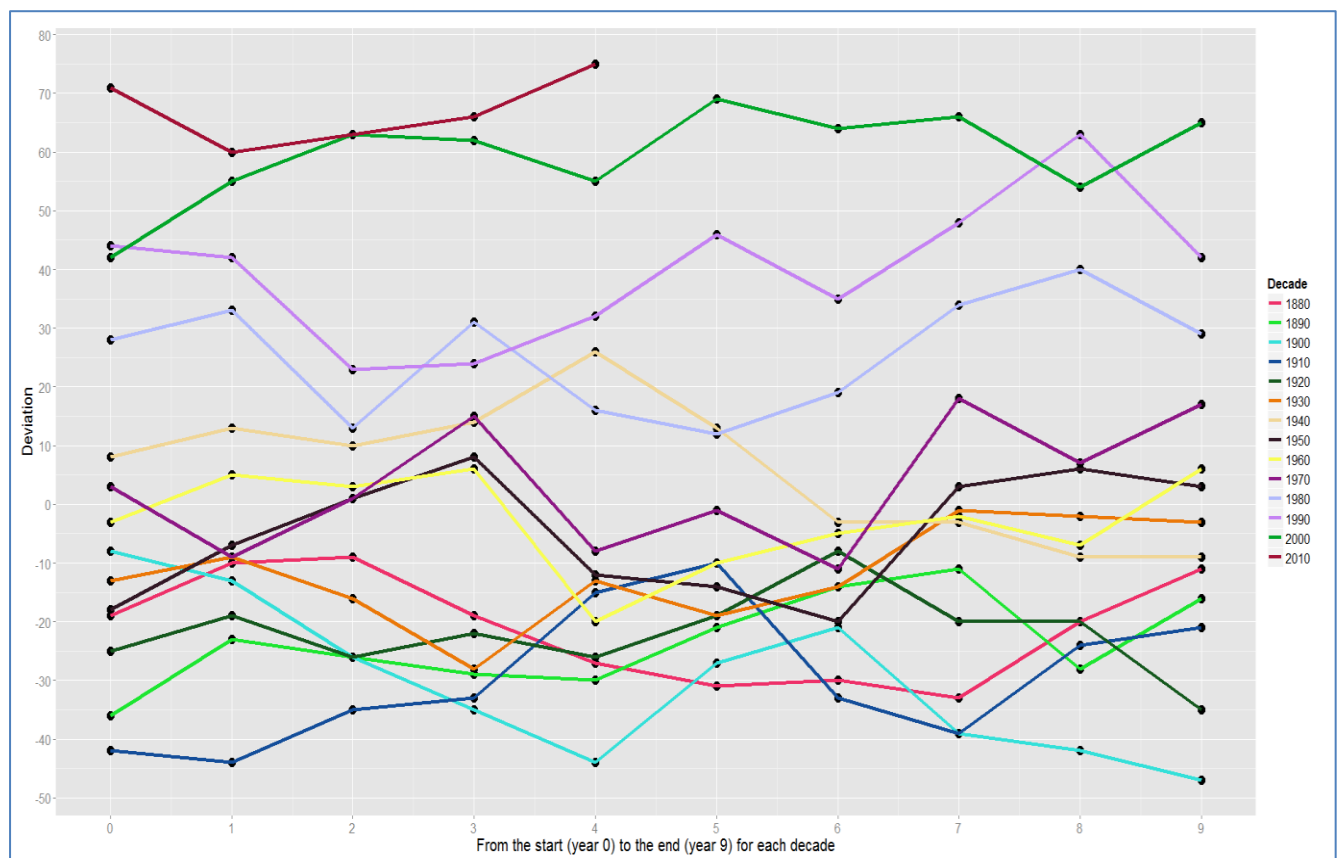

Figure 1

- Also, visualized each of the 3-month-average deviations for each year along each decade in the next figure (**figure 2**), in order to have an idea about patterns of the 3 months average increase in temperature.
- Each subplot in **figure 2** represents different quarterly average increase in temperature.
