

# OBSERVED PAST WEATHER

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Cornwall

September to March 1981-2014

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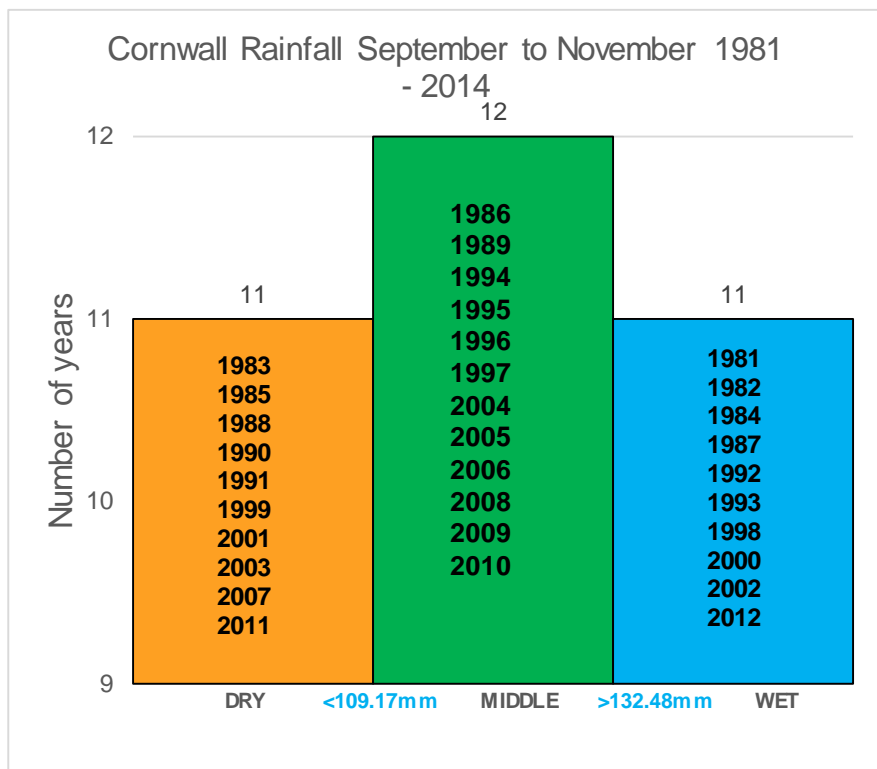
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This catalogue can be used along side the 3 month weather forecasts to compare previous years weather to what it is predicted to be in the 3 month forecast.

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.

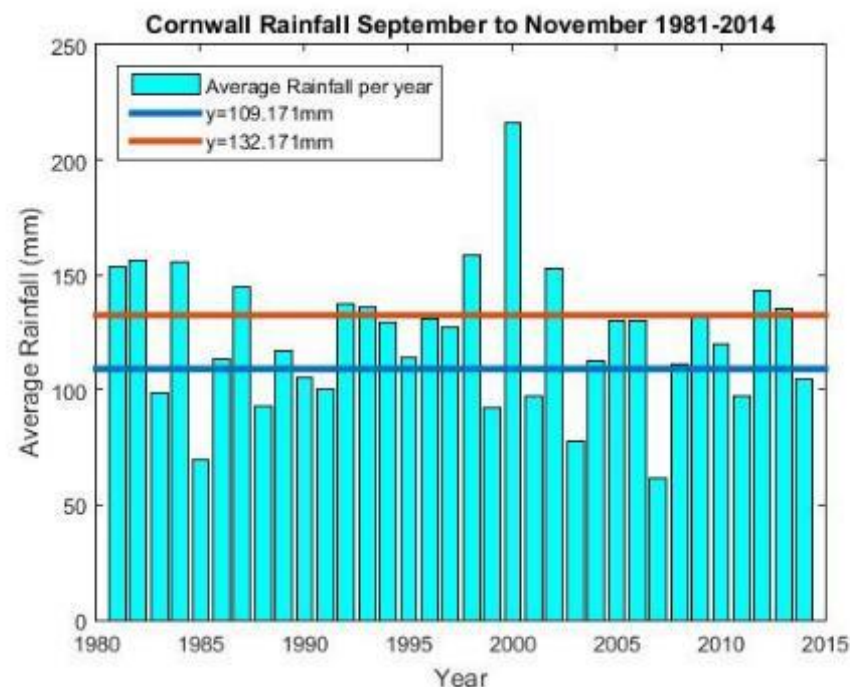
These graphs can be used in line with observations you have made over the years to be able to make decisions on how to best manage your land.

