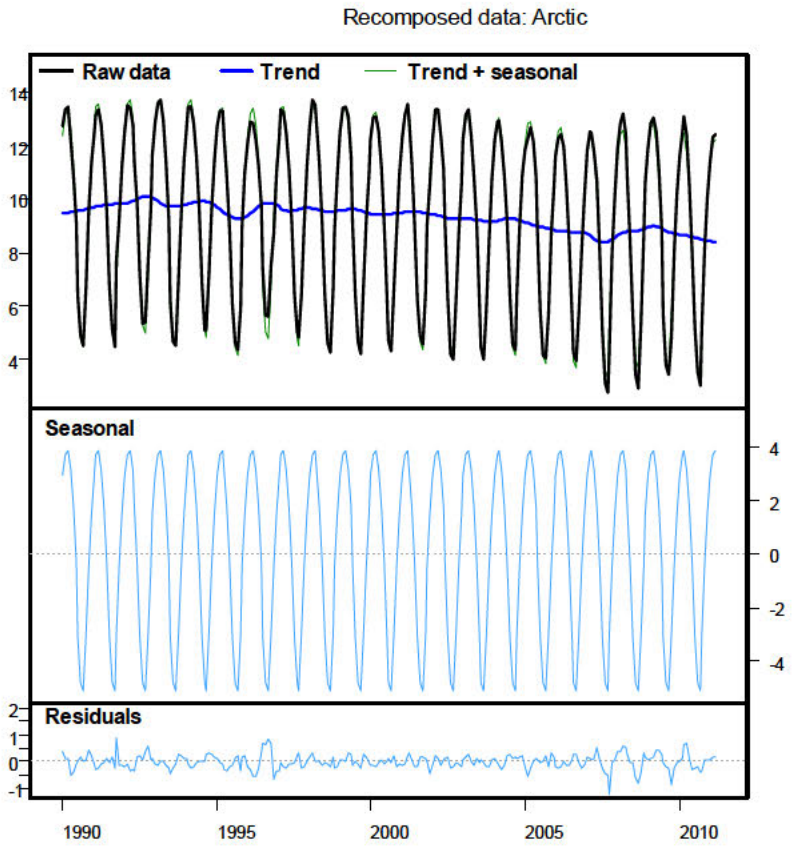
Student 5: Low Achieved

NZQA Intended for teacher use only

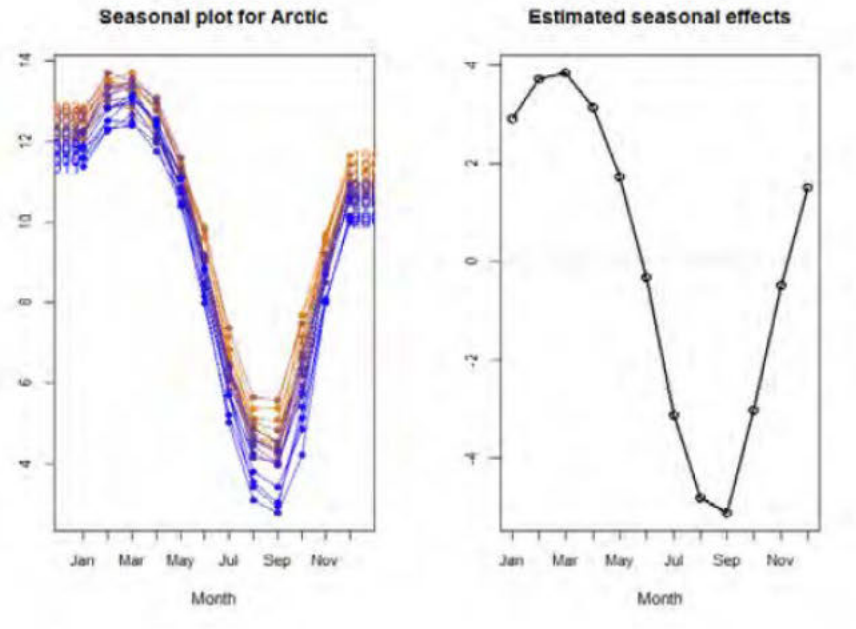
Sea ice is present in the Arctic region of the globe, and is formed from the freezing of sea water. The amount of sea ice in the Arctic is apparently decreasing over a period of 21 years due to causes such as global warming and the Greenhouse effect. I am going to see if this decrease is actually happening and if so how fast. (1)

Arctic Sea Ice Graphs

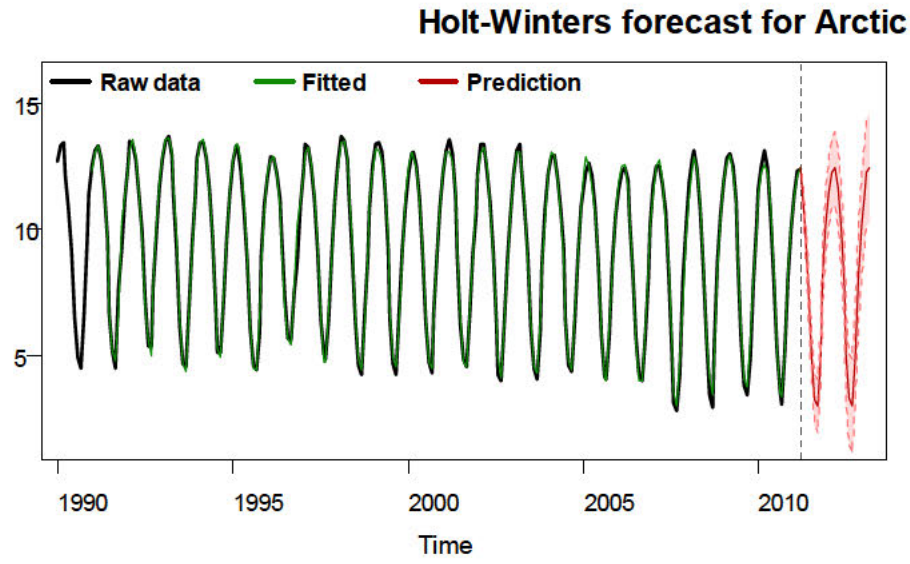


(2)

This graph shows the amount of sea ice (in millions of square kilometres) in the Arctic regions from January 1990 to March 2011. The amount of sea ice in the Arctic over a period of 21 years is generally decreasing. The area of sea ice has fallen from about 9.5 millions of square kilometres to about 8.5 million of square kilometres over this time. (3)



There is an annual seasonal pattern that can be seen in the graph. Generally, the month with the highest amount of sea ice in the Arctic is March and the month with the lowest amount of sea ice in the Arctic is September. (3)



(4)

We are able to make quite accurate predictions about the amount of sea ice in the future because of the fit of the trend line to the data and using the average seasonal effects for each month. I estimate from the graph that the area of Sea ice for Sept 2011 will be about 3 million square kilometres. (5)

The projection of the amount of sea ice in Sept 2011 should be quite accurate, assuming the trend line does not change and there are no errors or ramps in the data set.

My investigation has found that the sea ice in the Arctic has decreases over the twenty years of the data set. The sea ice looks as if it will continue to increase but the model may be affected by other factors so the rate changes. (6)