- The X and Y axes remain the same for each of the 4 subplots.
- As can be seen, for the mean increase in temperature for the 3-months average for Dec-Jan-Feb for the decade 2010 (brown line) is lower than the same for the decade 2000 (green line) for a few initial years.
- All the figures are drawn with R programs using grammar of graphics plot.
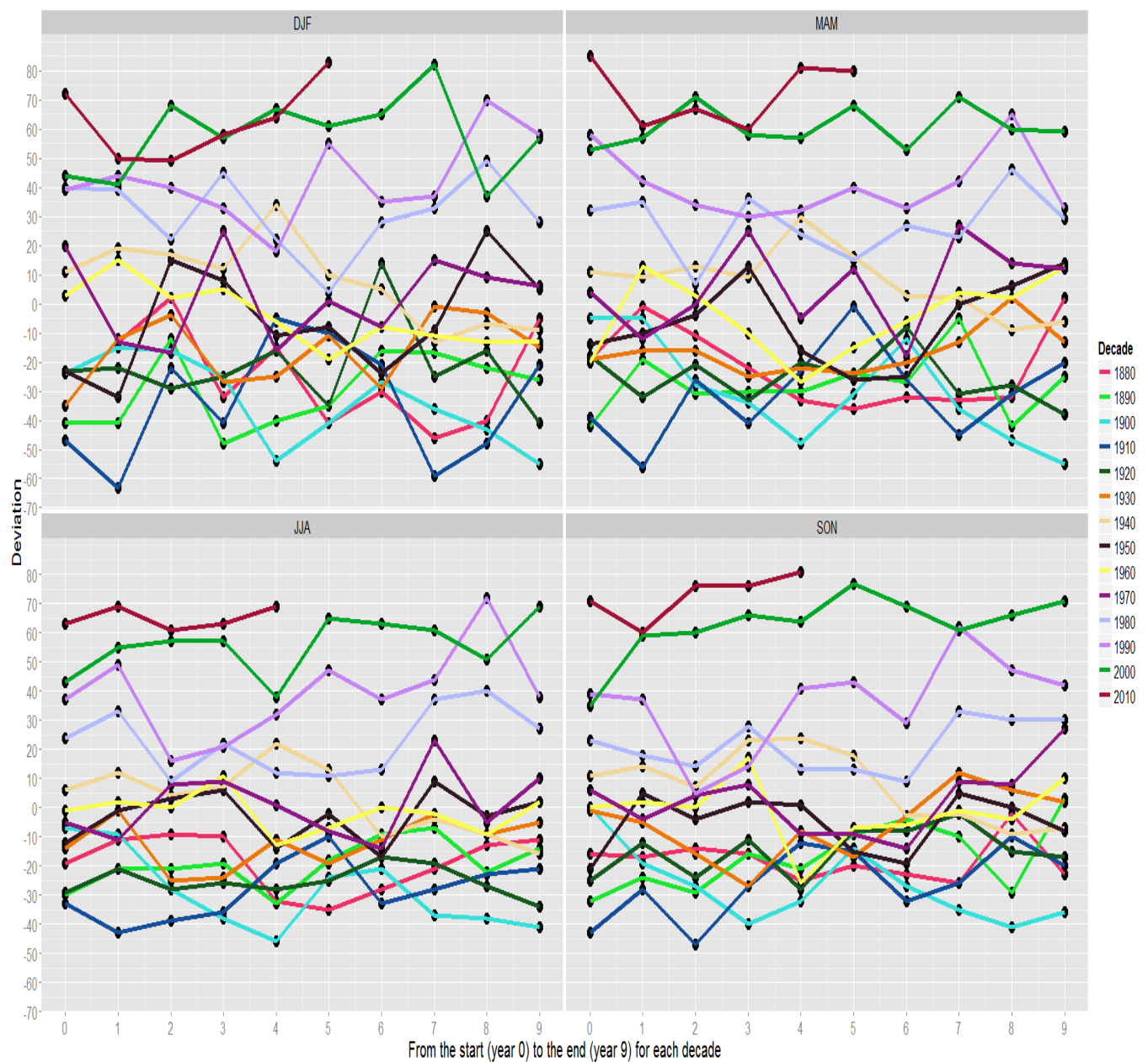
Figure 2

- Also, tried to visualize the line graphs (in figure 1) as area chart (**figure 3**), where the area represents the increase in temperature, the axes being the same.
