NASA GISS Surface Temperature Analysis

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Temperature Data Analysis

The GISS Surface Temperature Analysis (GISTEMP v4) is an estimate of global surface temperature change. The temerature shows data from year 1880 to 2015.

```
library(dplyr)
```

```
##
## Attaching package: 'dplyr'

## The following objects are masked from 'package:stats':
##
##     filter, lag

## The following objects are masked from 'package:base':
##
##     intersect, setdiff, setequal, union
```

```
library(tidyr)
library(ggplot2)
gistTemp2<- read.csv("/Users/rajeshkumarpanigrahi/Downloads/NASA GISS Assignment/NASA-GISTEMP-Data2CSV.

head(gistTemp2[1:10])
```

```
##   Year Glob NHem SHem X24N.90N X24S.24N X90S.24S X64N.90N X44N.64N X24N.44N
## 1 1880  -19  -33   -5      -38      -16       -5      -89      -54      -22
## 2 1881  -10  -18   -2      -27       -2       -5      -54      -40      -14
## 3 1882   -9  -17   -1      -21      -10        4     -125      -20       -3
## 4 1883  -19  -30   -8      -34      -22       -2      -28      -57      -20
## 5 1884  -27  -42  -12      -56      -17      -11     -127      -58      -41
## 6 1885  -31  -41  -21      -61      -17      -20     -119      -70      -43
```

```
gistTemp1<- read.csv("/Users/rajeshkumarpanigrahi/Downloads/NASA GISS Assignment/NASA-GISTEMP-DataCSV.cs

head(gistTemp1[1:10])
```

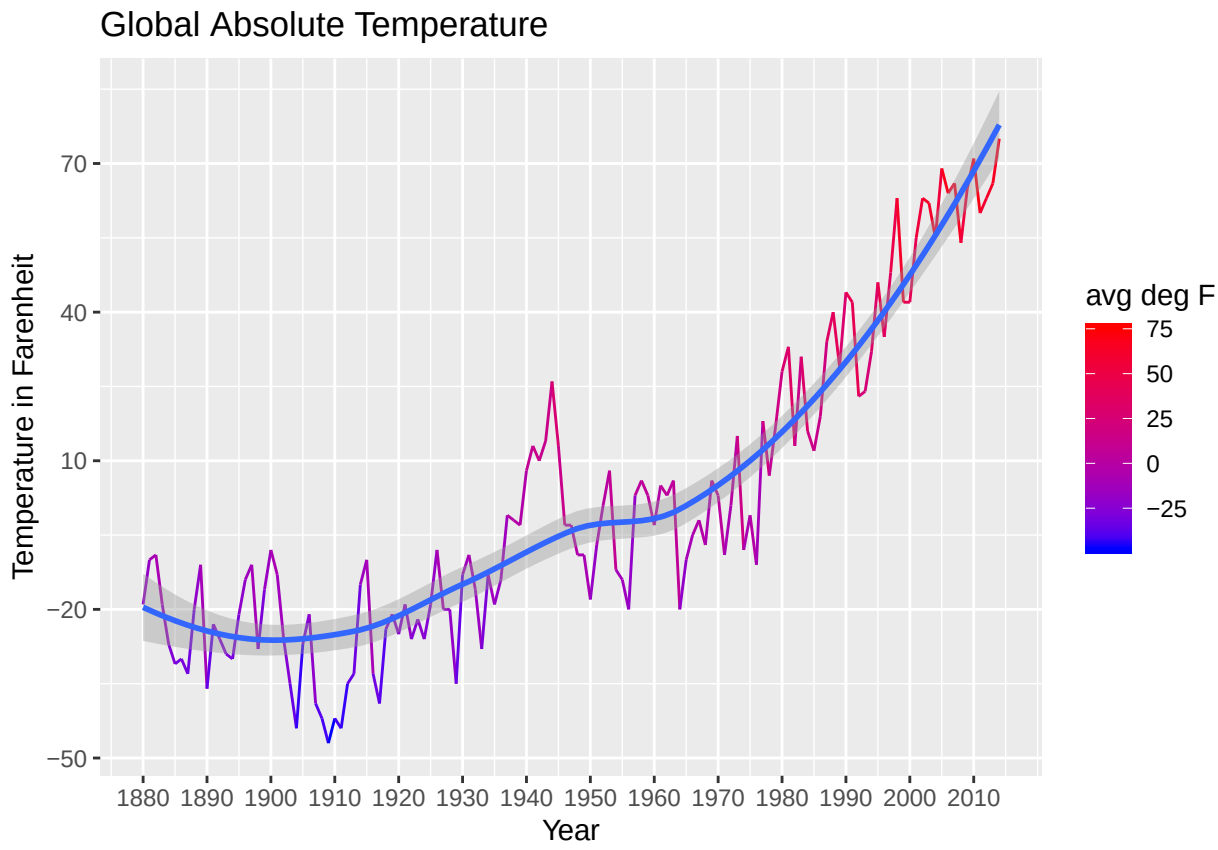
```
##   Year Jan Feb Mar Apr May Jun Jul Aug Sep
## 1 1880 -29 -19 -17 -27 -13 -28 -22  -6 -16
## 2 1881  -8 -13   2  -2  -3 -27  -5  -1  -8
```

```
## 3 1882  10  10   2 -19 -17 -24  -9   5   0
## 4 1883 -32 -41 -17 -23 -24 -11  -7 -12 -18
## 5 1884 -17 -11 -33 -35 -31 -37 -33 -25 -22
## 6 1885 -64 -29 -23 -44 -41 -50 -28 -27 -19
```

