OBSERVED PAST WEATHER

Devon

September to March 1981-2014

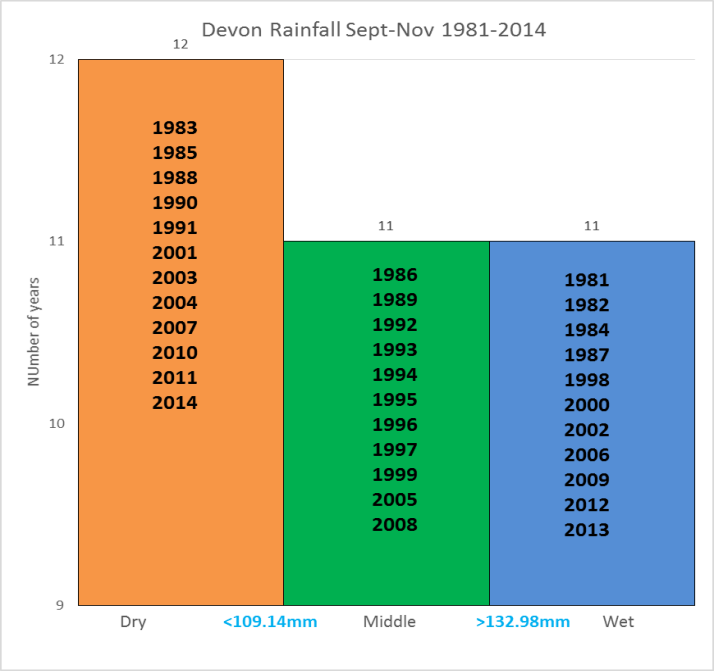
Contents

This catalogue can be used along side the 3 month weather forecasts to compare previous years weather to what it is predicted to be in the 3 month forecast.

For each 3 month category we have taken the observed actual weather from 1981 to 2014 and placed the average values over the 3 month period into 3 tercile categories: BELOW AVERAGE, AVERAGE & ABOVE AVERAGE. So for example, when looking at rainfall, below average would indicated a dryer than normal 3 month period.

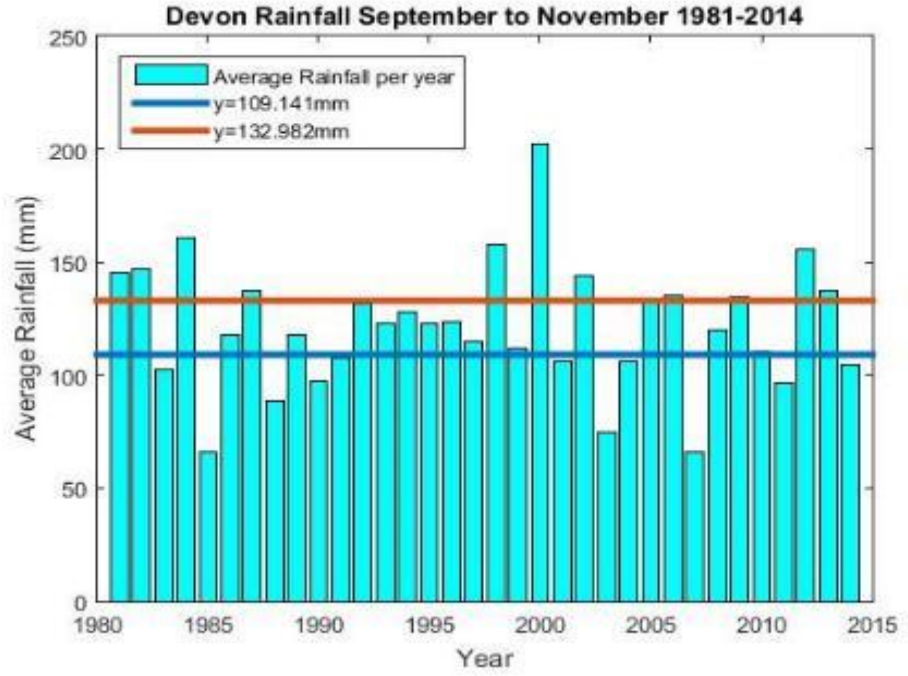
These graphs can be used in line with observations you have made over the years to be able to make decisions on how to best manage your land.

September to November - Rainfall



The rainfall for the 3 month period in each year was split into 3 categories, showing where the rainfall has been less or more than the average.

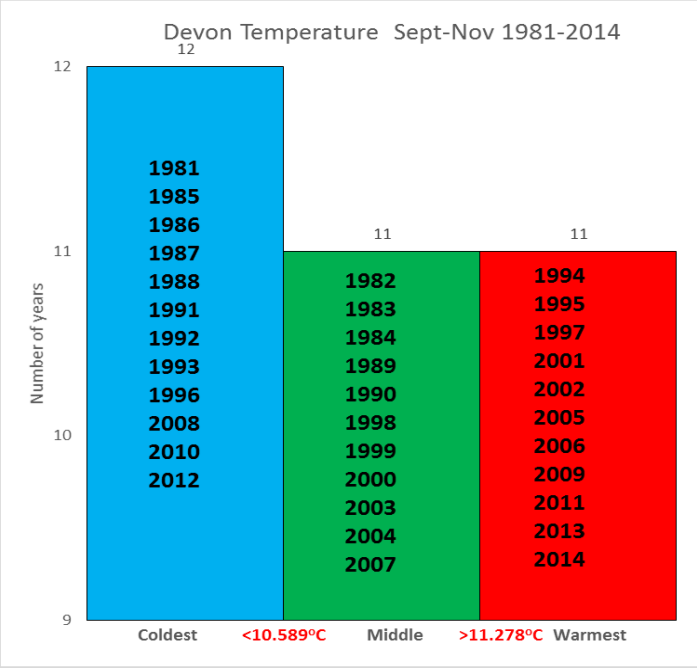
EG. September to November in 2013 was wetter than average, with rainfall exceeding 132.98mm



This next graph shows the distribution of the years within the boundaries i.e how close the years rainfall values are to the boundaries, also giving the actual rainfall values for each year. The horizontal lines represent the boundary values.