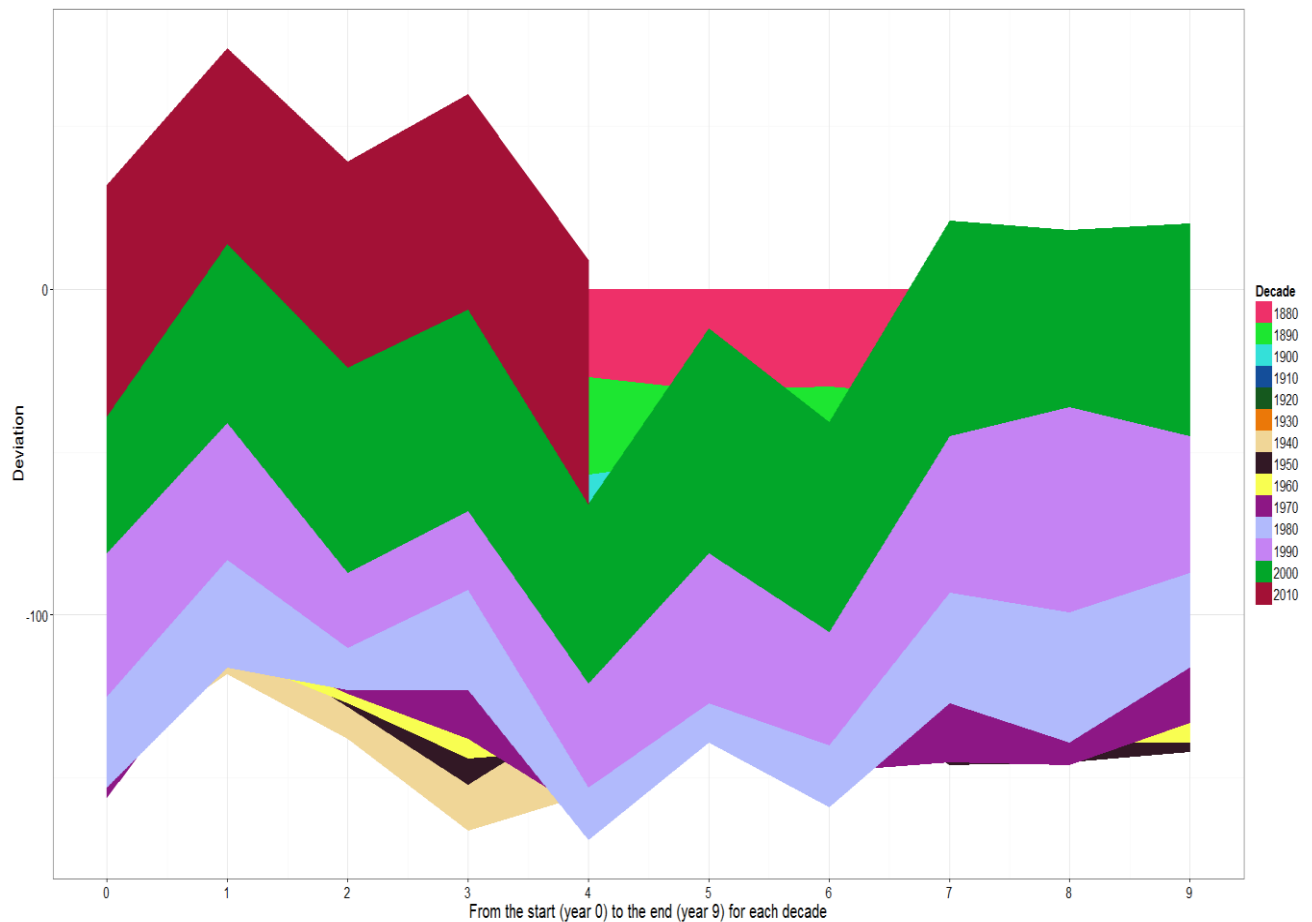
Figure 3

Part2

- This graph visualizes the GISTEMP data for the Globe and the North and South Hemispheres through all the given years.
