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Weather I

## Australia's Climate Research Paper

### **Introduction**

Global warming is a major concern to all species on this planet. There are many resources in all the vast corners of media trying to spread global warming awareness. Organizations helping to spread this information may sometimes be unaware of the details and possibly even be unaware of the misconceptions they are spreading. In this paper I intend analyze a large pool of data from Australia and look at the temperature patterns from each year from 1857 to 1991 and precipitation data starting from 1877 to 1992. With this large accumulated amount of data one can infer correlations between temperature and precipitation.

### **Approach**

By looking at a temperature data from year 1857 to 1991, we can graph this data to get a better understanding of the data collected. A very useful tool when analyzing a large amount of data is calculating a best fit line which will easily show us either an increase in temperature or a decrease in temperature over this time period. It will also be important to look at the data separately for each season. Seasonal variations can explain the temperature differences and hence also explain precipitation differences.

### **Results**

As graphed in Figure 1, our best fit line is given by the following equation:  $y = -0.0062x$

+ 28.024. Using simple mathematics and the slope formula  $y=mx + b$ , we can note that our best fit line has a decreasing slope suggesting a decrease in temperatures over the years. We can do the same for the precipitation data (Figure 6), this data has a best fit line given by the equation,  $y = -0.0031x + 22.487$ . Once again since the slope of the line is a negative number we can infer a decrease in annual precipitation. Figure 2 & Figure 5 show the winter and fall seasons' temperatures, note the large decrease of 0.085 degrees C in average temperatures. Figure 3 shows the spring temperature averages, here only a slightly smaller decrease of 0.031 degrees C. Finally figure 4 gives us the decrease in temperature for the summer season in Australia, this is only a decrease of 0.045 degrees C per decade.

Precipitation directly correlates to the findings of temperature roughly around the same years. As the temperatures continue to fall, the precipitation raises. Refer to figure 6, using the same method of best fit line as before we observe that there is an increase in precipitation, estimately roughly 1.6 mm per decade. Looking further at the seasonal graphs for precipitation one can conclude that the data shows increase precipitation amounts in all seasons except for the spring season for Australia.

## **Discussion**

The results from the data seem to be counter intuitive to the general understanding of global warming. As the term global warming implies, temperatures should be increasing not decreasing. Instead of a negative correlation between temperature and precipitation we should be noticing a positive correlation. Australia is a continent with a greatest climate changes different parts of the country. The continent's climates include equatorial, tropical, subtropical, desert, grassland, and temperate. The vast range of climates can help to explain the unexpected

results found from the data. Since the data consisted of averages from all these different climates one would have to consider the physical changes in environment. Even though the results in findings about temperature may not relate to global warming, data about precipitation surely does. Due to the polar caps melting away and oceanic levels rising rapidly it is safe to assume that this caused the precipitation increase seen in Australia over the century.

## **Conclusion**

From the results found we can conclude that Australia's climate is one that changes very rapidly and quickly. Although we cannot conclude that the temperature patterns found relate to global warming we can surely see the increase in precipitation is definitely related to global warming factors. Due to the many climates found on the continent it is rather difficult to address any particular climate and research the effects of global warming. With the temperature data found, a best fit line shows that there was decrease in the average annual temperature over the centuries and the graphs for precipitation conclude the sum increase of precipitation.

