Connor Edwards
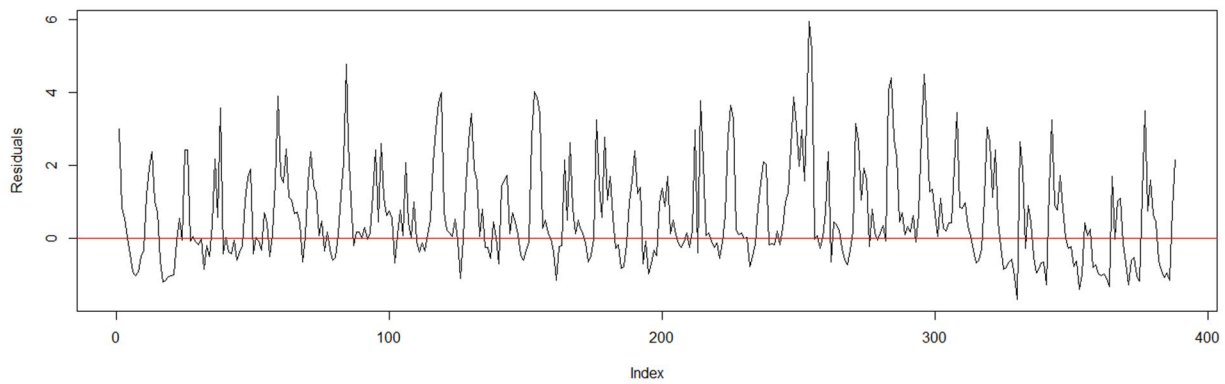
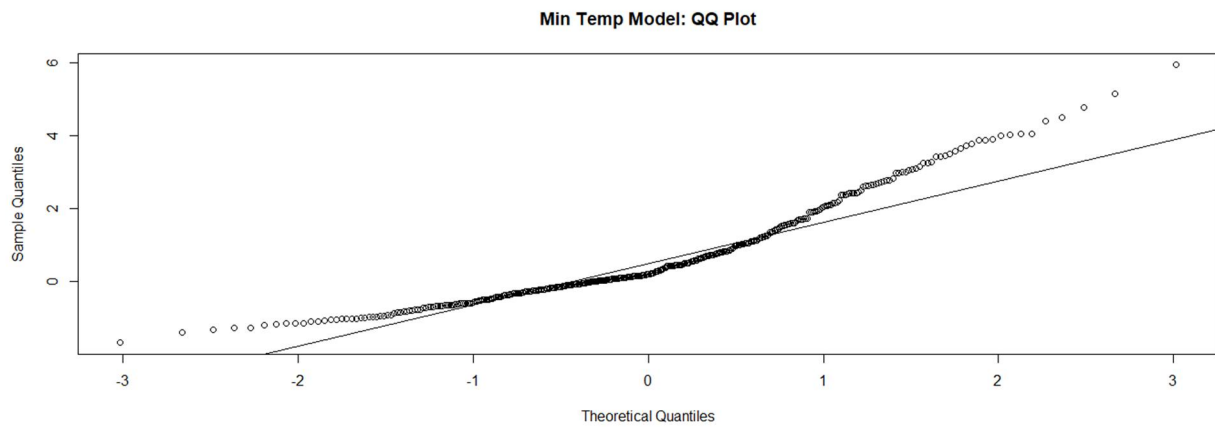## **Minimum Model:**

As is clear from the model and residual vs. order plot, the minimum model is not very satisfactory for the data from Sotouboua. There is a large set of data points that the model doesn't even come close to, and there appears to be no trend in the residuals vs. order plot. However, while not capturing the extremely low data points, the model does capture the oscillatory behavior of the data decently.
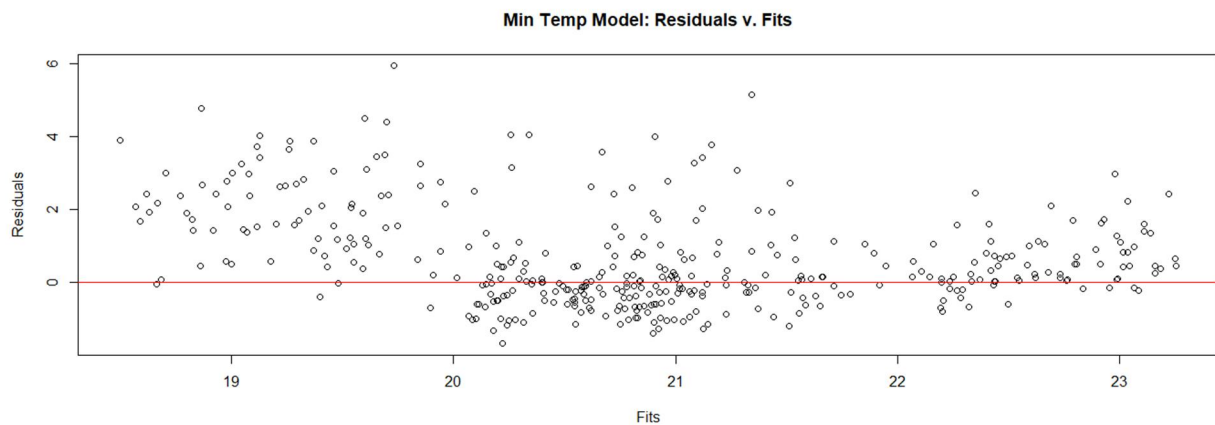
Our-Squared Value = 0.6250485

