

# Free graphing using long-term proxy data essay sample

[Business](#), [Management](#)



According to the University of Rhode Island (URI, 2014), time series graphs compare the variable under observation on the vertical (Y) axis against time on the horizontal (X) axis. Cycles reveal the trend of the collected data over time through plotting points on the graph which in turn produces the highs (peaks) and lows (troughs). The cycles reveal the variations in performance. When a scientist plots two lines (waveforms) on the same graph, the two waveforms provide a graphical comparison of performance between two subjects under observation.

1) When peaks and troughs align, does this mean the data is more or less similar?

A look at the two waveforms indicates alignment between their peaks and troughs. This does not mean that data is similar, especially if we were to look at it in terms of quantity. In other words, the actual values between the two comparative waveforms are not the same. However, this alignment is significant because it reveals a similar trend or pattern between the two distinct set of values in comparison. For example, when the precipitation (PPT) is high, the ring width (RW) is also high. This could be interpreted to mean that with more rainfall, the tree would grow bigger.

2) If the data have similar patterns, what does this mean for the relationship between precipitation and ring growth?

A common pattern between the two waveforms reveals similar behavior. It is indicative of a reciprocal relationship between the subjects. However, similar behavior does not mean similar physical values. It means that the behavior of one subject causes the other subject to react similarly. In this case, the availability of more rainfall and other favorable conditions (precipitation)

such as direct sunlight will cause trees to grow bigger (RW) and faster.

3) What conclusion can we draw about ring growth when growth and precipitation graphs act differently from one another?

In contrast, when ring growth (RW) waveform and precipitation (PPT) waveform depict different trends, this is a clear indication that there is no relationship between the subjects. It means both subjects are independent of each other. The action of one does not affect the other in any way. In this case, it would mean the growth of trees or vegetation for that matter will not be determined in any way by the availability or lack of rainfall or any other favorable conditions.

4) If it is possible to develop 400 years of ring width data, what benefits might this have for reconstructing climate?

400 years is a long time. This would definitely reveal a historical pattern of the precipitation values over that period of time. That means that a scientist would be able to determine the actual precipitation for each year. For example, the scientist would be able to determine the amount of rain that fell for each of those 400 years. This is because ring width (RW) is directly affected by precipitation.

5) Hypothesis Question: Suppose water resource managers have access to 400 years of precipitation data developed from tree rings. How might this help them manage water consumption?

Water resource managers have to contend with growing populations and growing industries. All these constitute modern day water guzzlers. To make their approach to water management more realistic, they would need population data, even estimates in order to be able to determine the actual

water needs. Precipitation would reveal the amounts of water at the disposal of man, flora and fauna. The managers would then compute the amount of water required sustainably, without upsetting the ecosystem. Using these values, they would then be able to advice on such matters as water conservation, pollution control, and so on.

Works Cited