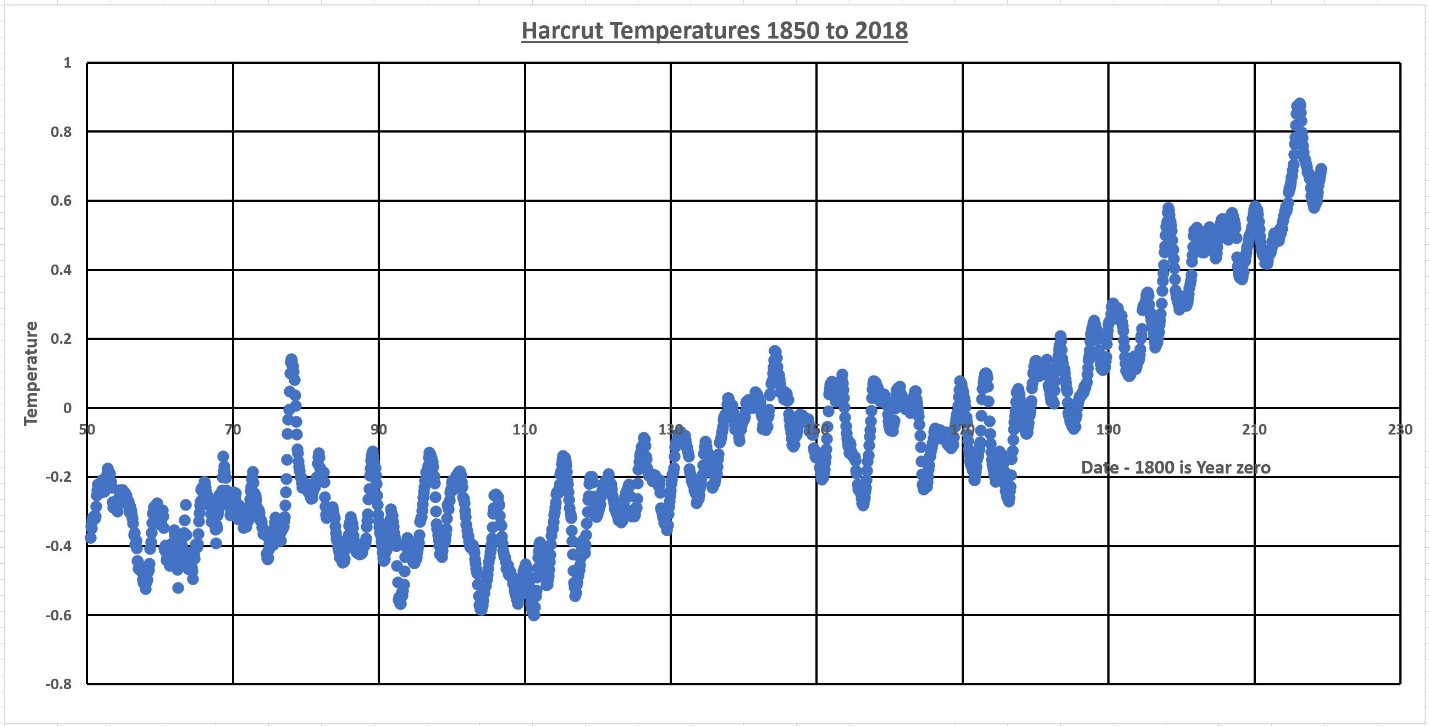
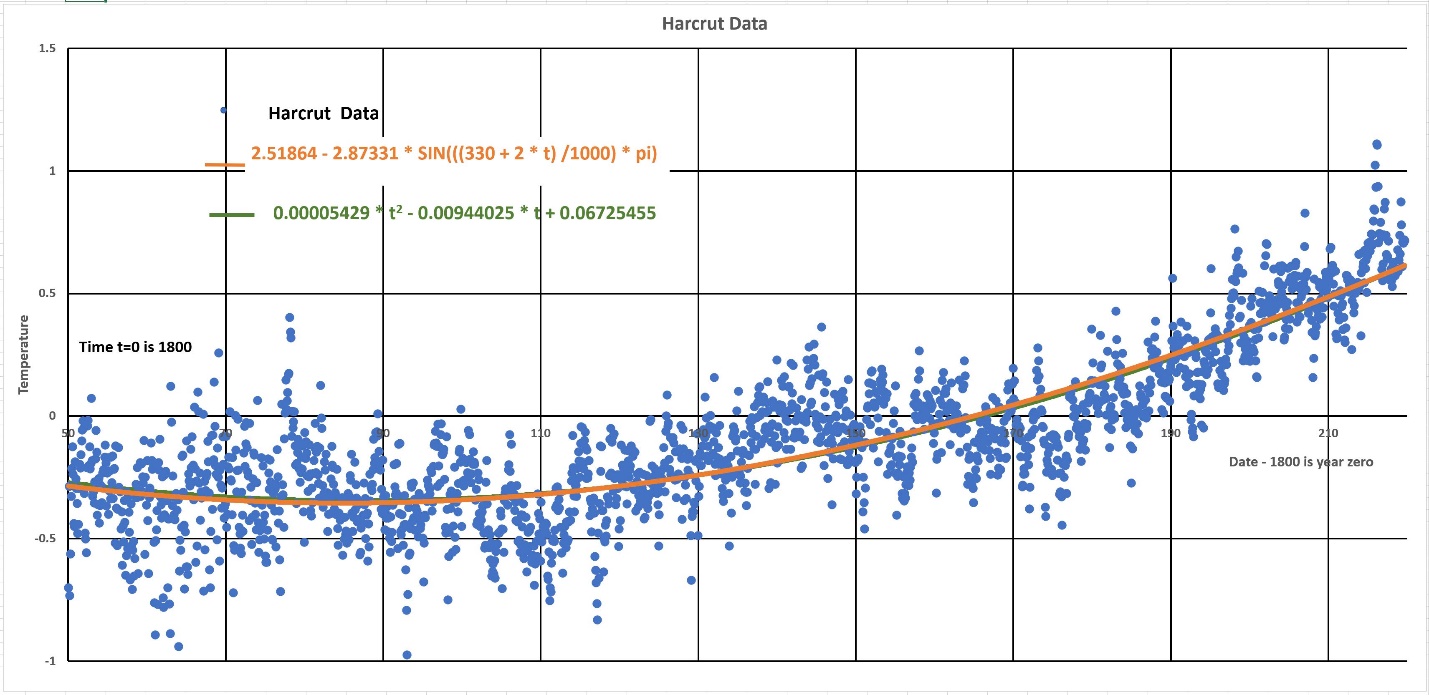
Alan Welch Harcrut Temps Analysis