Data Visualization

The below graph shows the global temperature from year 1880 to 2015.

```
ggplot(gistTemp2,aes(Year,Glob))+geom_line(aes(color=Glob))+geom_smooth(method="loess")+ggtitle("Global
```

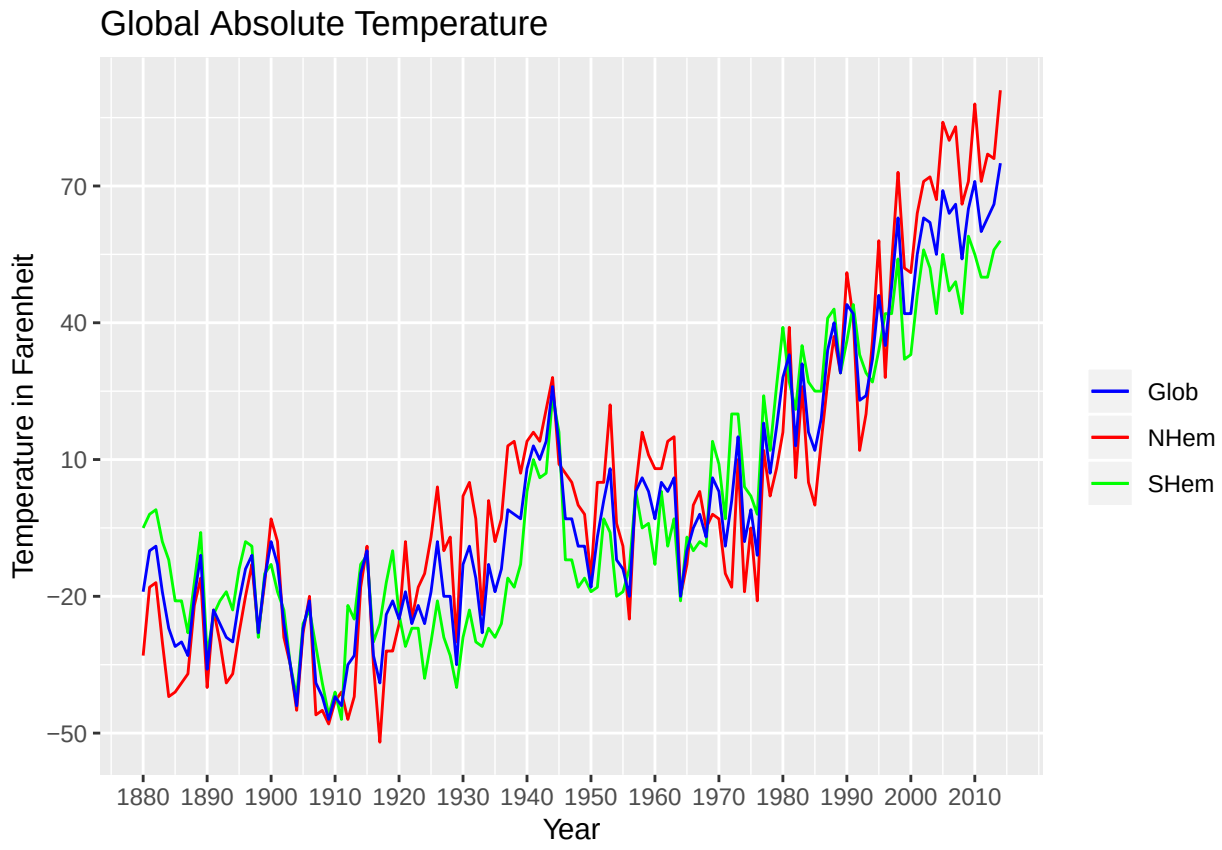


Observation

As we can see from the above graph that global temperature has increases significantly.