Min Temp: Residuals Histogram
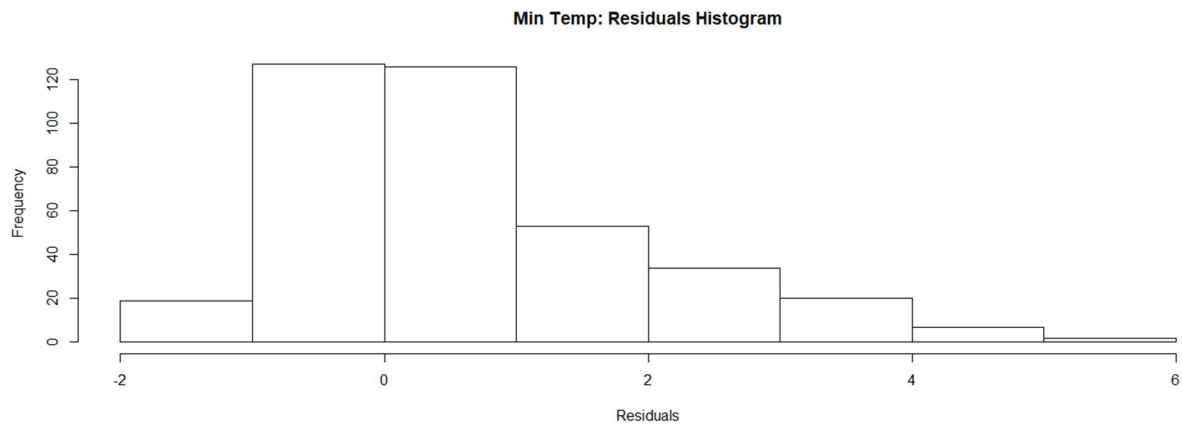
The residuals of this plot are skewed heavily to the right and lack any normality.

Min Temp Model: QQ Plot

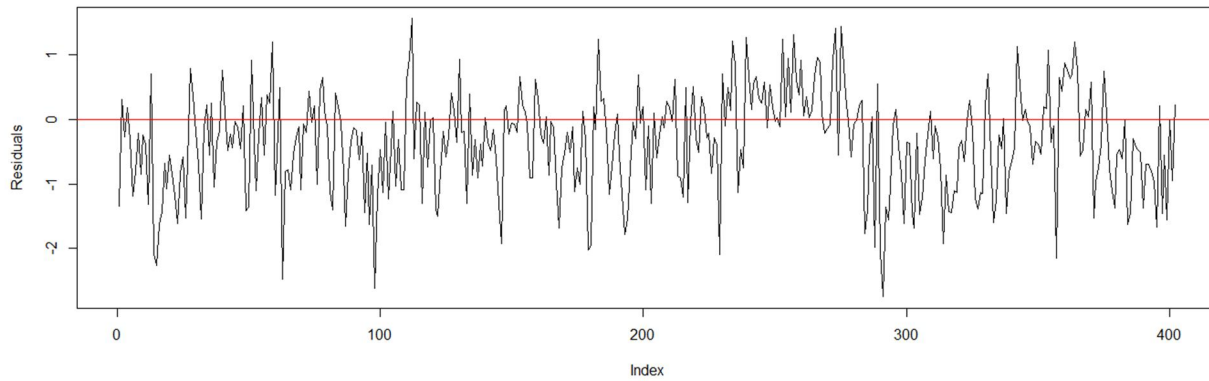Once again, this plot shows an extreme lack of normality in our residuals.