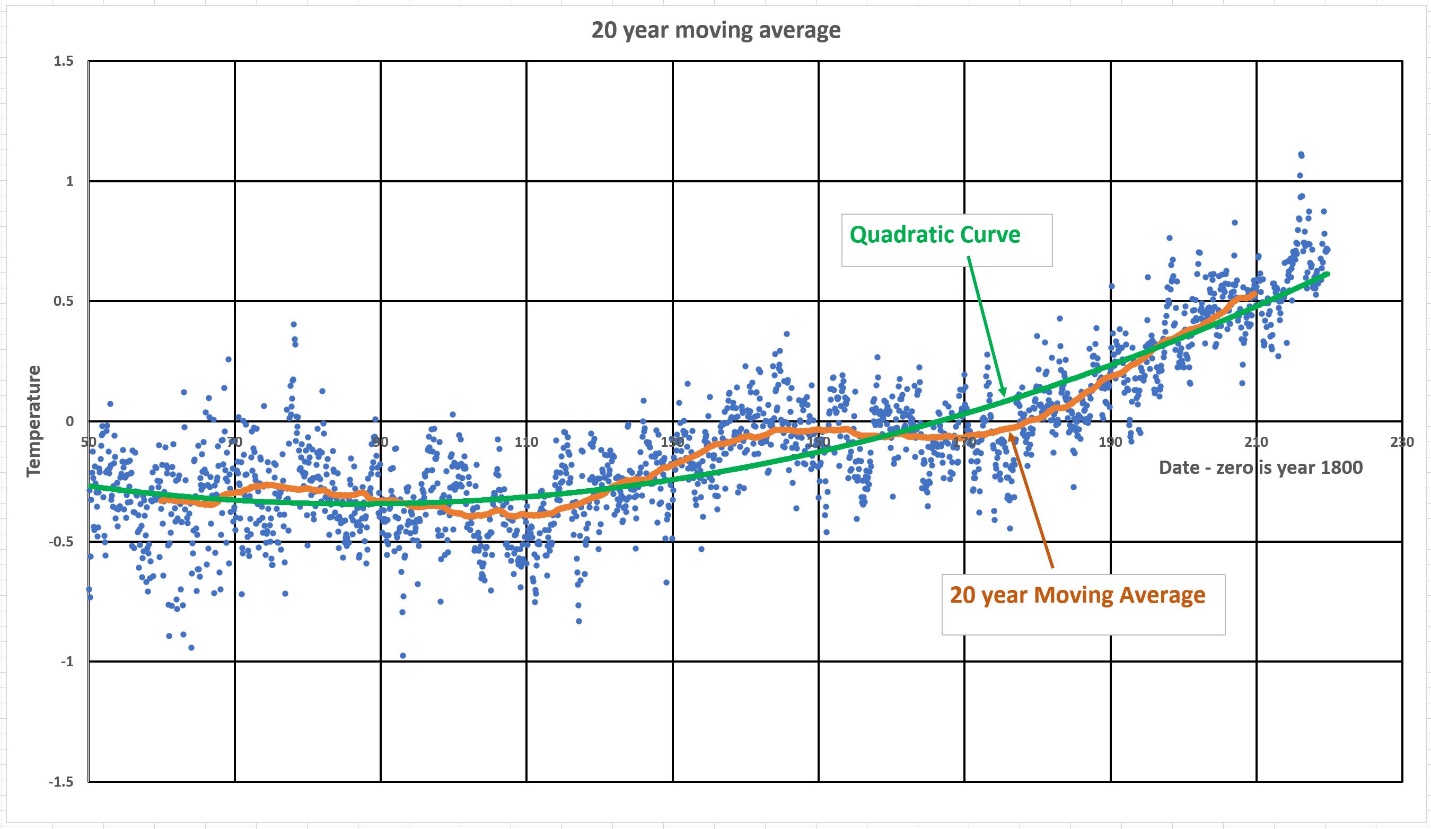
30 June 2022



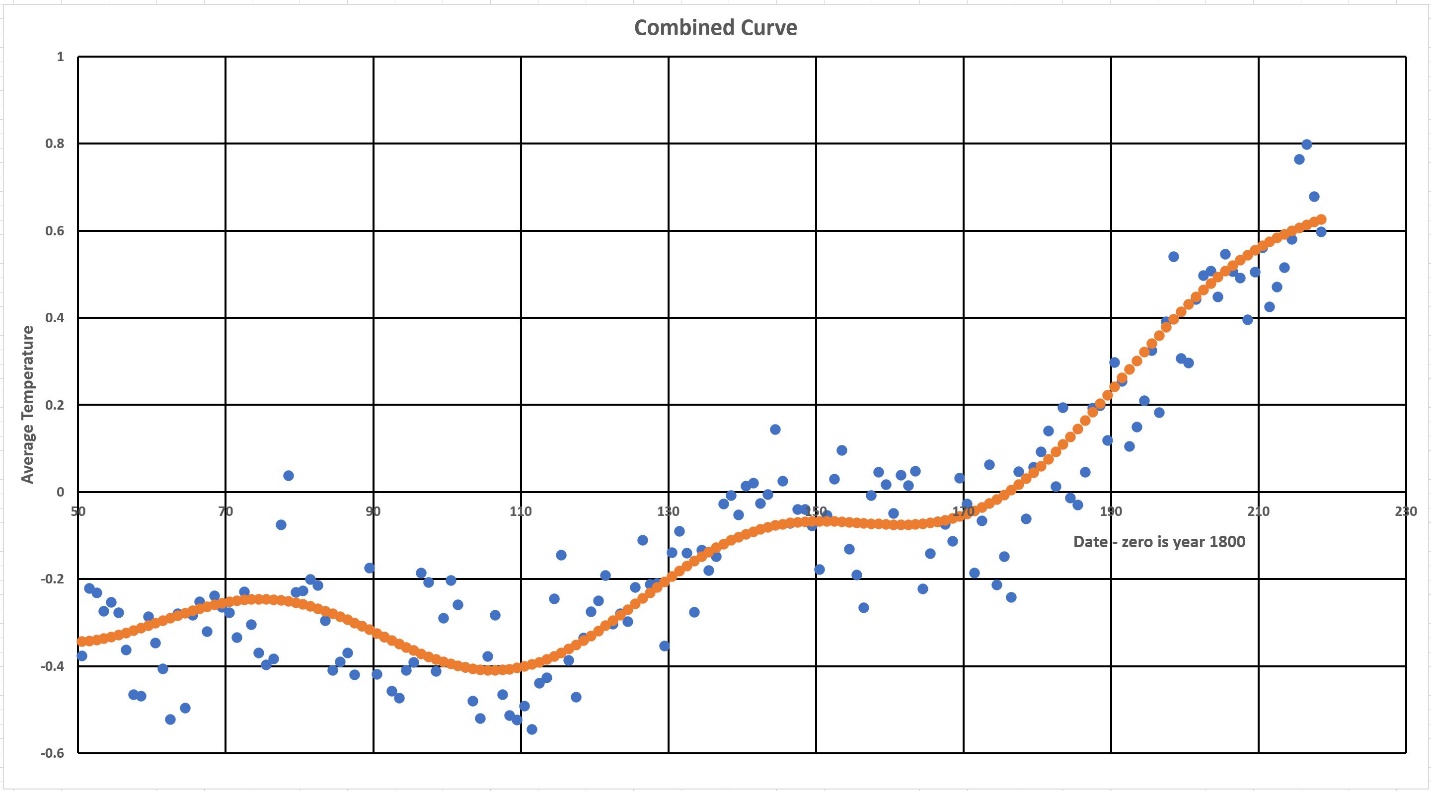