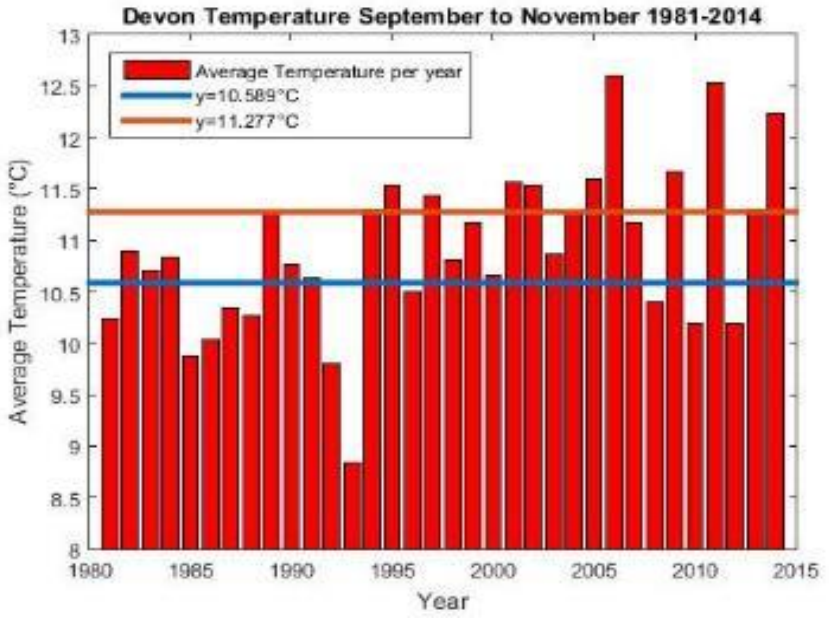
EG.In 2008 the rainfall was nearer to the below average boundary (DRY) compared to the above average boundary (WET).

September to November - Temperature



The Temperature for the 3 month period in each year was split into 3 categories, showing where the Temperature has been less or more than the average.

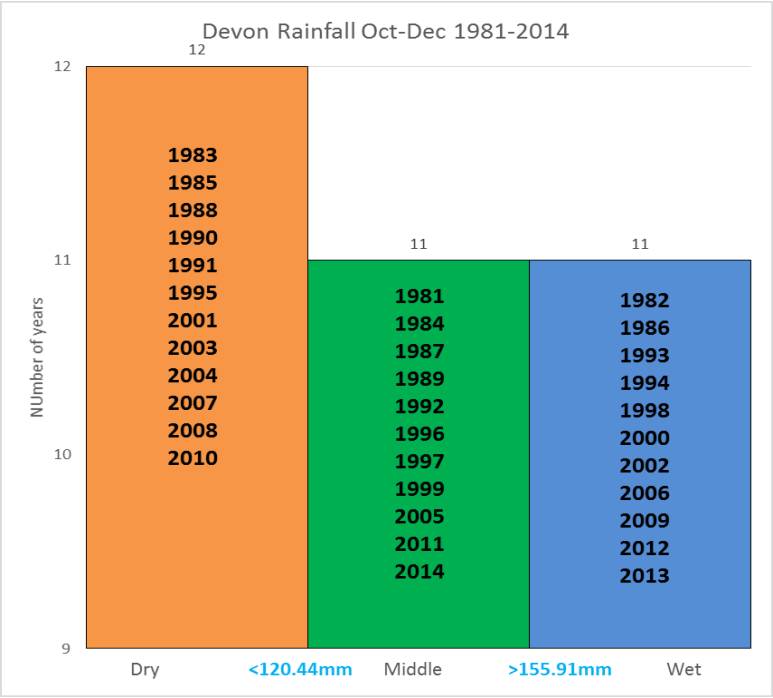
EG. September to November in 2012 was colder than average, with average temperature less than 10.589°C.



This graph shows the distribution of the years within the boundaries i.e how close the years temperature values are to the boundaries, also giving the actual temperature values for each year.
The horizontal lines represent the boundary values.

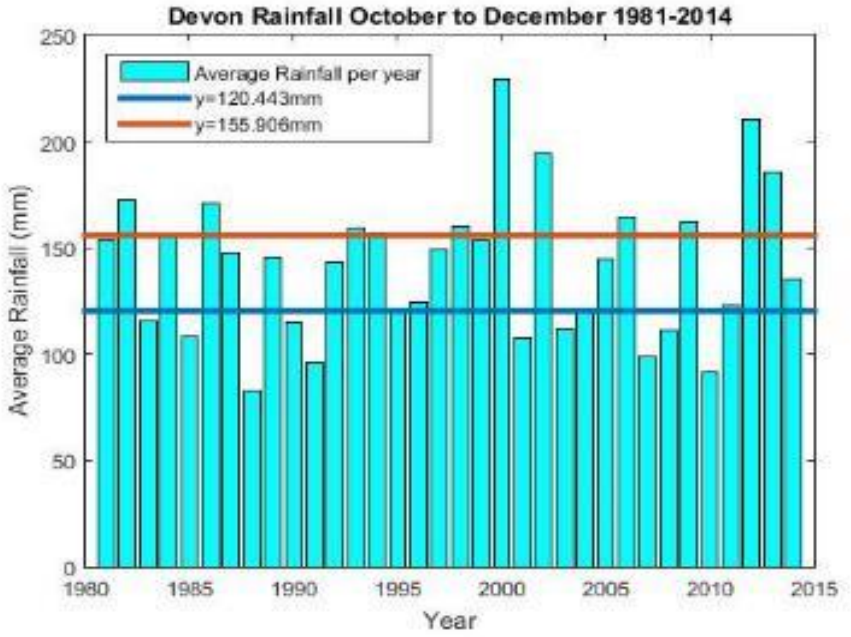
EG. In 2007 the temperature was nearer to the above average boundary (WARM) than the below average boundary (COLD).

October to December - Rainfall



This graph shows the boundaries of the three catagories and which years fit into each.

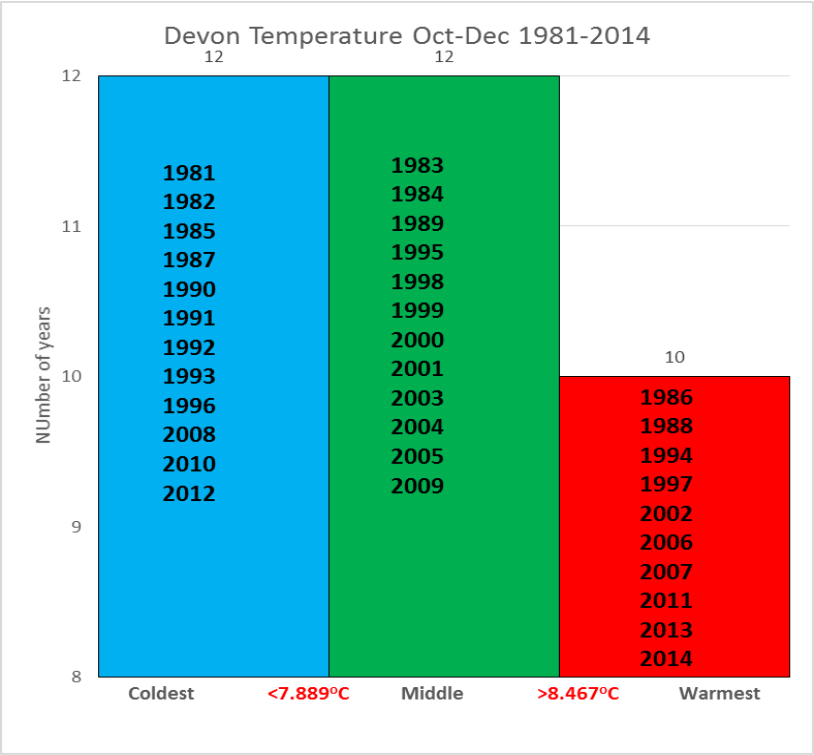
EG. you can see that 2012 was wetter than average, with rainfall greater than 155.91mm