Min Temp Model: Residuals v. Fits

Many data points lie well away the fit of the model and are not randomly scattered.
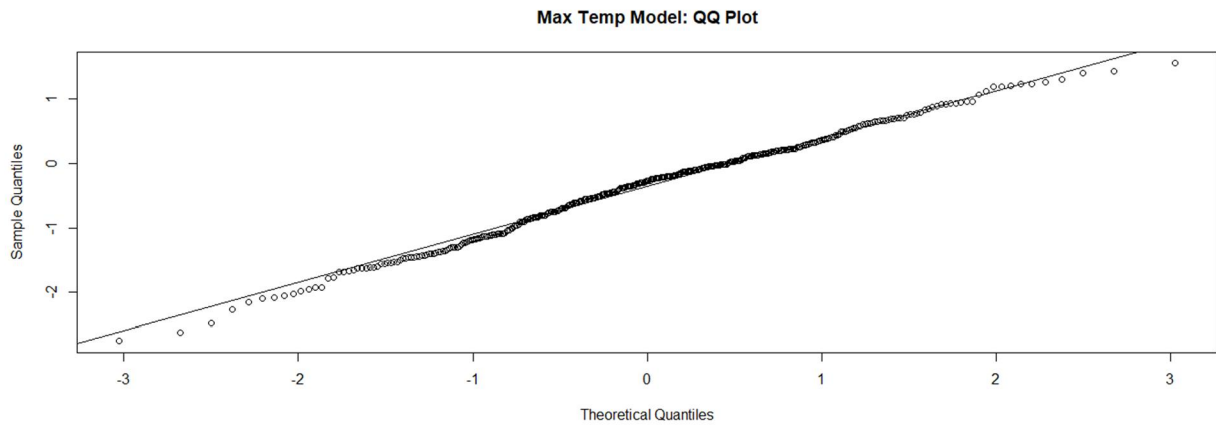
Maximum Model:
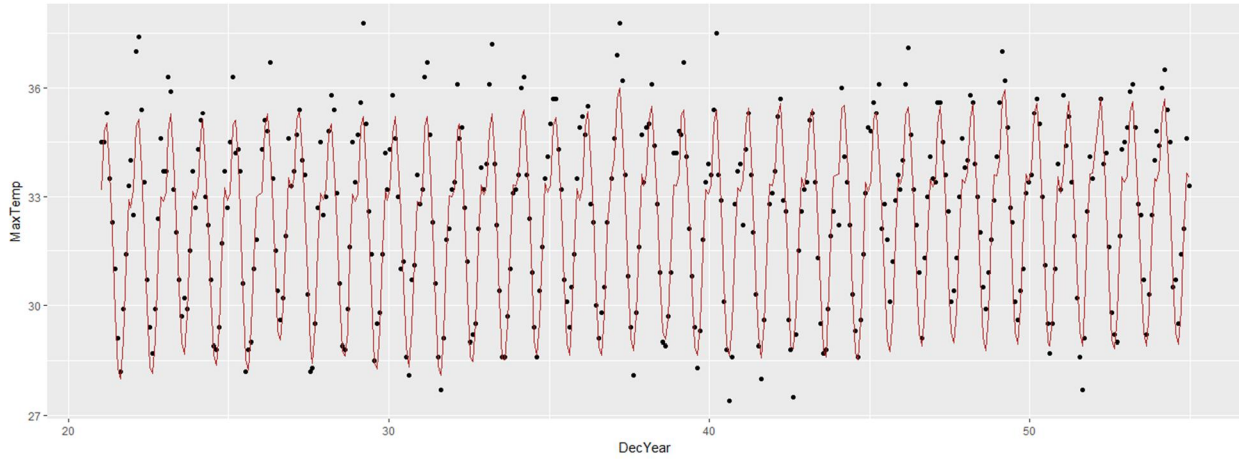
The maximum model seems to fit the data much more nicely than the minimum and there does seem to be more of a trend in the residuals vs. order plot. Once again, the periodicity of the data is modelled well, while still reaching extreme data points.
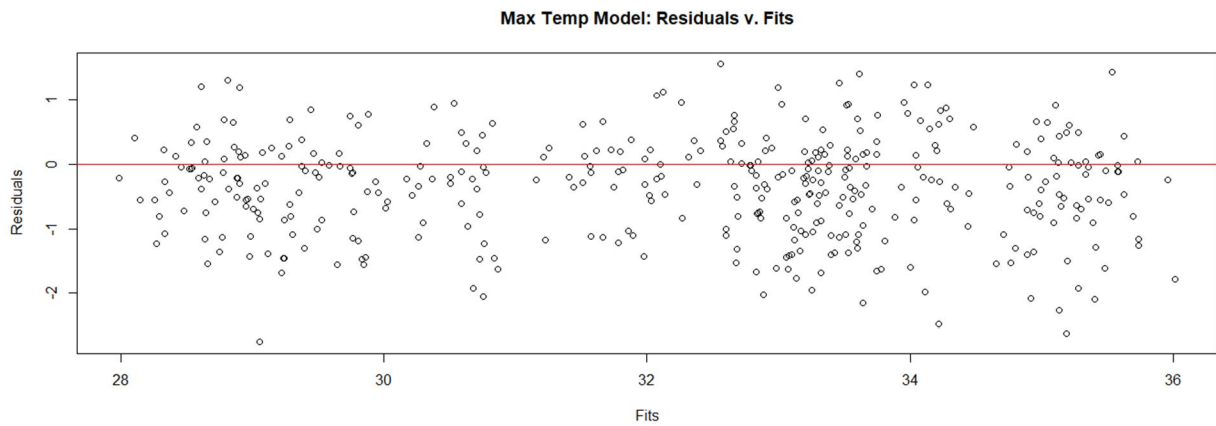
Our-Squared Value = 0.8751226

