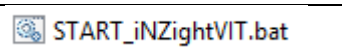
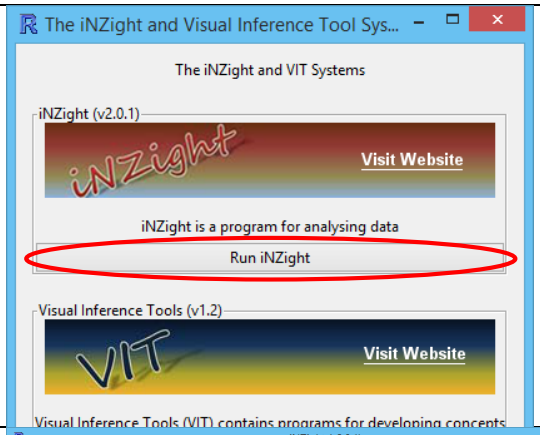
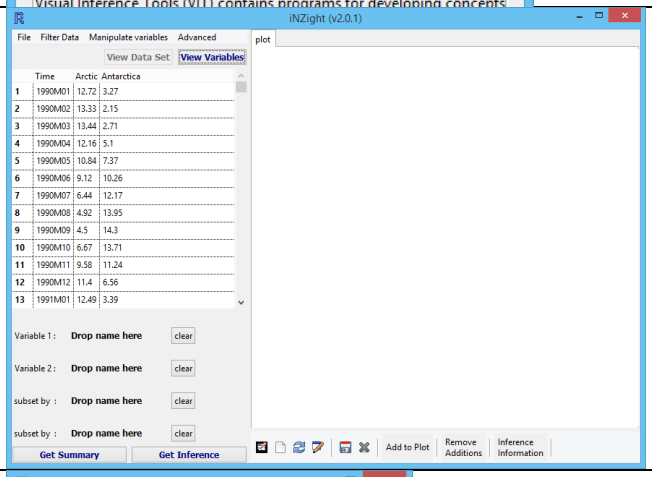
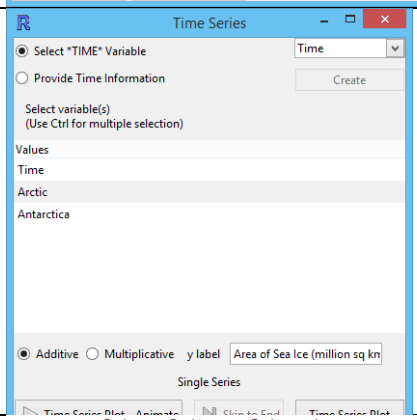
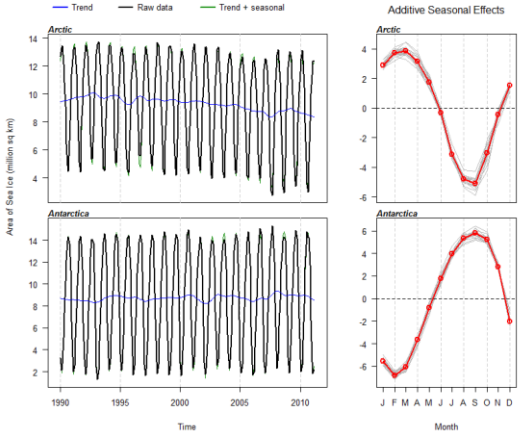
Data – Using iNZight

For this internal we are again using iNZight. The instructions below are written using iNZight 2.0. iNZight is free and can be obtained from https://www.stat.auckland.ac.nz/~wild/iNZight/