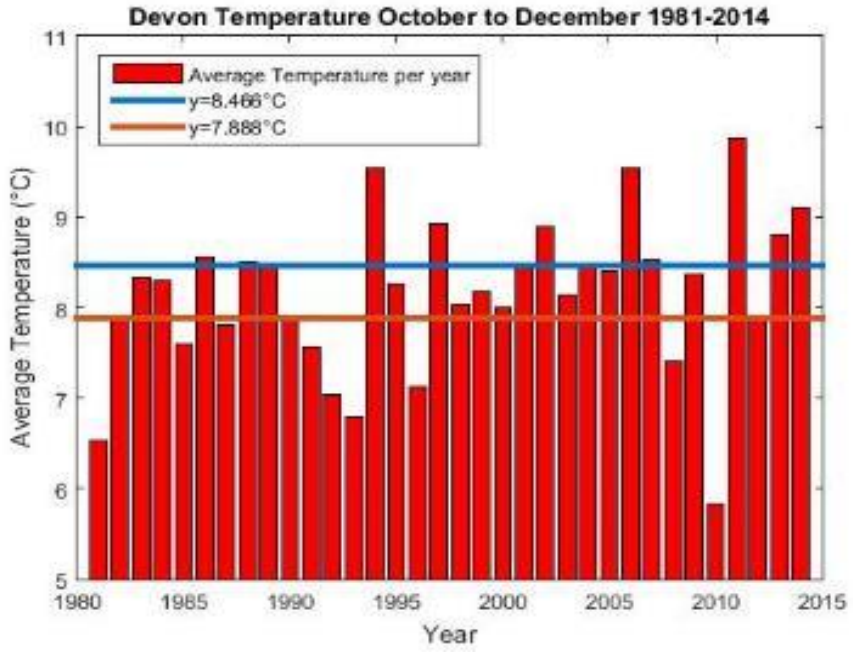


This graph shows how close each years rainfall lies to the boundaries of Dryer than average, average and wetter than average.

EG. 2009 was just in the wetter than average category, so 2009's rainfall was only a bit greater than 155.91mm

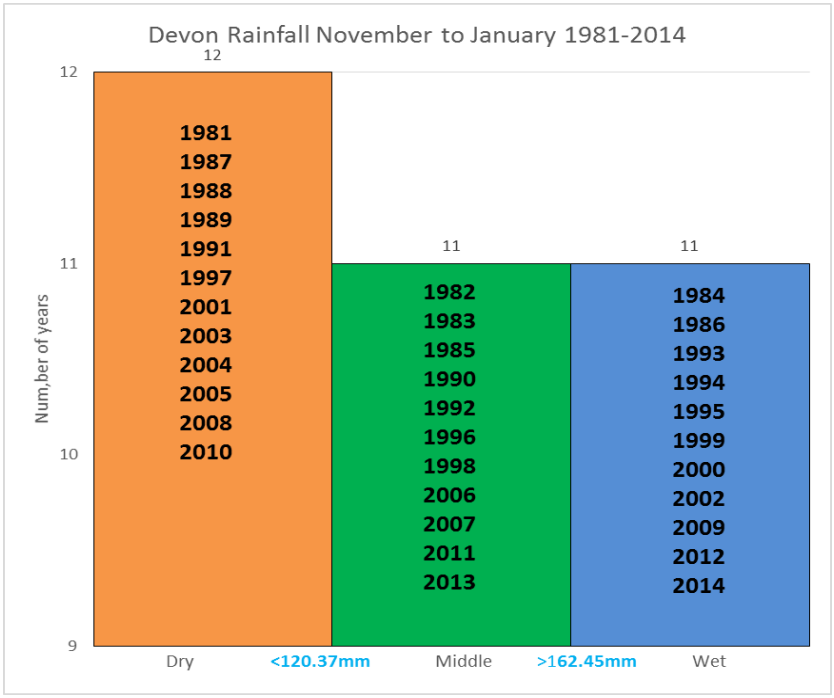
October to December - Temperature

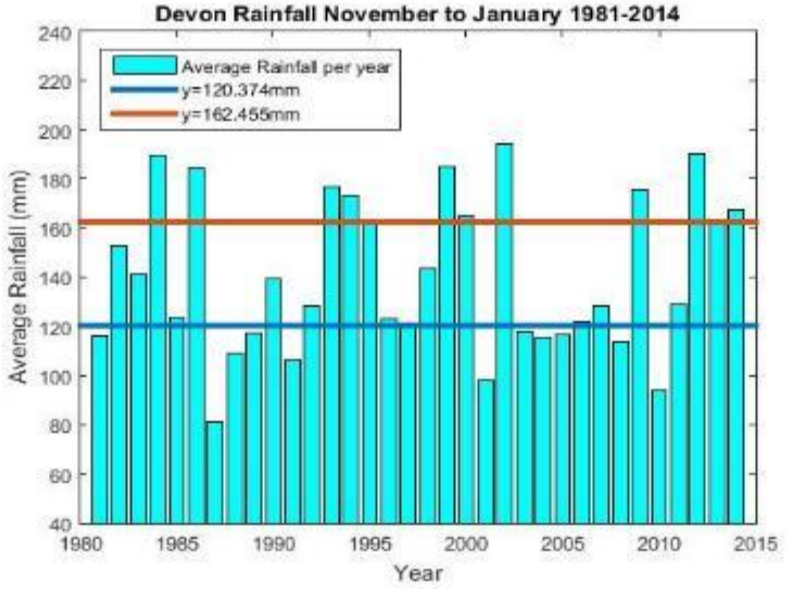




As you can see in the first graph, 2010 is colder than average with temperature lower than 7.889°C. From the second graph, you can see that 2010's temperature was dramatically lower than the colder than average boundary

