NASA World Temperature Visualization

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Overview

We are using the data from the GISTEMP site. Specifically the data from "Table Data: Global and Hemispheric Monthly Means and Zonal Annual Means." We parsed the data in a data frame format to facilitate plotting with R.

Data 1

We used a Jitter format with different colours based on the columns DJF,MAM,JJA,SON illustrated below. This format is useful to see distribution along the time from the Zero Line, with a clear upward trend in this century.

```r
library(ggplot2)
```

```
## Warning: package 'ggplot2' was built under R version 3.5.1
```
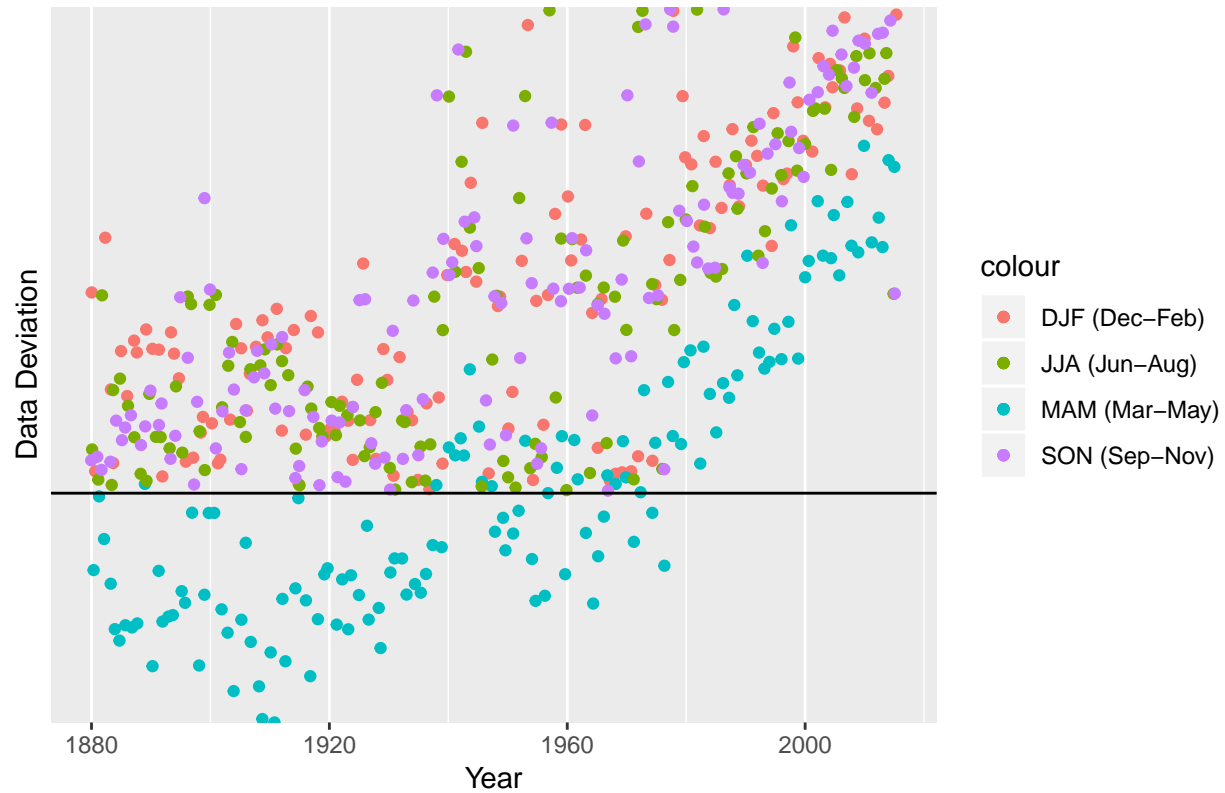
```r
library(readr)
ExcelFormattedGISTEMPDataCSV <- read_csv("ExcelFormattedGISTEMPDataCSV.csv")
```

```
## Parsed with column specification:
## cols(
##   Year = col_integer(),
##   Jan = col_integer(),
##   Feb = col_integer(),
##   Mar = col_integer(),
##   Apr = col_integer(),
##   May = col_integer(),
##   Jun = col_integer(),
##   Jul = col_character(),
##   Aug = col_character(),
##   Sep = col_character(),
##   Oct = col_character(),
##   Nov = col_character(),
##   Dec = col_character(),
##   `J-D` = col_character(),
##   `D-N` = col_character(),
##   DJF = col_character(),
##   MAM = col_integer(),
##   JJA = col_character(),
##   SON = col_character()
## )
```

```r
df<-data.frame(ExcelFormattedGISTEMPDataCSV)
ggplot(df, aes(x=df$Year)) +
  geom_jitter(aes(y=df$DJF, color="DJF (Dec-Feb)")) +
  geom_jitter(aes(y=df$MAM, color="MAM (Mar-May)")) +
  geom_jitter(aes(y=df$JJA, color="JJA (Jun-Aug)")) +
  geom_jitter(aes(y=df$SON, color="SON (Sep-Nov)")) +
```

```
scale_y_discrete(breaks=NULL)+
geom_abline(intercept=0,slope=0)+
ggtitle("GISTEMP Data 1")+
xlab("Year")+
ylab("Data Deviation")
```

GISTEMP Data 1

Data 2

This graph visualizes the GISTEMP data for the Globe and the North and South Hemispheres through all the given years. The resulting graph corroborate the previous graph results showing an increasing mean global temperature over the years.

```
library(readr)
library(ggplot2)
ExcelFormattedGISTEMPData2CSV <- read_csv("ExcelFormattedGISTEMPData2CSV.csv")

## Parsed with column specification:
## cols(
##   Year = col_integer(),
##   Glob = col_integer(),
##   NHem = col_integer(),
##   SHem = col_integer(),
##   `24N-90N` = col_integer(),
##   `24S-24N` = col_integer(),
##   `90S-24S` = col_integer(),
```

```
##    `64N-90N` = col_integer(),
##    `44N-64N` = col_integer(),
##    `24N-44N` = col_integer(),
##    `EQU-24N` = col_integer(),
##    `24S-EQU` = col_integer(),
##    `44S-24S` = col_integer(),
##    `64S-44S` = col_integer(),
##    `90S-64S` = col_integer()
## )
df<-data.frame(ExcelFormattedGISTEMPData2CSV)
ggplot(df, aes(x=df$Year)) +
  geom_line(aes(y=df$Glob, color="Glob")) +
  geom_line(aes(y=df$NHem, color="NHem")) +
  geom_line(aes(y=df$SHem, color="SHem")) +
  ggtitle("GISTEMP Data2")+
  xlab("Year")+
  ylab("Data Deviation")
```