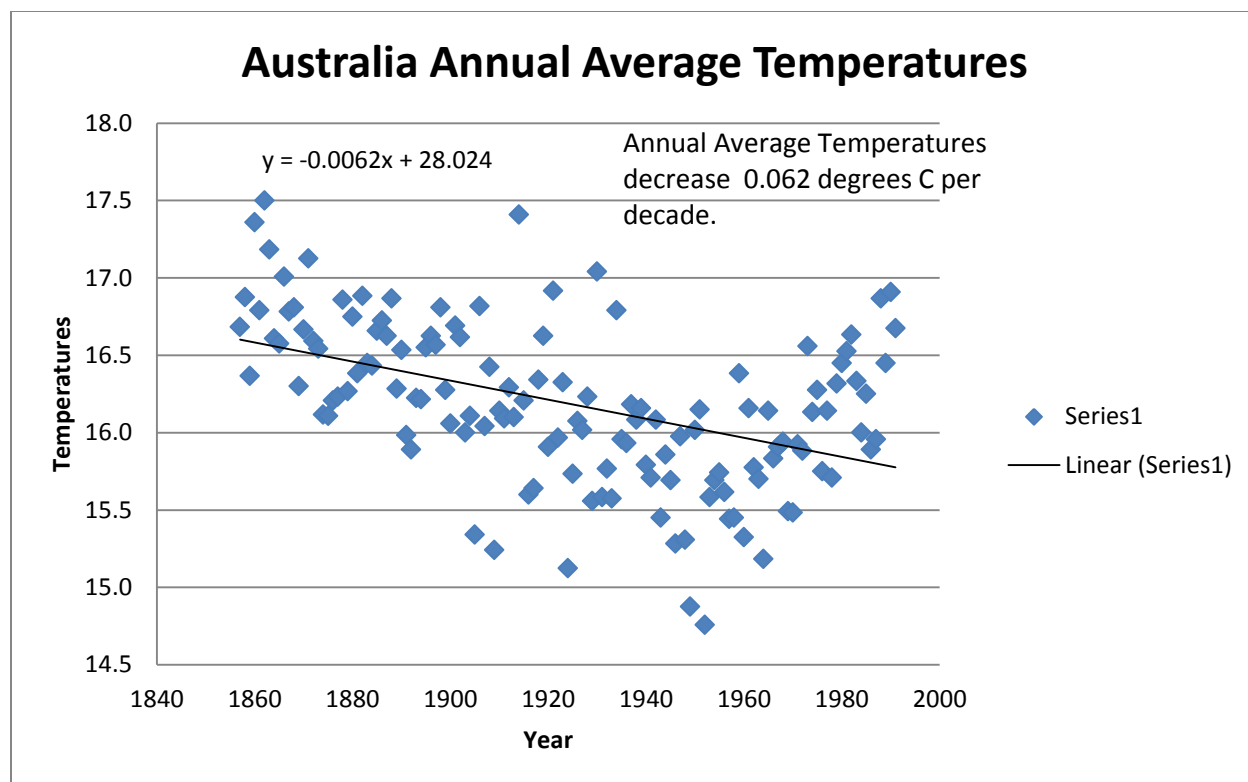


Figure 1

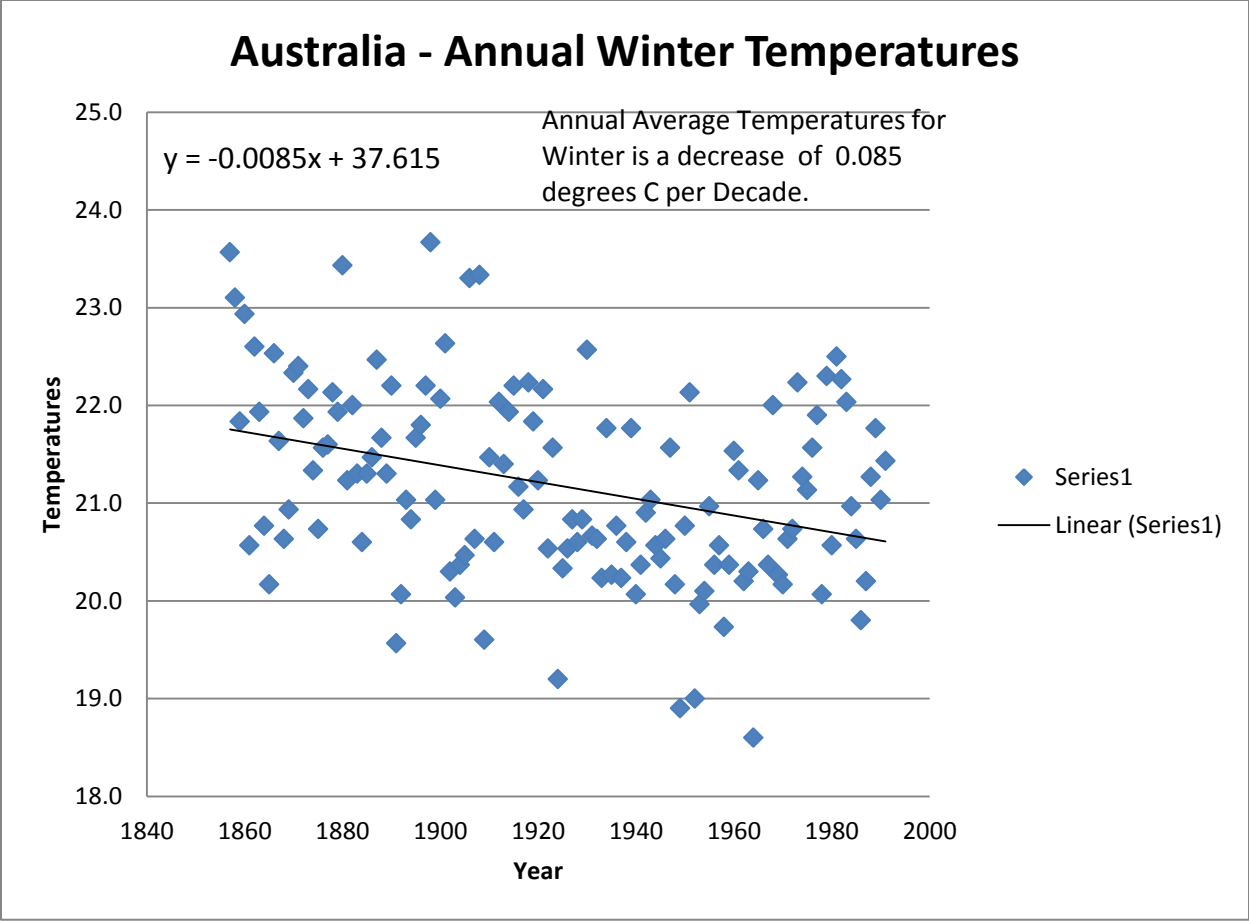