# 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 2012 was wetter than average, with rainfall exceeding 132.48mm*

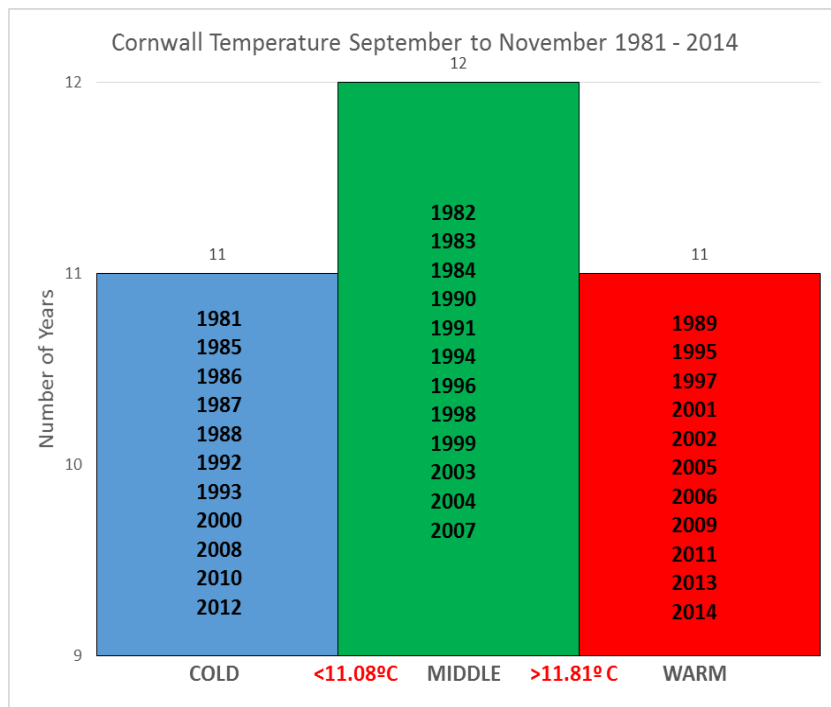


This next graph shows the distribution of the years within the boundaries i.e how close the years rainfall values are to the boundaries, also giving the actual rainfall values for each year.

The horizontal lines represent the boundary values.

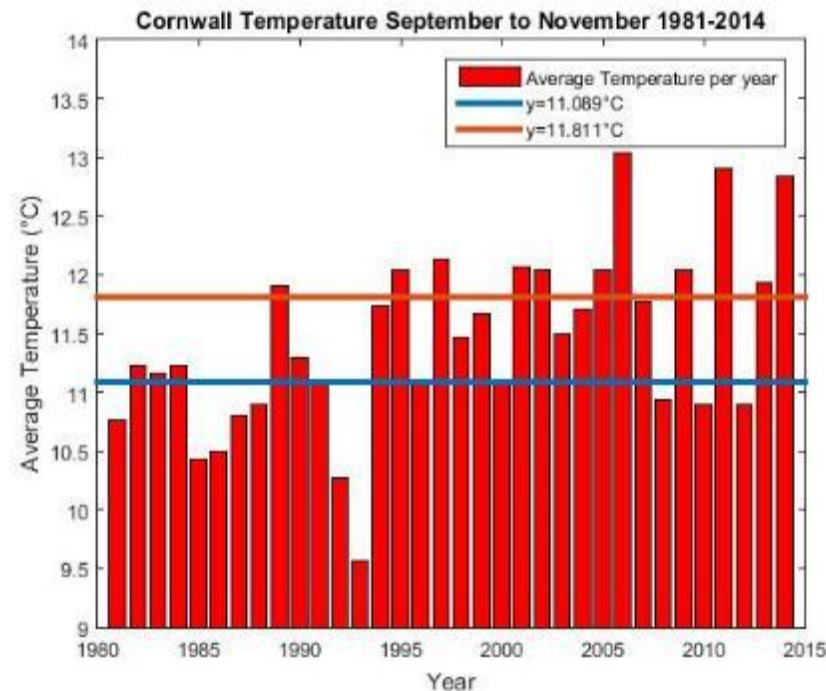
*EG. In 2005 the rainfall was nearer to the above average boundary (WET) compared to the low average boundary (DRY).*

