Q2. Smoothened Weeks

To produce the chart to your right we first smoothened the Global Intensity data for each week using the moving average, with a time window of 10 consecutive observations.

We then computed the average smoothened week. This was produced by finding the averaged value for time t for all times for one whole week.

Letting:

X\_i = The smoothened week for week i

Y = average smoothened week

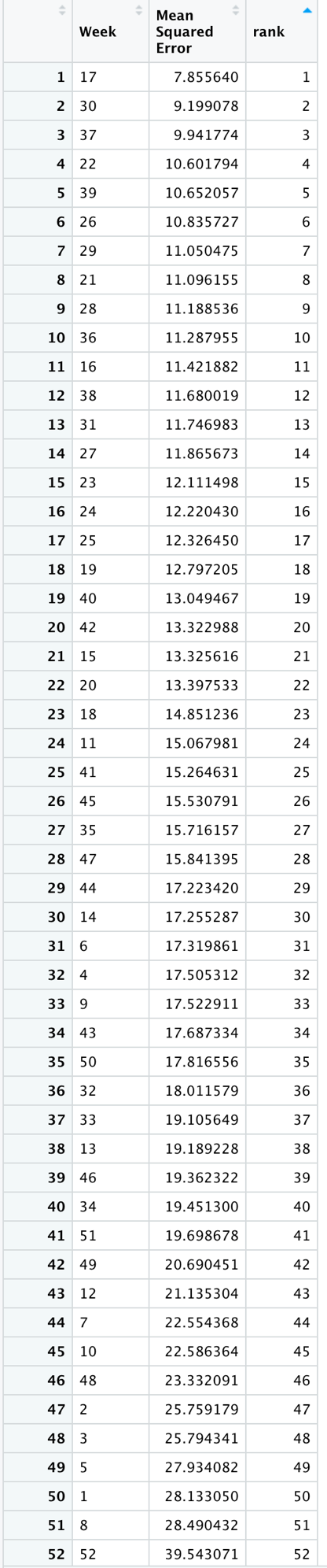
We then computed:

MSE = n/1 ∑ (Y− f(X\_i ))^2 for each i

This is what we see in the Mean Squared Error column, which represents how closely the observed values match the expected values. Smaller MSE values mean that the observed values were close to the predicted values, while larger MSE values mean the opposite.

From the rank column of the table, we can see that week 17 had the lowest MSE, while week 52 had the highest MSE. Thus, week 17 was the least anomalous, while week 52 is the most anomalous.

Please see the following page for a visual depiction of the findings.



Chart

Description automatically generated