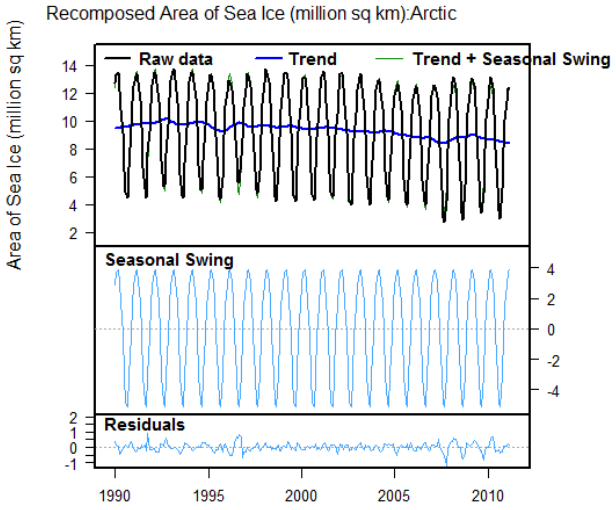
The example below uses the sea ice dataset.

First up we need to start iNZight by clicking on the shortcut in the iNZight folder that looks like this.	
After it has had some time to think it will open up a window that looks like this. To start off with we need to open the iNZight window by clicking on the 'Run iNZight' button (circled)	
This will bring up the main iNZight window that looks like this. We then want to import the data by clicking on 'File' and 'Import Data'. Browse for the right file and follow the prompts, and once imported it should look like this.	
We then need to open the time series module which is under 'Advanced' and then 'Time Series'. This will bring up a window that looks like this. **It is really important to add the y label in, including units, otherwise the graphs will not have a useful y-axis label.** *Note: most of the time additive model is fine… but you can experiment with either, but multiplicative seasonal effects are extremely rare.*	
Often it is useful to get an overview of all the series, to do this select all the variables that you would like an overview of and press either the 'Single Plot' or 'Multi Plot' button at the bottom of the window…. For this data the multi plot looks best. This will give a graph like this. To copy or save any of the graphs you can click on file in the top left corner. *If you copy as a metafile you can right click once pasted into word and edit the individual components.*	

Once we have determined what variable we would like to investigate we select that variable and click the 'Decompose' button.

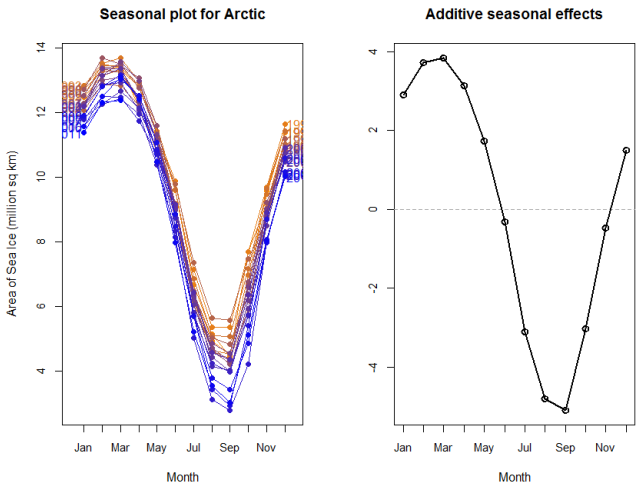
Then click the recompose button to get a graph that looks like the one to the right.

The top graph shows the raw data, the trend and the recomposed data which is 'trend + seasonal'.
The middle graph shows the seasonal trend.
The bottom graph shows the difference between the actual (raw) data and the recomposed data.



We also need to produce the graph looking at the seasonal effect by clicking on the 'seasonal effect' button. This graph is show to the right.

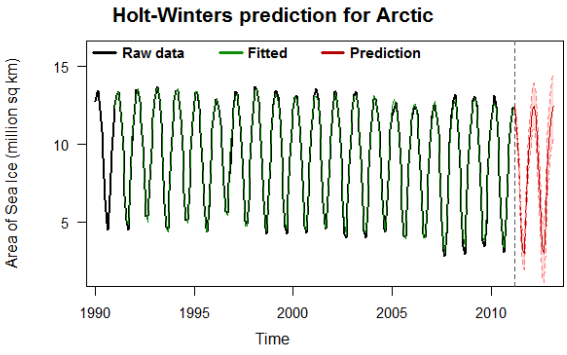
The graph on the left shows all the different years raw data superimposed on each other.
The graph on the right shows the average difference between the trend and the raw data for each month.