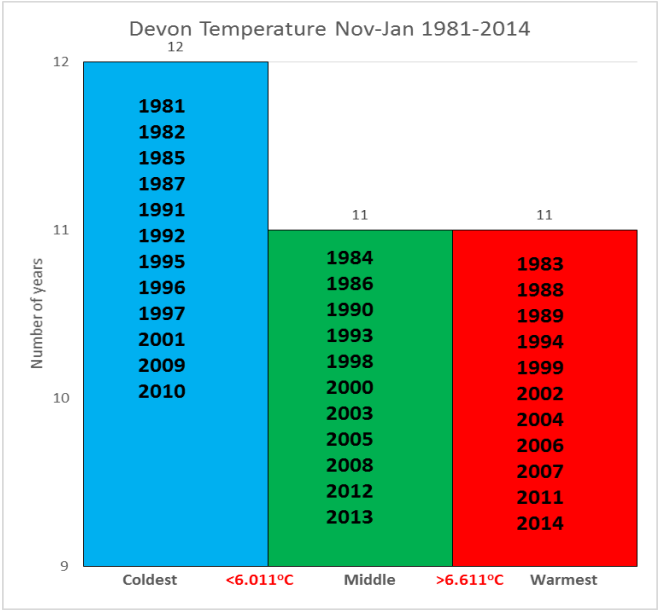
November to January – Rainfall

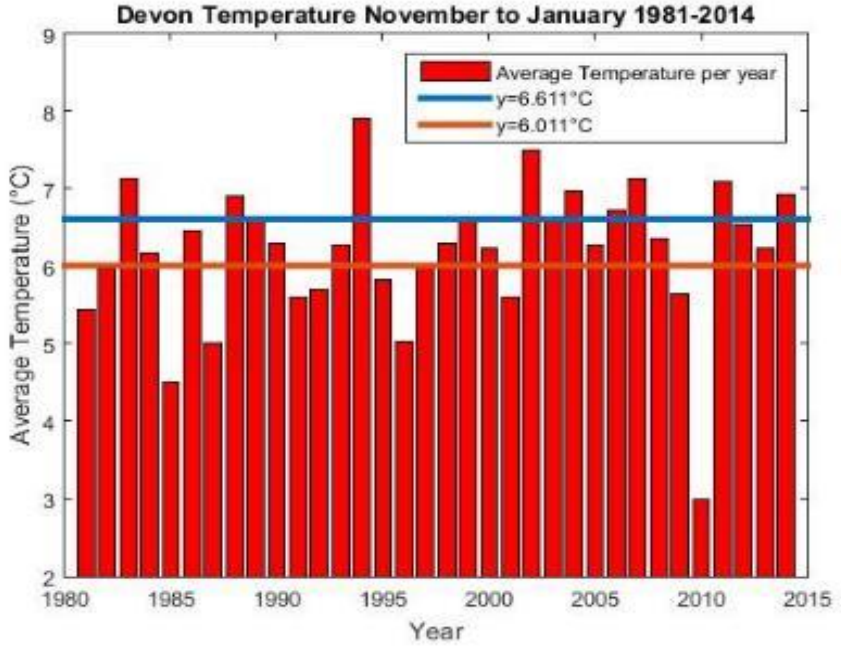




From the first graph you can see that 2011 is in the average rainfall category, however from the second graph you can see that it is only just into this category, with the rainfall being very close to the lower 120.37mm boundary value.