Figure 2

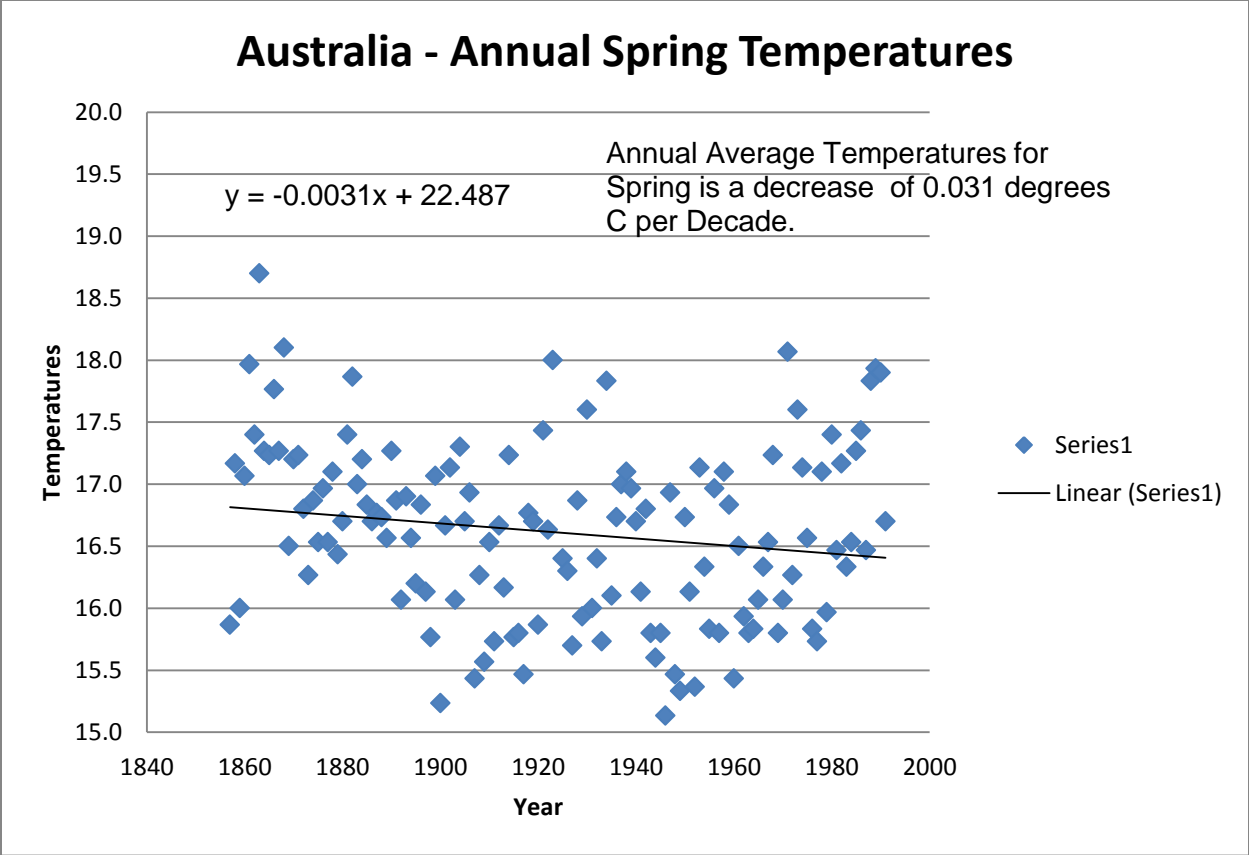