- The **entire data** from the CSV data file **ExcelFormattedGISTEMPDataCSV.csv** was used for the visualization, no subset. The visualization is shown in **figure 4**.
- The **Y Axis** is the deviation from the 1951 – 1980 mean in 0.01 degrees.
- The **X Axis** represents the years (from 1880-2010).
- 3 different colors (hues) were used: The Red line describes the data for the Northern Hemisphere, the Blue for the South Hemisphere, and the Green line is for the Globe.
- The resulting graph shows an increasing mean Global Temperature over the years.
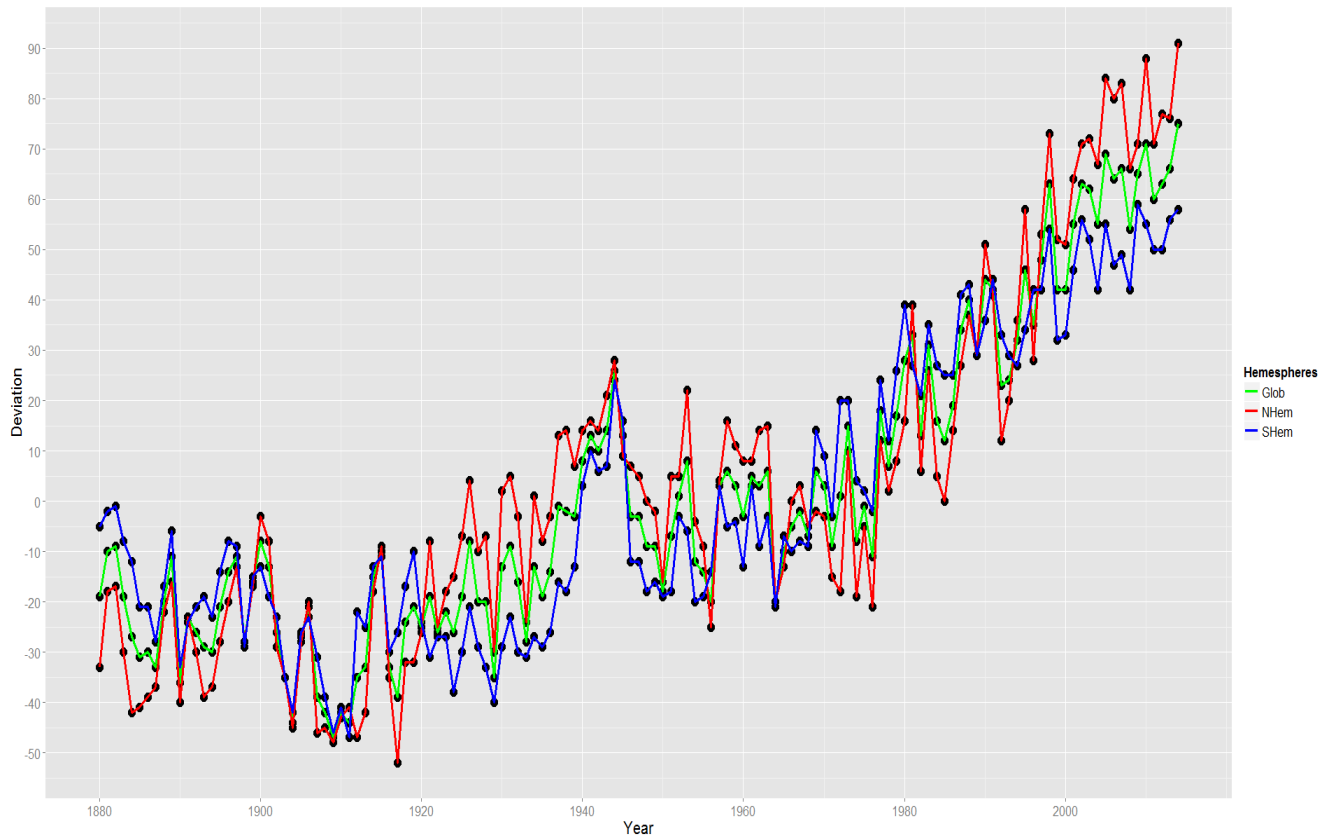- The temperature increase was more in the N/S hemispheres than in the globe on average.