Max Temp: Residuals Histogram
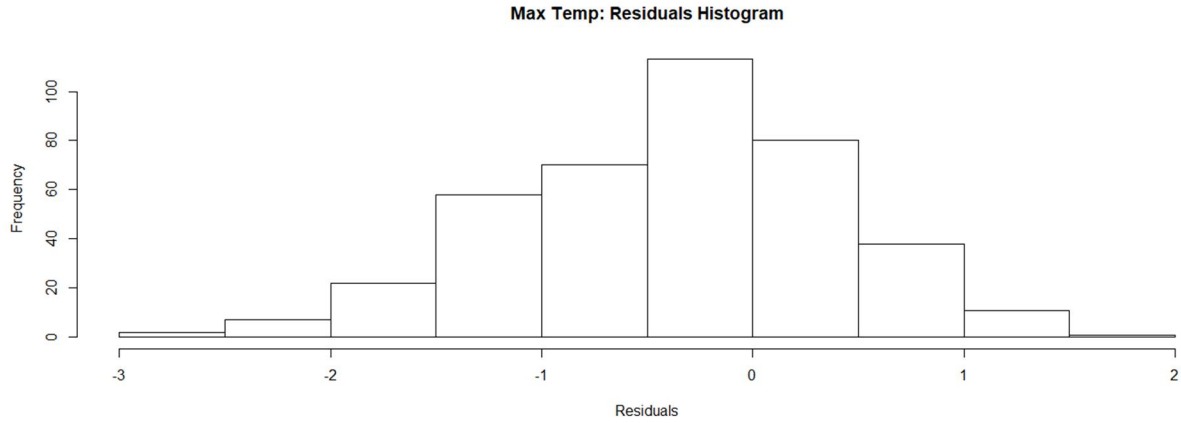
While the residuals have a distribution that appears normal, it is skewed right just like the minimum model.
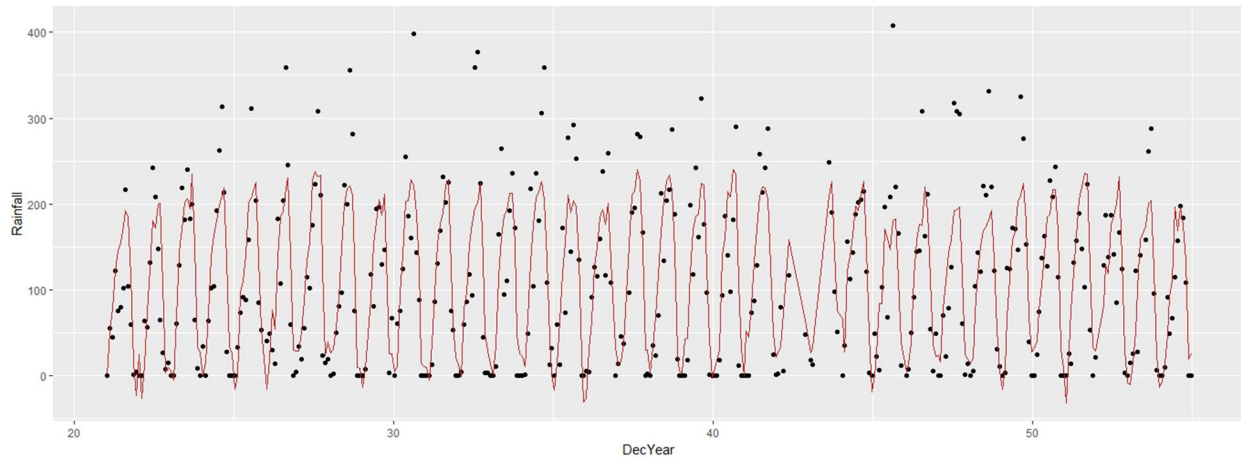
Max Temp Model: QQ Plot