Figure 3

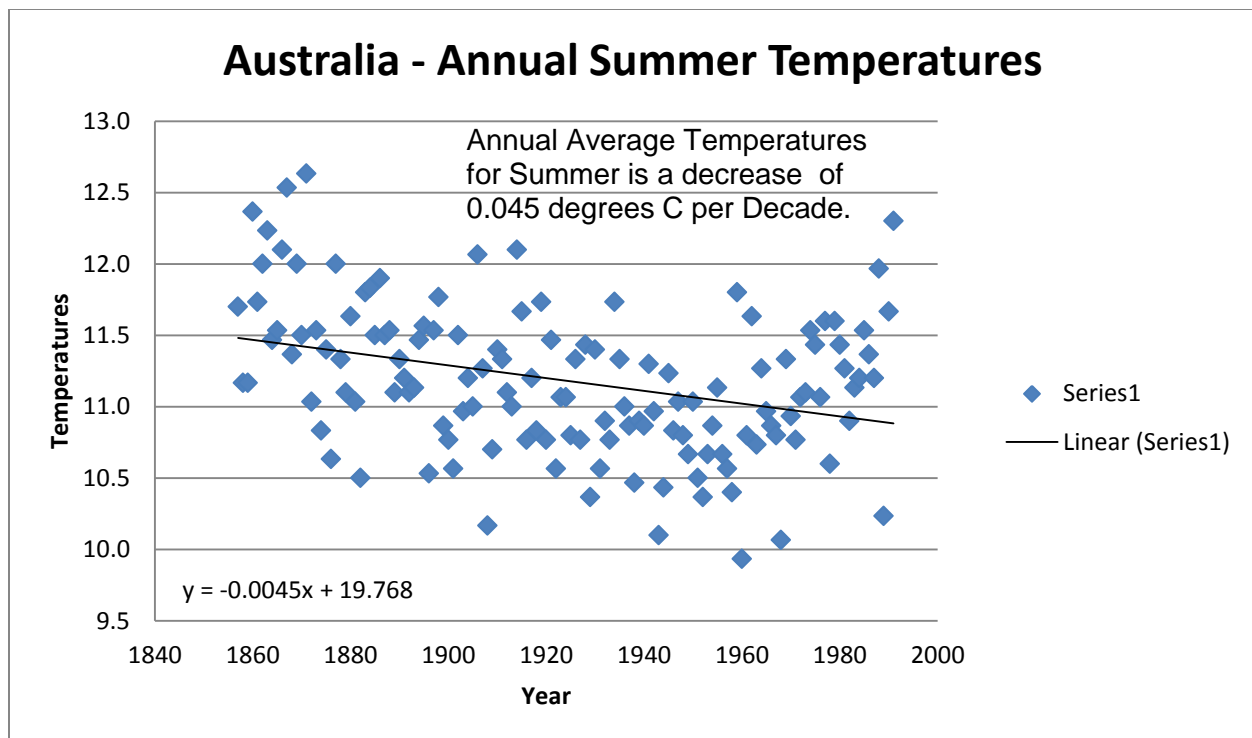


Figure 4