**1 – Harcrut basic data**



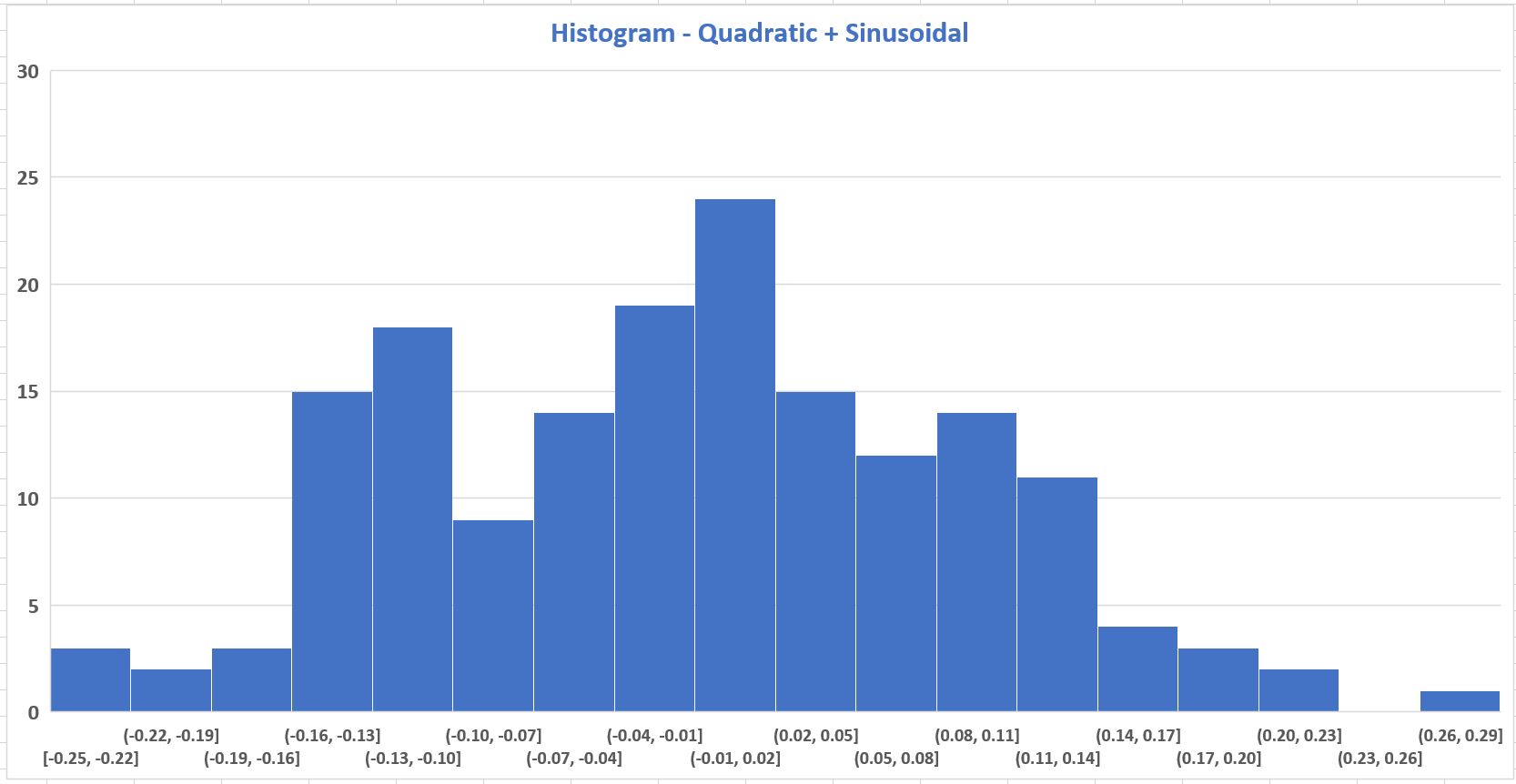
**2 – Harcrut Data** – 1850 to 2018 with best quadratic fit and a sinusoidal fit of a 1000 long term curve with an amplitude of +/- 2.87 degrees. The sinusoidal curve is just one of many but I feel a 1000 year period is a reasonable choice for starters.