Later on we will also need to make predictions. This is done by clicking on the 'Predict' button.

This will bring up two windows. One with the graph shown to the right and the other with all the text values of the predictions in it.

Note 1: if you want to copy the prediction output as text you can make the columns line up nicely by changing the font to 'Courier' or 'Courier New' once you have pasted it into Word.
Note 2: the left column is the actual fitted value, the middle number is the lower estimate and the right number is the upper estimate.
Note 3: iNZight will always predict for the next two years.



Forecast Output

	fit	upr	lwr
Apr 2011	11.644755	12.230027	11.059483
May 2011	10.007984	10.717860	9.298109
Jun 2011	7.768086	8.584828	6.951344
Jul 2011	4.985253	5.897386	4.073120
Aug 2011	3.247304	4.246649	2.247959
Sep 2011	2.974021	4.054385	1.893656
Oct 2011	5.042567	6.199065	3.886069
Nov 2011	8.161452	9.390111	6.932794
Dec 2011	10.132259	11.429772	8.834747
Jan 2012	11.461963	12.825527	10.098399
Feb 2012	12.268707	13.695914	10.841501
Mar 2012	12.423776	13.912527	10.935025

Now it's your turn. For each dataset produce all the outputs shown above.

Teachers: for tips and tricks on how to format data for time series click on the time series link on:
http://www.mathsnz.com/inzight-tips/

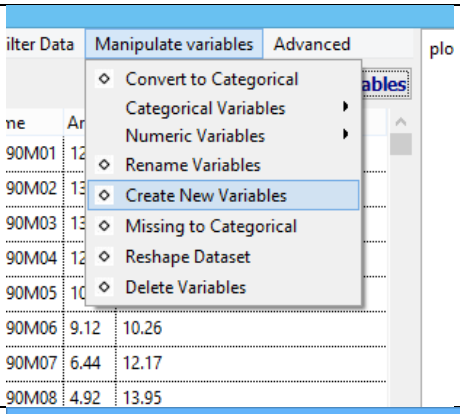
Combining Variables

One of the things that you can investigate is the total of two different variables.

The example below shows how to combine the amount of Sea Ice at the North and South Poles.

In order to combine two (or more) variables you need to create a new variable.

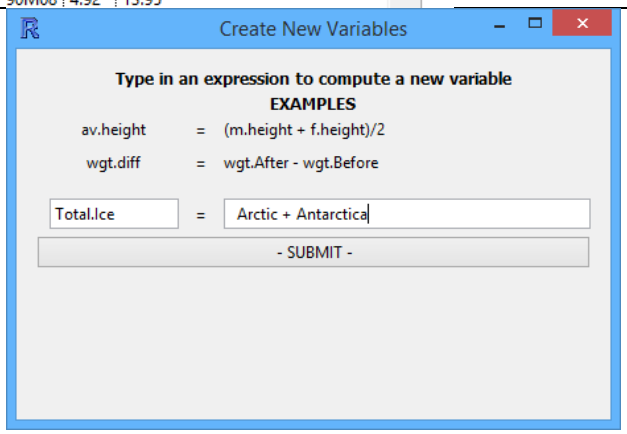
Go to 'Manipulate Variables' → 'Create New Variables'



This will bring up a window similar to the one on the right.

In the left hand box type the name of the variable you want to create (don't include spaces, as iNZight doesn't like spaces) and in the right hand box type in the calculation you want to do on the variables

Note: Spelling and Capitalisation are vital, if you do not have correct spelling and capitalisation it will not work.



This will bring up a confirmation message and the new variable will be added into the data set. You can the plot this as shown on pages 10 and 11.