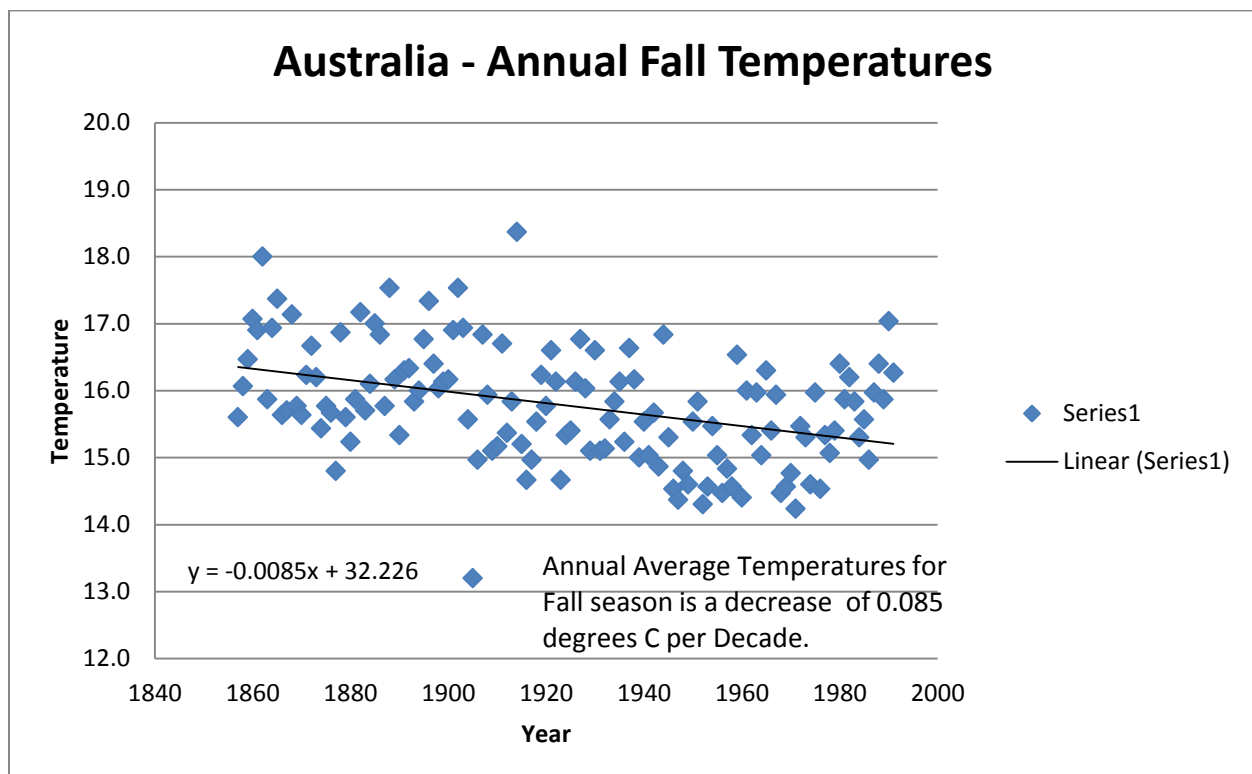


Figure 5

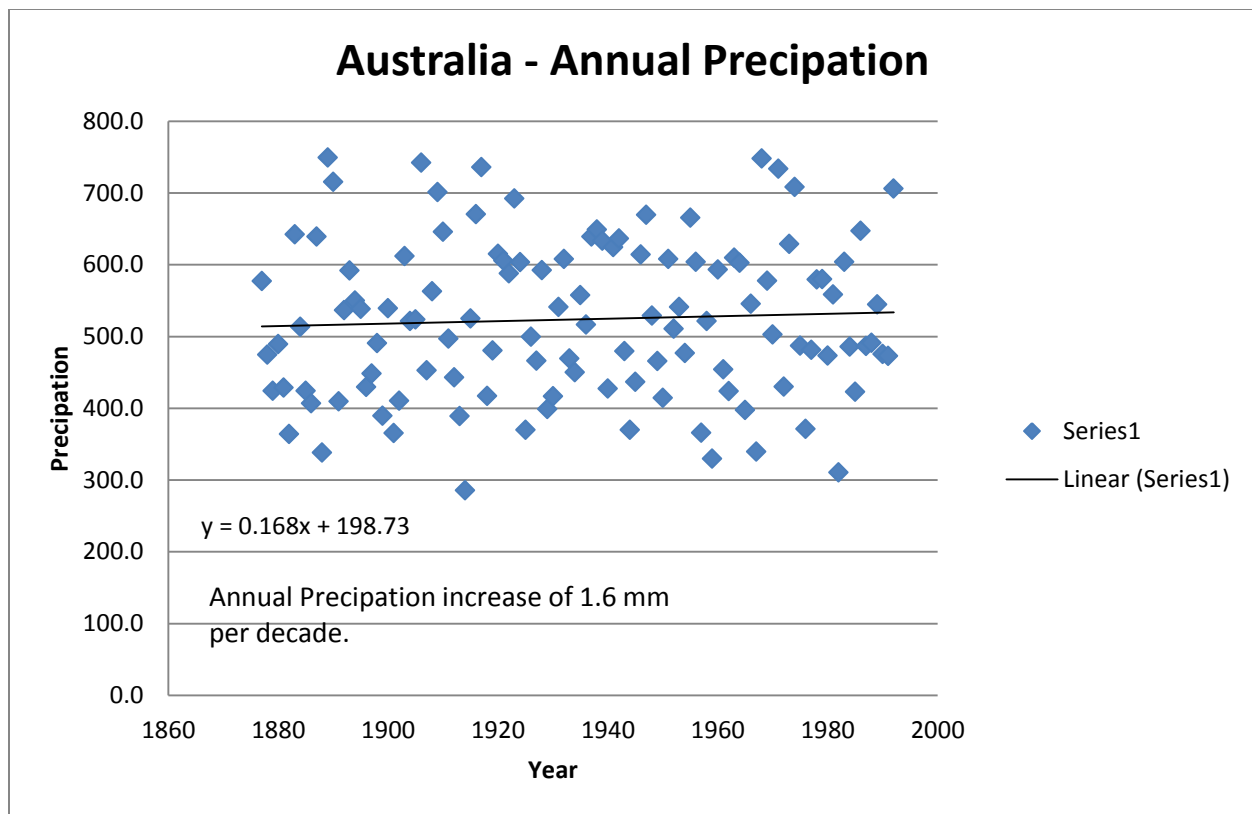