Figure 4

- Also, shown the relative increases in temperature per decade for the globe and the hemispheres in **figure 5**, with the same axes representation as in figure 1.
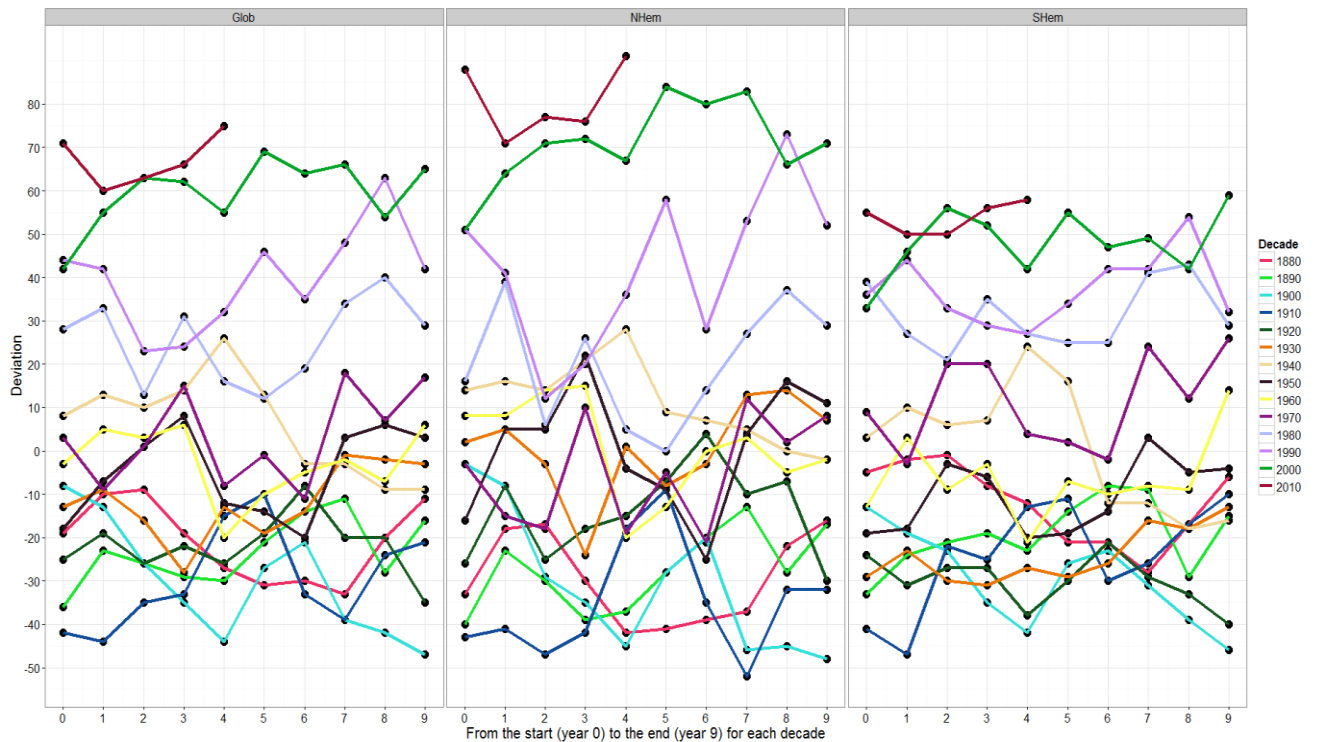

Figure 5