The below graph shows the global temperature, northern and southern hemisphere temperature from year 1880 to 2015

```
ggplot(gistTemp2,aes(x=Year)) + geom_line(aes(y= NHem, col="NHem")) + geom_line(aes(y= SHem, col="SHem"
```



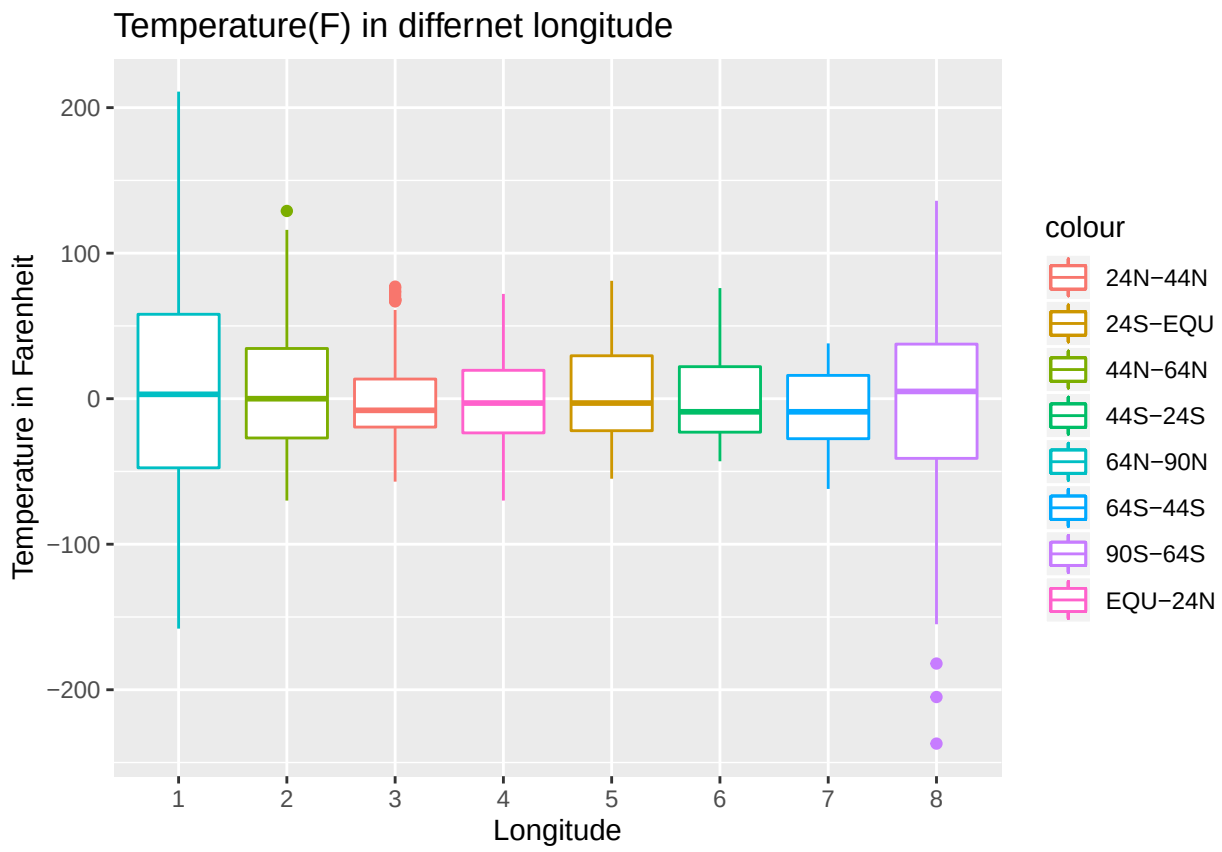
Observation

As we can see from the above graph that global temperature, northern and southern hemisphere temperature has increases significantly.

The below graph shows the tempreature in different longitude of earth.

```
g1 <- gistTemp2
ggplot(g1) +
geom_boxplot(aes(x="1",y =X64N.90N, color="64N-90N")) +
geom_boxplot(aes(x="2",y =X44N.64N, color="44N-64N")) +
geom_boxplot(aes(x="3",y =X24N.44N, color="24N-44N")) +
geom_boxplot(aes(x="4",y =EQU.24N, color="EQU-24N")) +
```

```
geom_boxplot(aes(x="5",y =X24S.EQU, color="24S-EQU")) +
geom_boxplot(aes(x="6",y =X44S.24S, color="44S-24S")) +
geom_boxplot(aes(x="7",y =X64S.44S, color="64S-44S")) +
geom_boxplot(aes(x="8",y =X90S.64S, color="90S-64S")) +
ggtitle("Temperature(F) in differnet longitude")+xlab("Longitude")+ ylab("Temperature in Farenheit")
```



Observation

From the above graph we can see the mean, maximum and minimum temperature on different longitude.