Figure 6



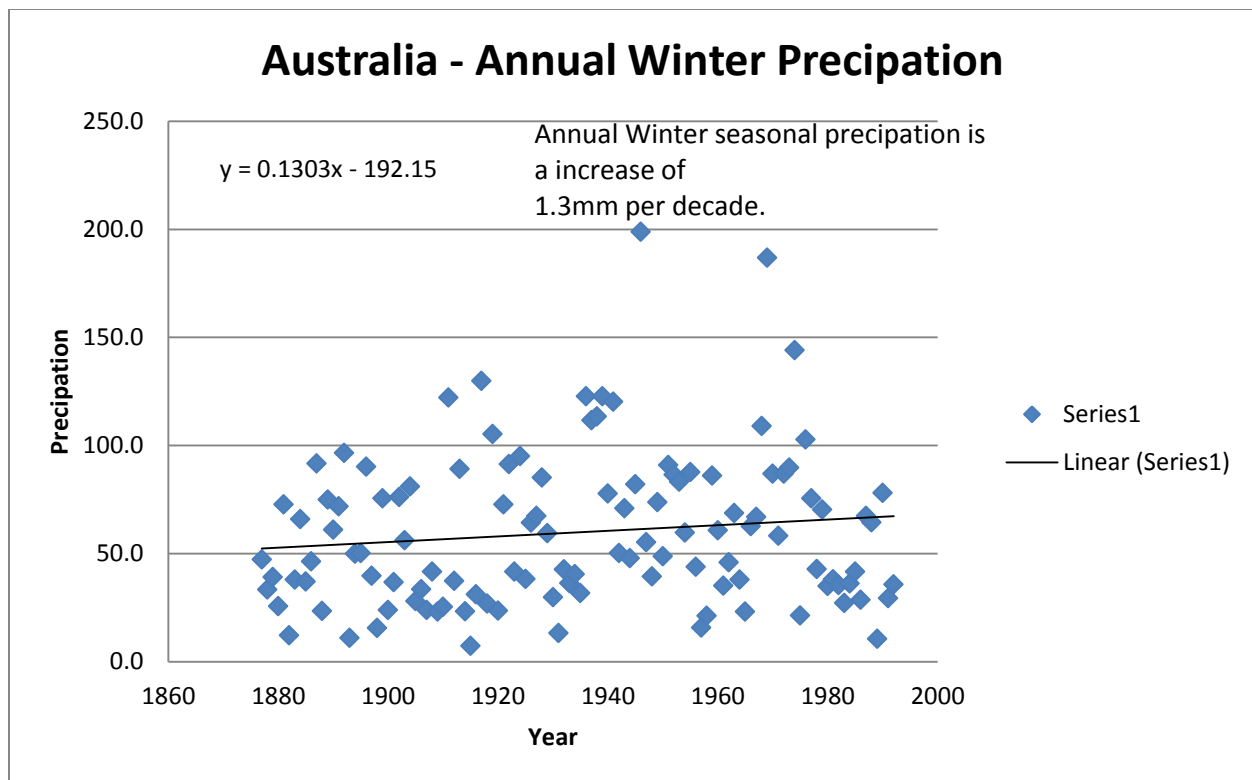


Figure 7