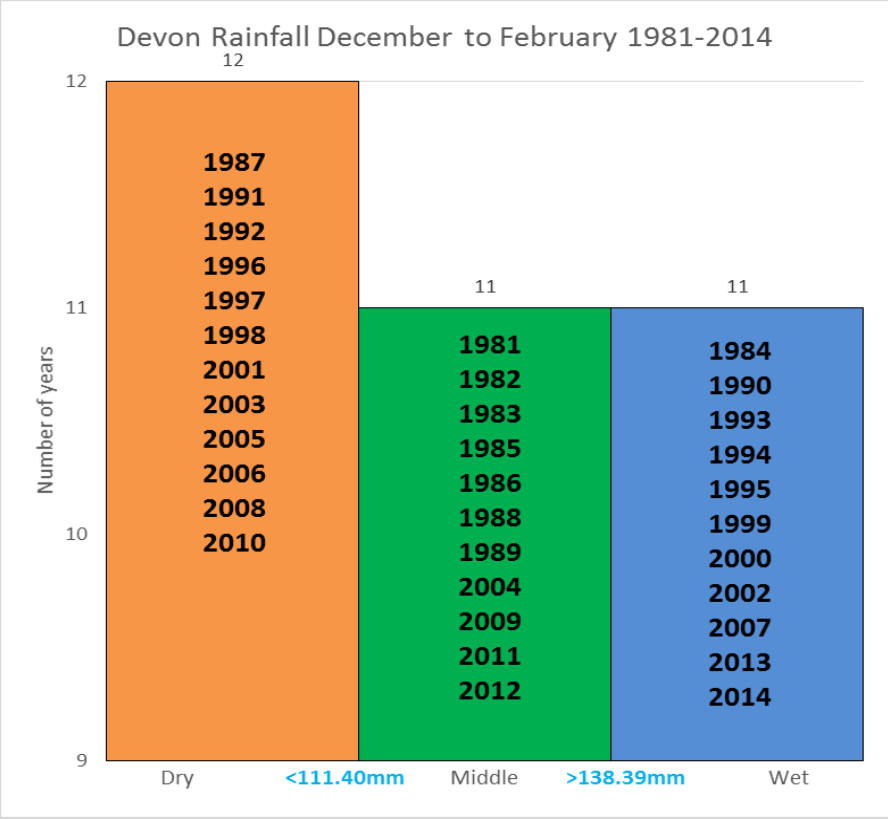
November to January - Temperature

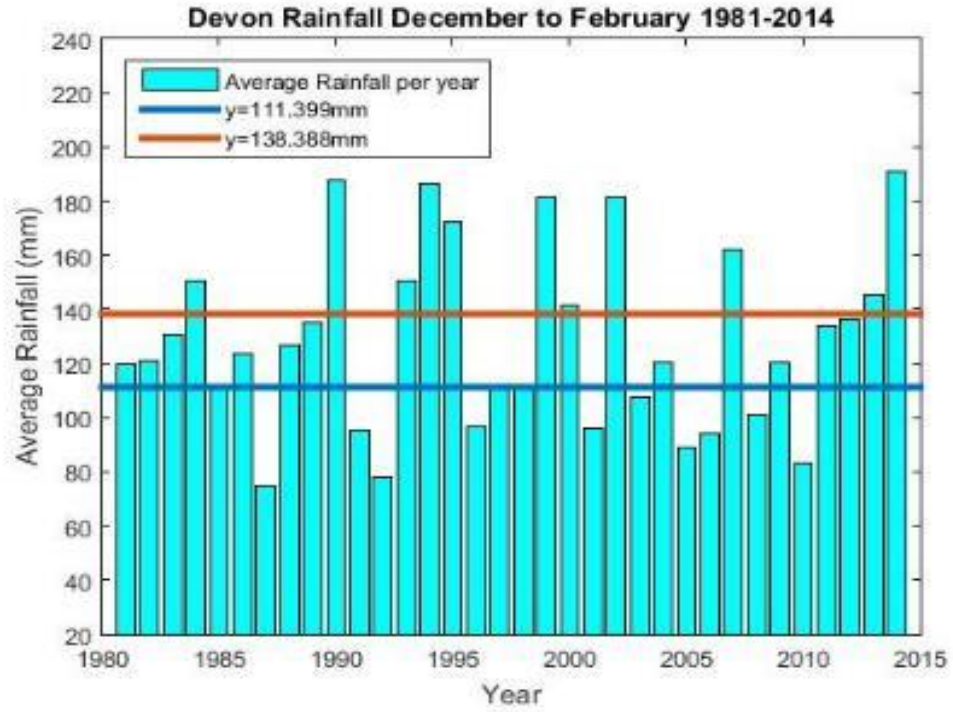




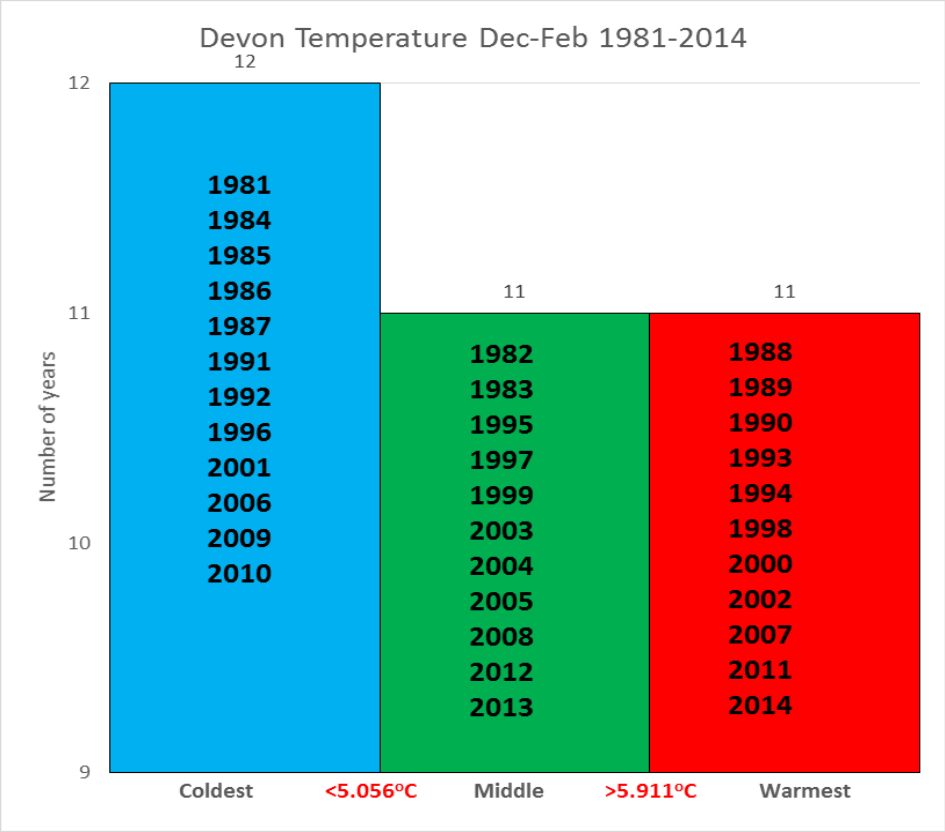
From the first graph you can see that 2013 is in the average rainfall category, however from the second graph you can see that it is only just into this category, with the rainfall being very close to the lower 6.011°C boundary value.