By the QQ plot, the residuals do appear more normal than in the minimum model as many of the points are close to the line y=x.
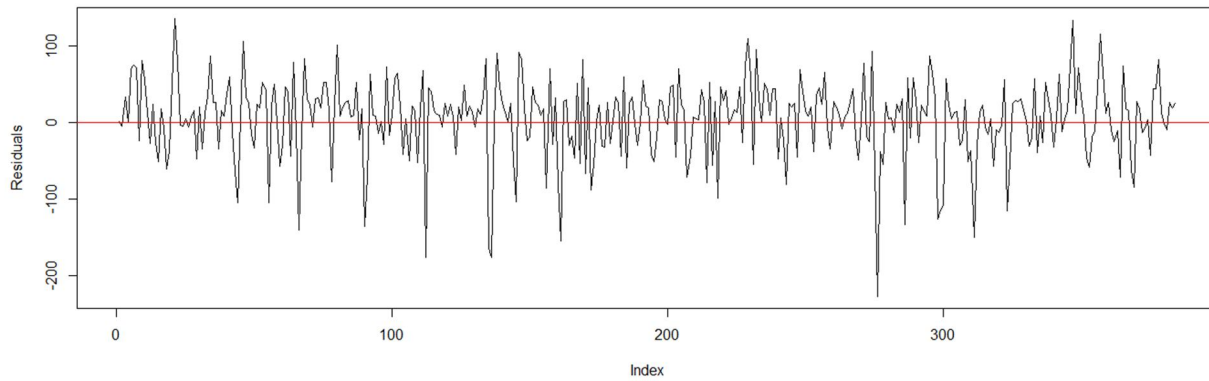
Max Temp Model: Residuals v. Fits

The residuals for the maximum model are randomly scattered about zero.

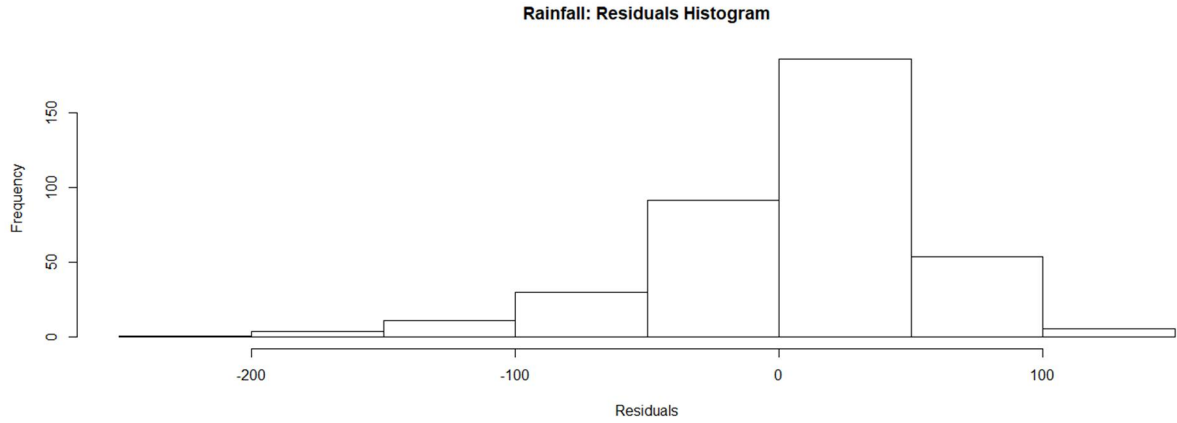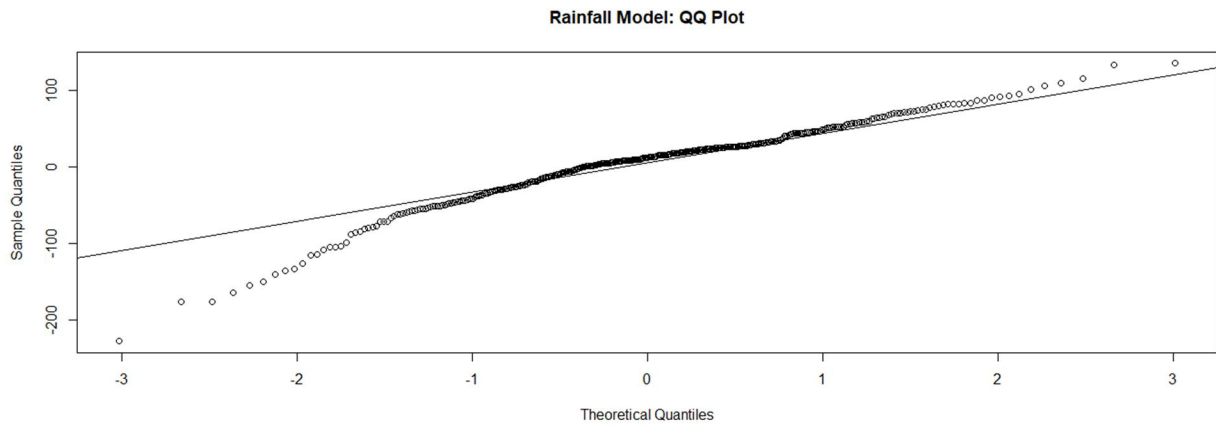**Rainfall Model:**