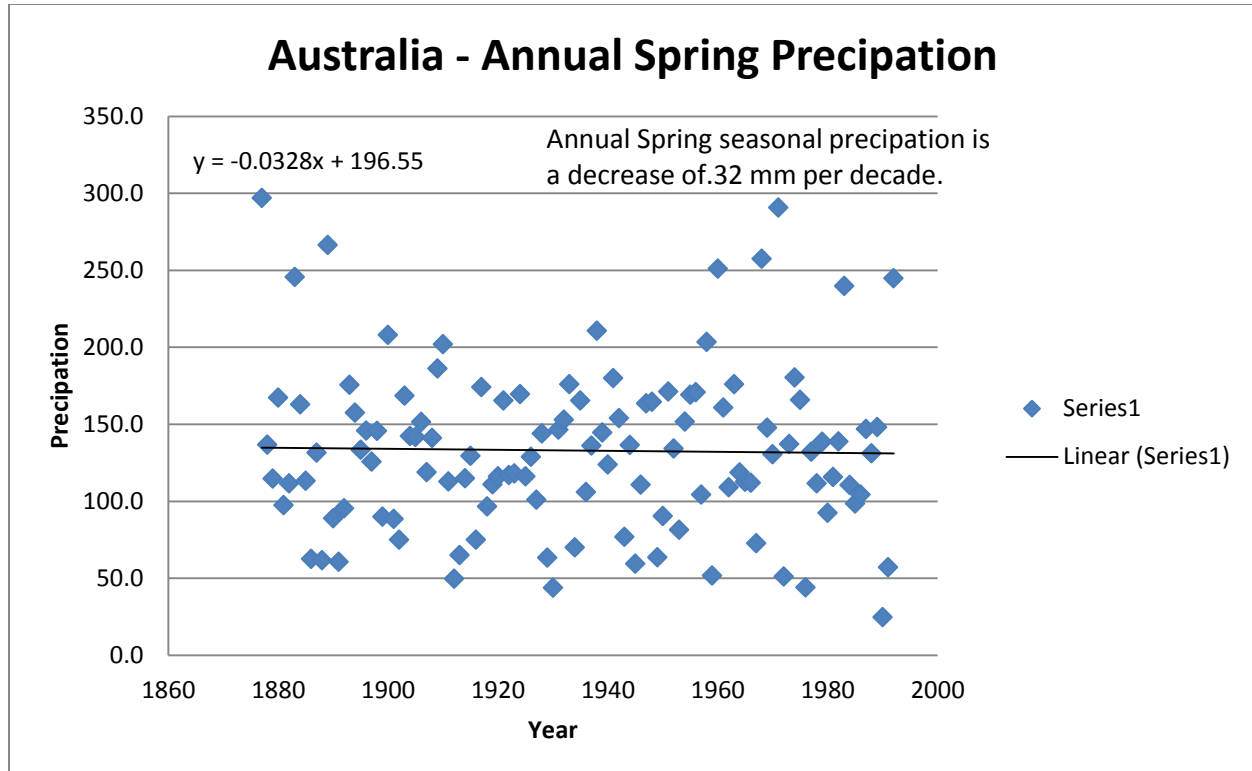


Figure 8

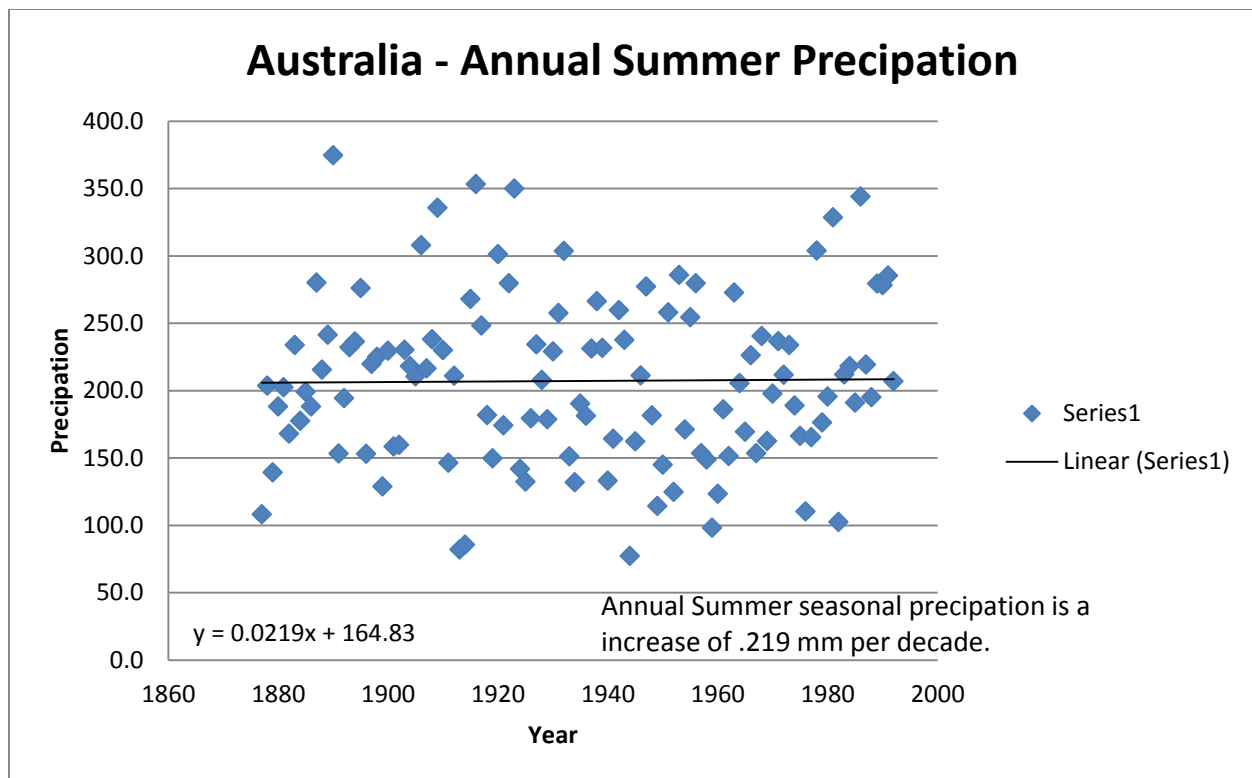