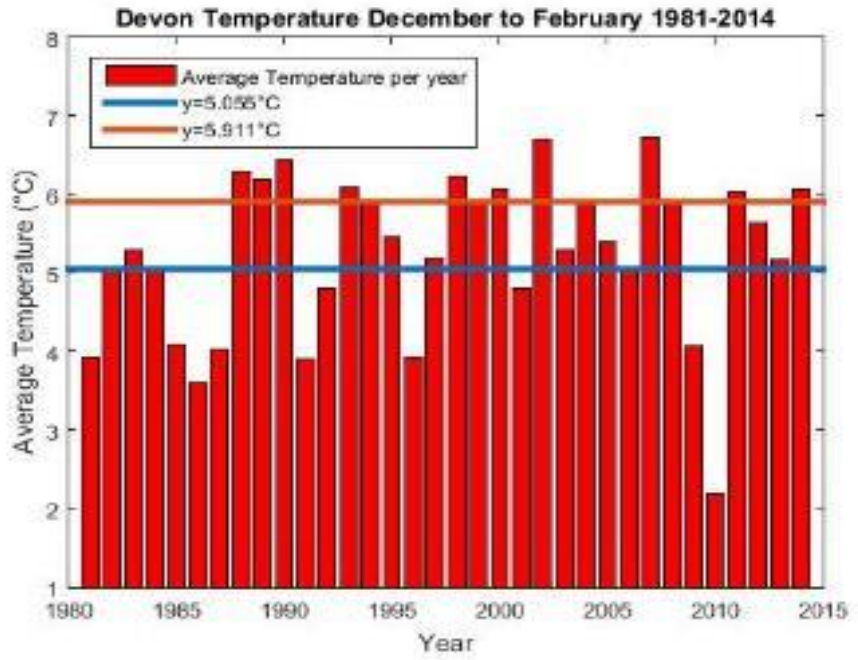
December to February - Rainfall



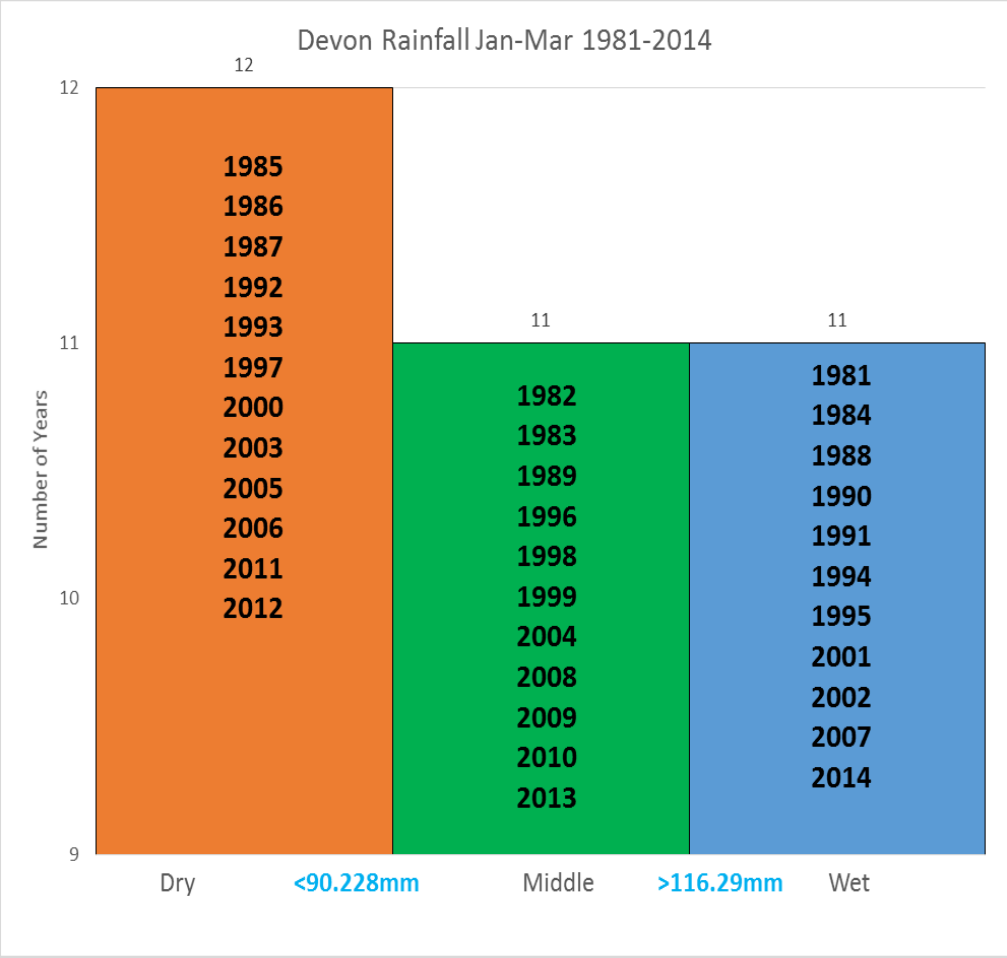


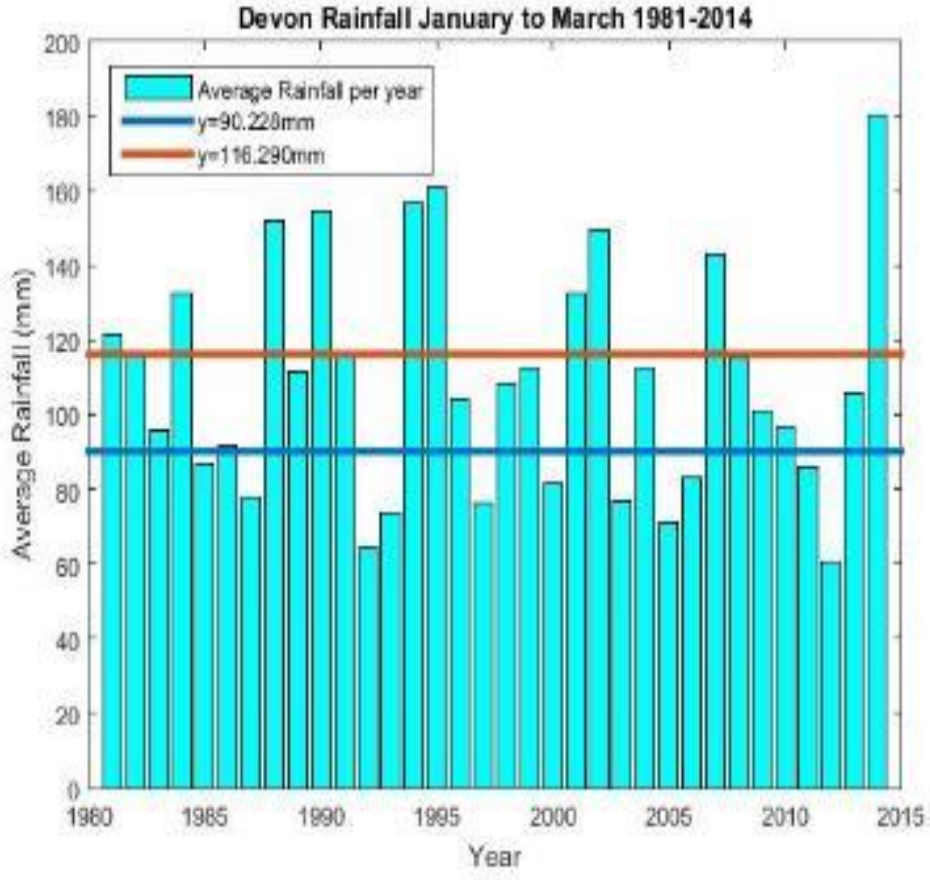
December to February - Temperature



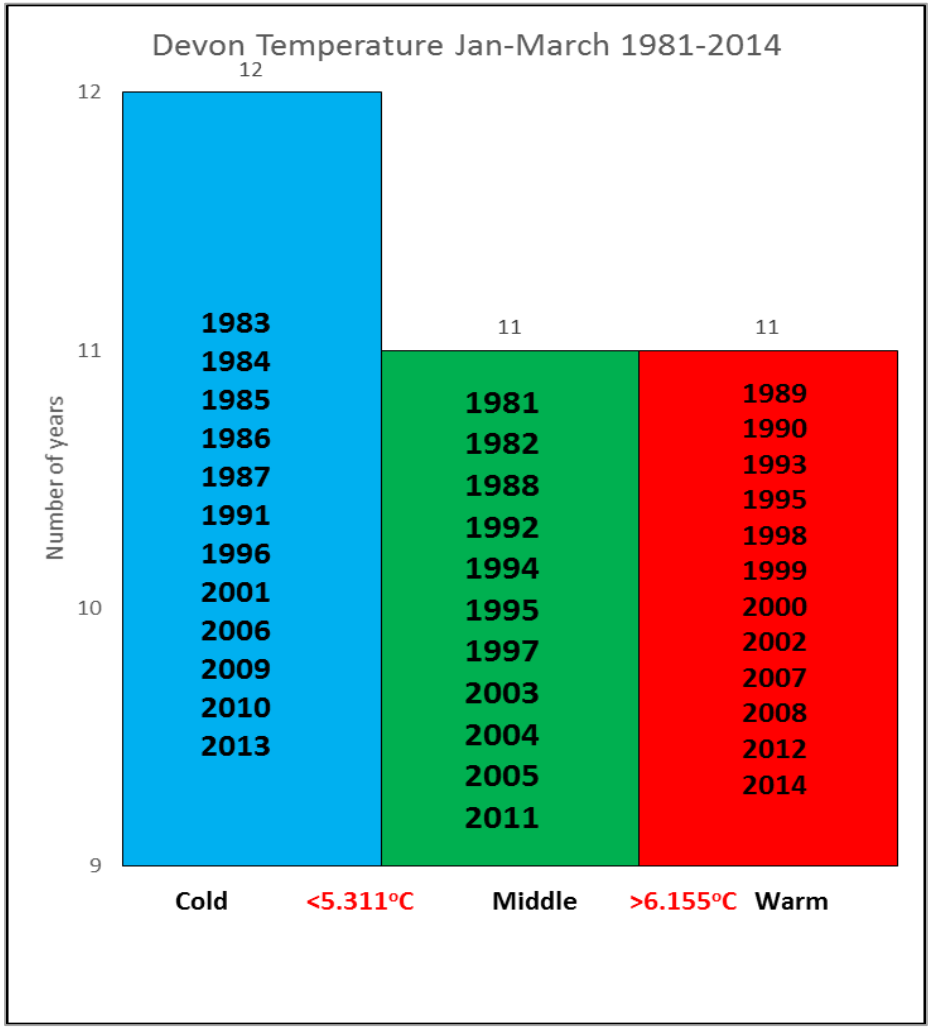


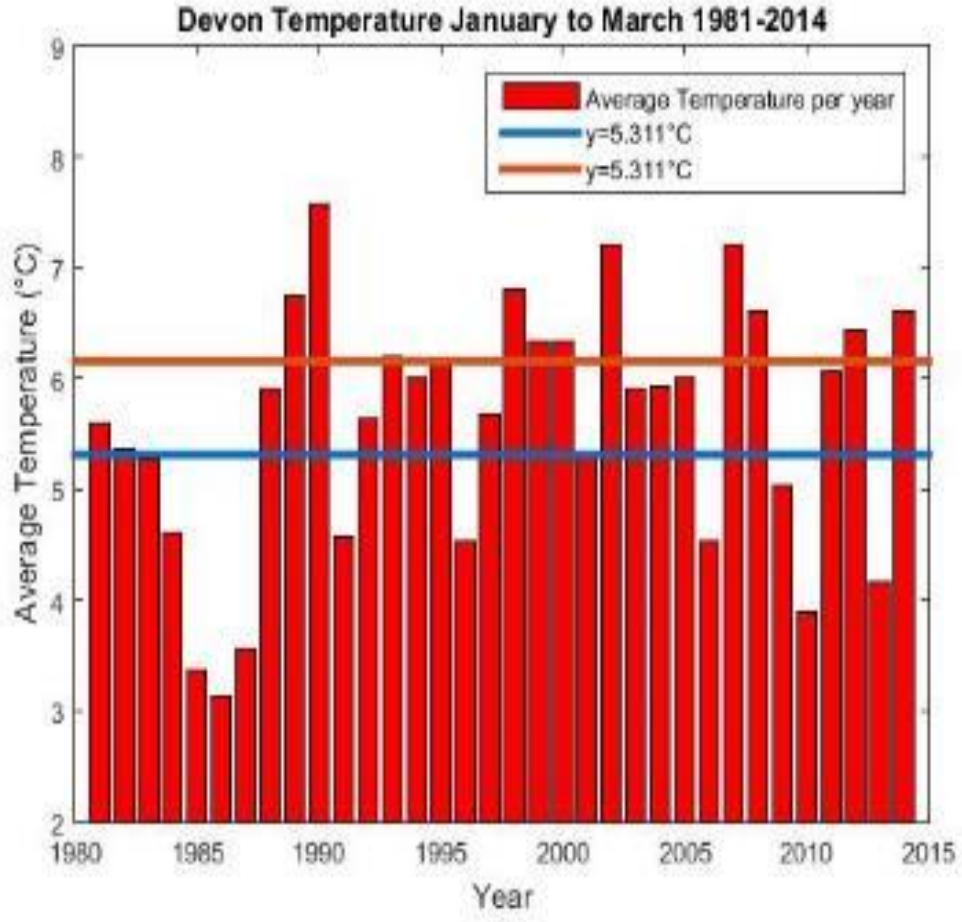
January to March - Rainfall





January to March - Temperature





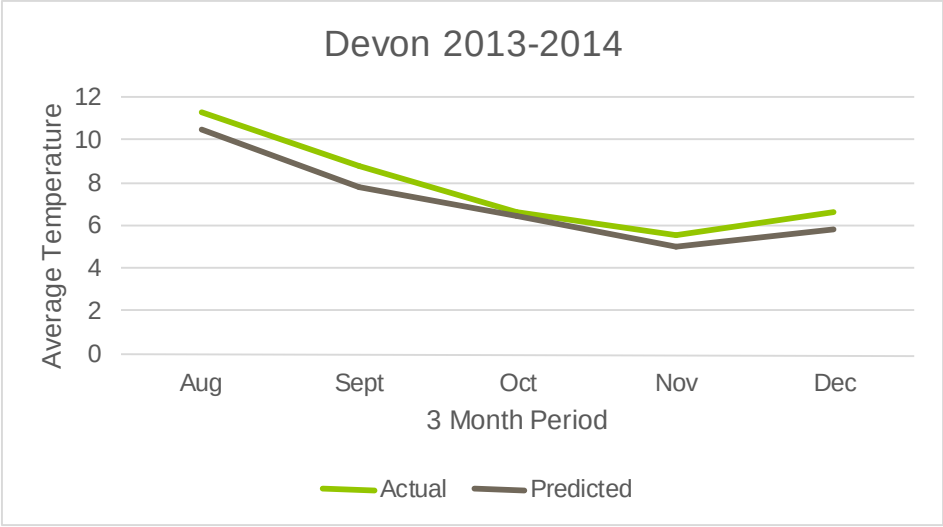
Extreme Weather

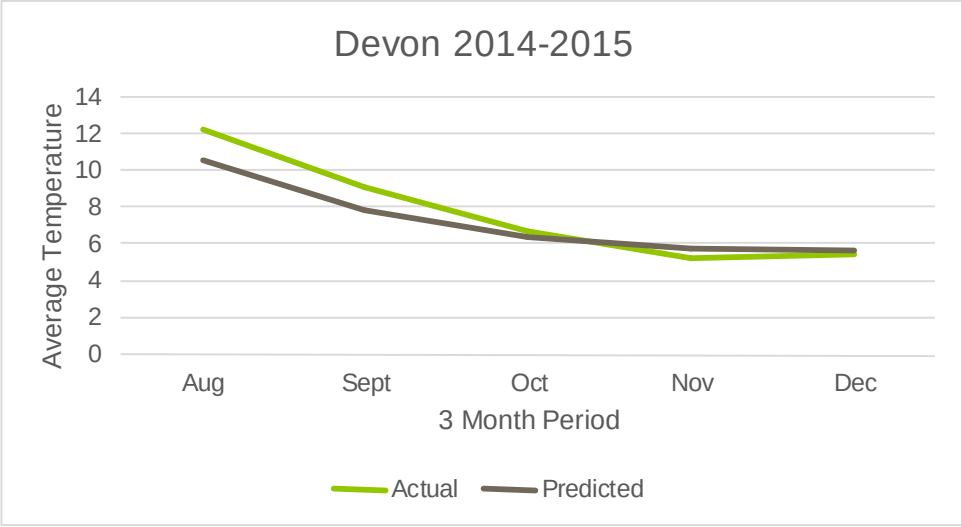
- The winter of 2013/2014 saw wettest December to January period since 1876 in the South West.
- Cyclone Dirk 22nd December 2013 causing storms and flooding.
- Precipitation caused run off from agricultural land
- Transportation disruption – part of the South Devon Railway sea wall carrying the railway line was washed away.
- Last minute flood management.
- Huge economic toll – damage caused a cost of around £100 million to repair.