The rainfall model has the same problem as the minimum model in that it does not reach extreme data points, however, this can be attributed to a large number of zero values in the data. While there is a slight sinusoidal shape in the residuals vs. order, there does not appear to be a general trend.
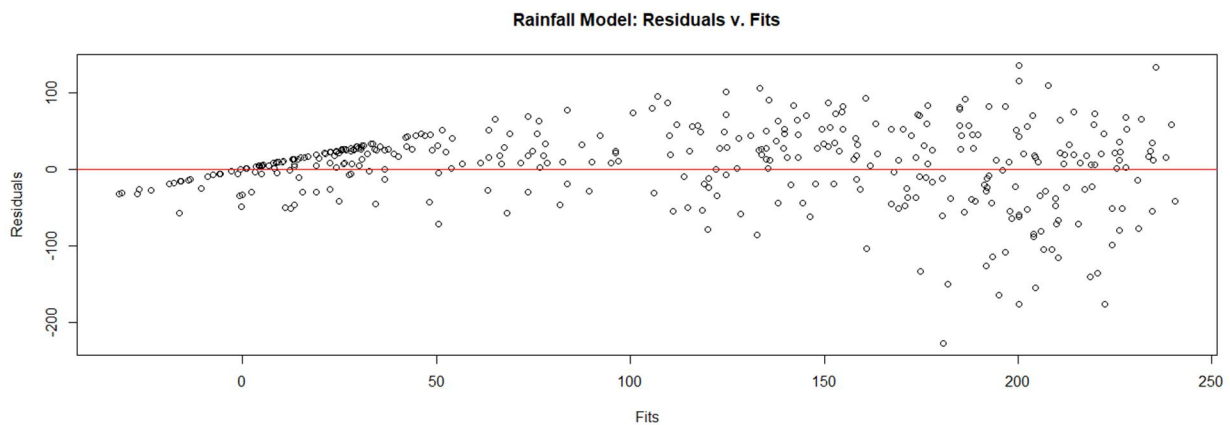
Our-Squared Value = 0.7332977

Rainfall: Residuals Histogram

The residuals for the rainfall model are skewed to the left and have no normality about them.

Rainfall Model: QQ Plot

The QQ plot also shows a lack of normality as the data points start well below the line y=x and end above the line.

Rainfall Model: Residuals v. Fits

The residuals for the rainfall model seem to a megaphone shape near the beginning of the data, however they do appear to become randomly scattered near the end of the data set.

Summary

All three models had varying degrees of success in accurately capturing the true nature of the data provided by the Togolese. Going by "Our-Squared," the minimum temperature model was the least accurate of the three models for our city. However, it still managed to account for a significant amount of variation in the data, this is likely due to the model managing to capture the periodicity of the data. The rainfall model fared slightly better at capturing its provided data but was likely hampered by the vast number of zeroes in the given dataset. Finally, the maximum temperature model was the best of the three, accounting for approximately 88% of the variation in the data.