Figure 9

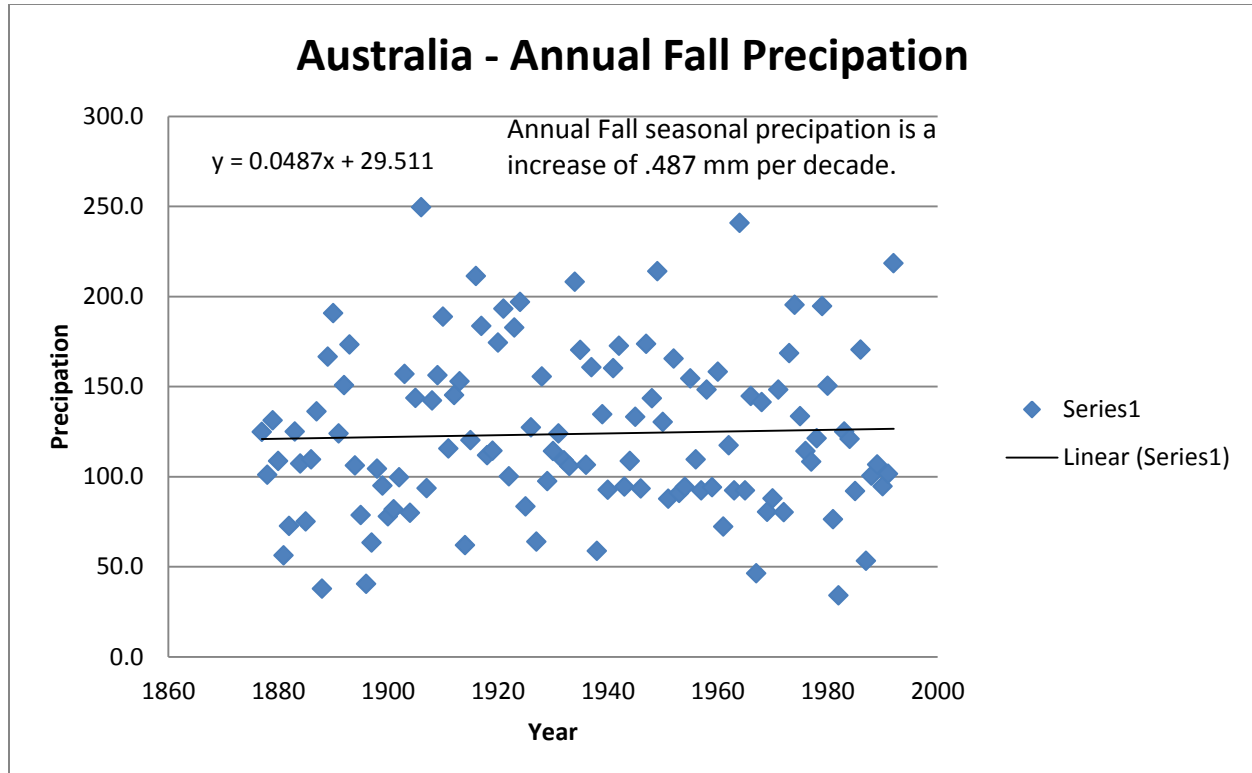


Figure 10