- The floods impacted on the agricultural sector through damage to or loss of established crops (grass and winter-sown arable crops), difficulties in accessing land to manage crops and costs of moving livestock.

Damage caused by flooding to railway in Dawlish

http://www.westernmorningnews.co.uk/images/localworld/ugc-images/276272/Article/images/20570411/5777374-large.jpg

Validation of 3-month temperature (°C) forecasts 2013 & 2014



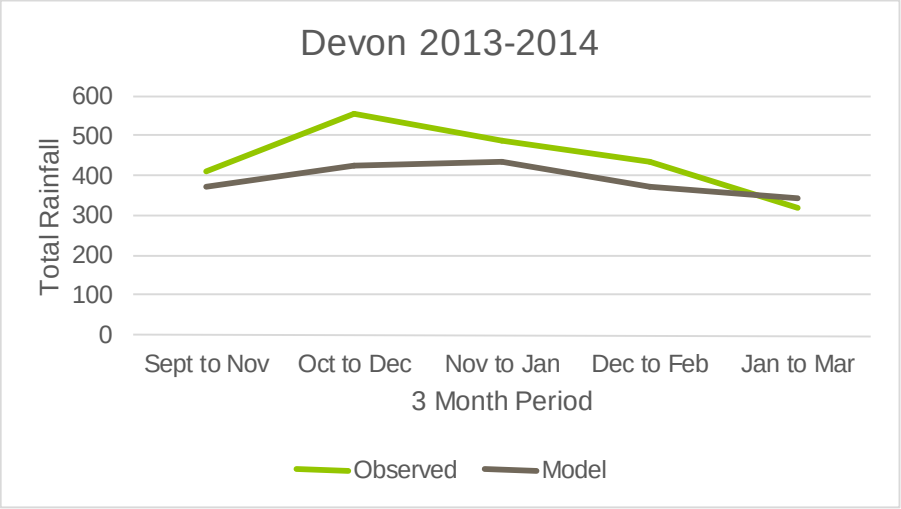


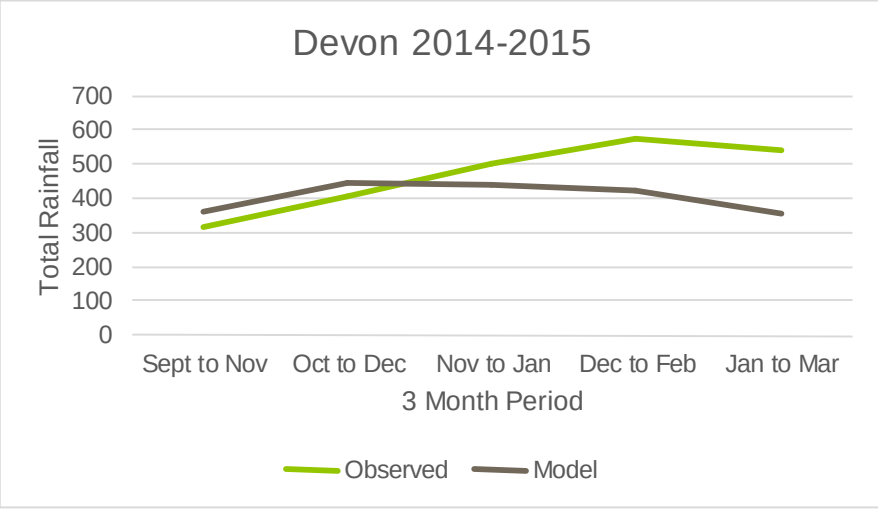
- The graphs show that the model predicts a very similar temperature pattern to the actual weather in both years. This demonstrates that the forecasts are accurate.

<u>Statistics</u>

- On average the model predicts a lower temperature by 7% for Devon.

Validation of 3-month rainfall (mm) forecasts 2013 & 2014





- The graphs show that the model predicts a very similar rainfall pattern to the actual weather in both years. This demonstrates that the forecasts are accurate.

<u>Statistics</u>

- On average the model predicts lower rainfall by 19% for Devon.

Appendix 1- Model Accuracy

- The forecast models produce numerous values for temperature and rainfall. The table below shows the percentage of those values that predicted the correct tercile of weather (below average, average, above average) for 2013-2014 and 2014-2015

		Aug		Sept		Oct		Nov		Dec	
2013	**Rainfall**	26	W	31	W	50	A	33	W	34	A
	Temperature	0	H	0	H	53	H	36	A	76	H
2014	**Rainfall**	44	D	52	A	16	W	36	W	41	W
	Temperature	0	H	0	H	38	H	60	A	48	A

- KEY:
- H = hotter than average
- W = wetter than average
- A = average
- C = colder than average
- D = drier than average