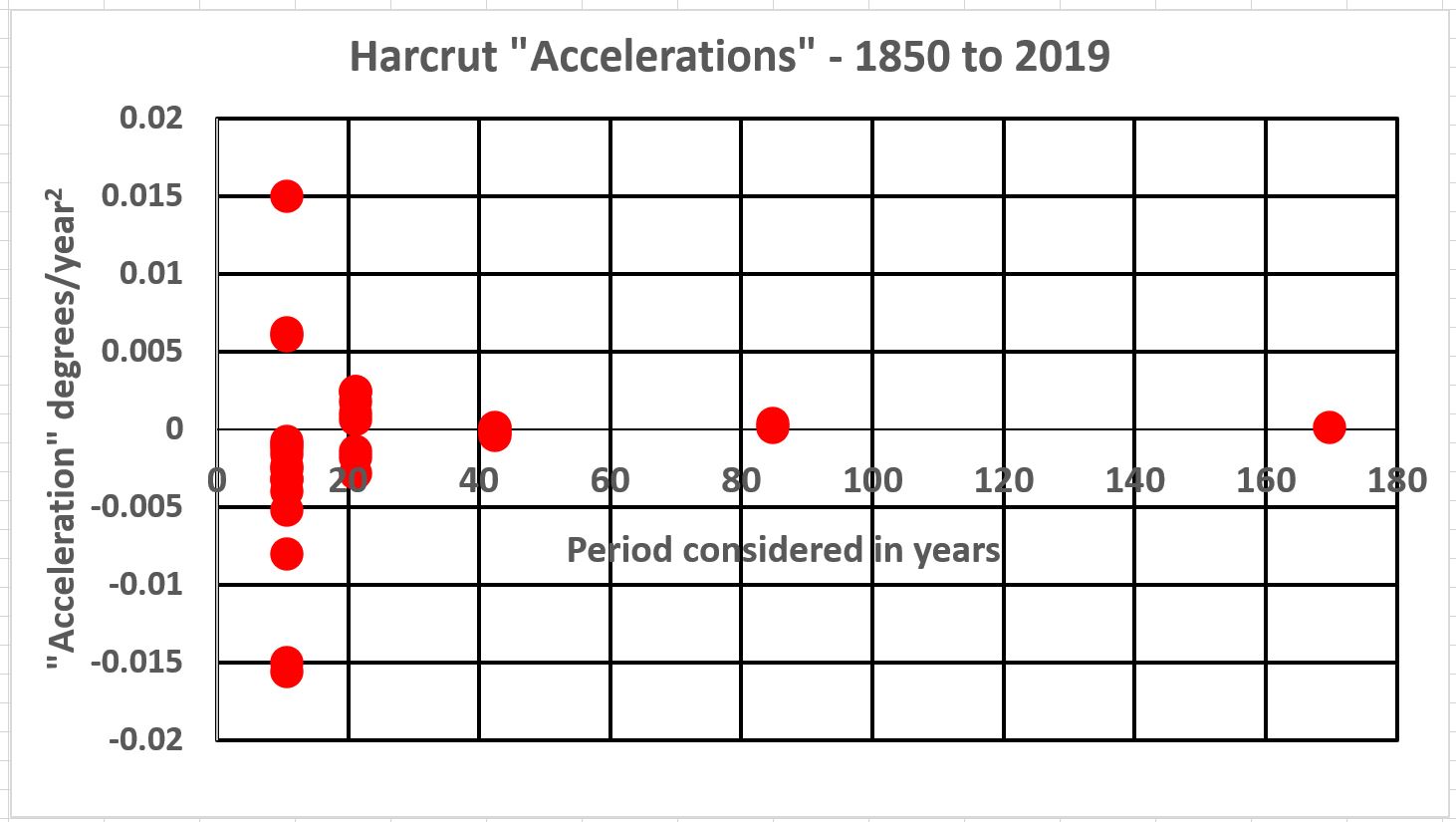
**3 – 20 year moving average** – indicate possible 65 year variation



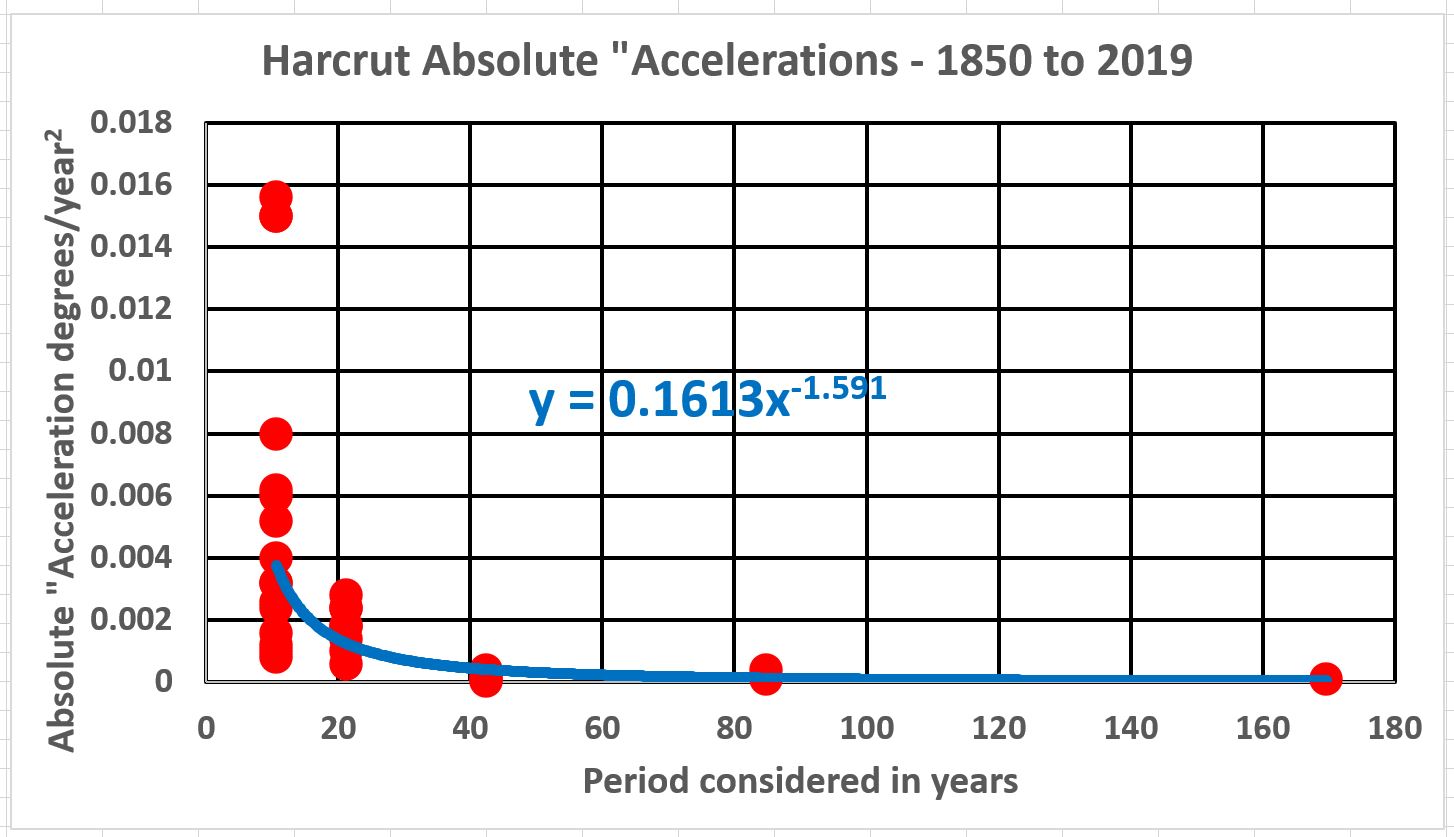
**4 – Combined Curve** -best fit quadratic plus sinusoidal curve with 65 year period and +/- 0.09 degree amplitude



**5 – Histogram** – Histogram of differences between actual data and fitted combined curve. Standard Deviation 0.1024 degrees



**6 – Accelerations** – over 5 different time periods down to 10.6 years with an amplitude of +/- 2.87 degrees. The sinusoidal curve is just one of many but I feel a 1000 year period is a reasonable choice for starters.



**7 – Absolute accelerations** – power term -1.591