# 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 11.08°C.*

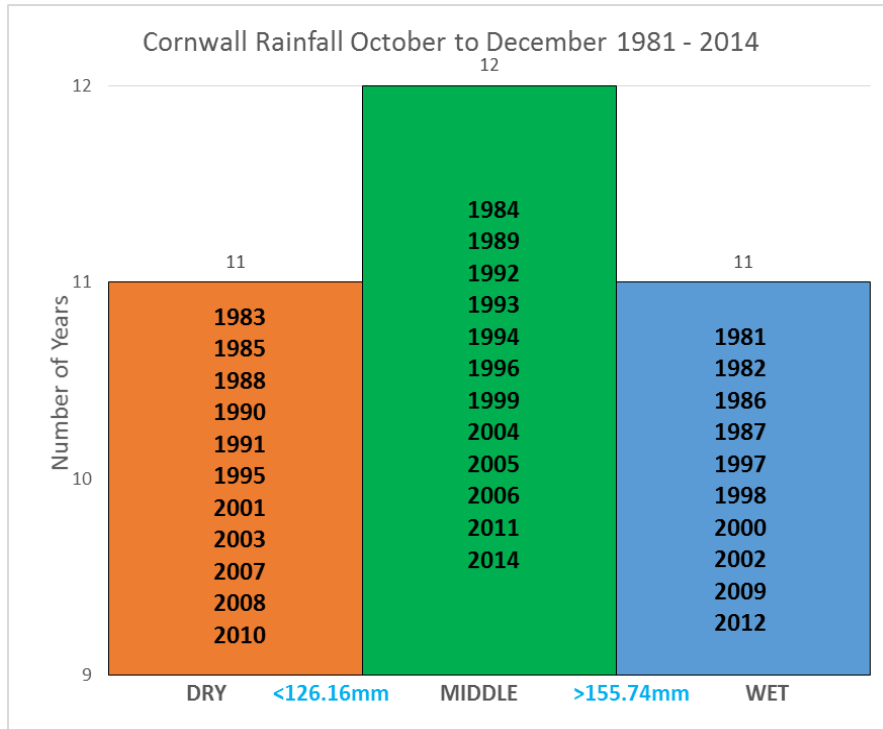


This graph shows the distribution of the years within the boundaries i.e how close the years temperature values are to the boundaries, also giving the actual temperature values for each year.

The horizontal lines represent the boundary values.

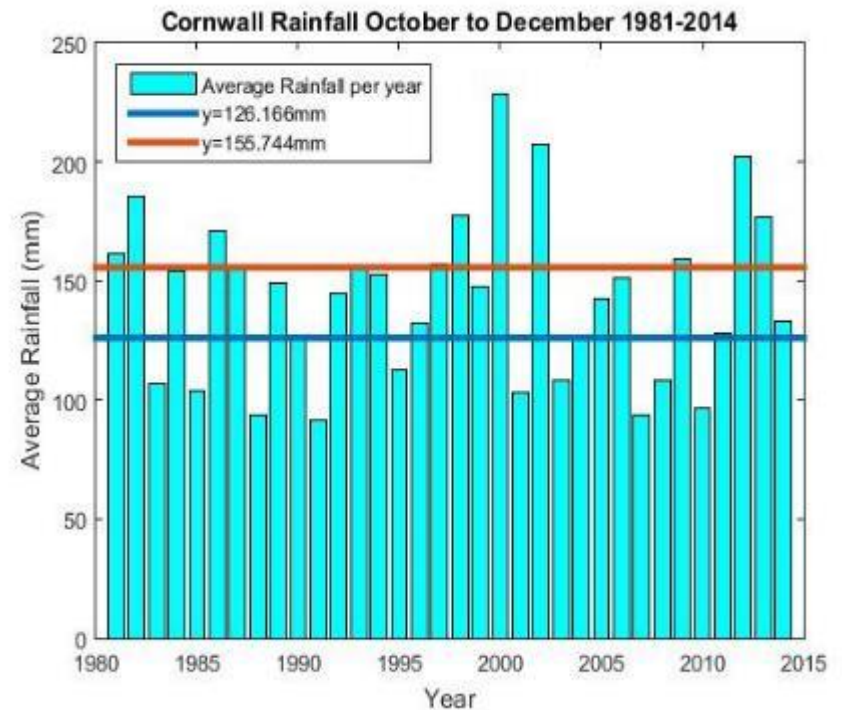
*EG. In 1990 the temperature was nearer to the below average boundary (COLD) than the above average boundary (WARM).*

# October to December - Rainfall



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

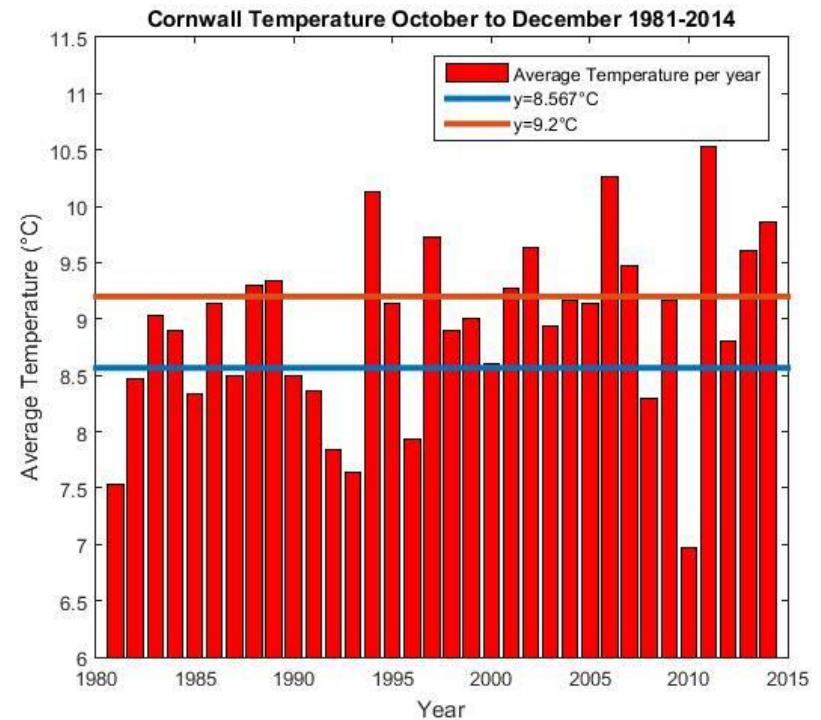
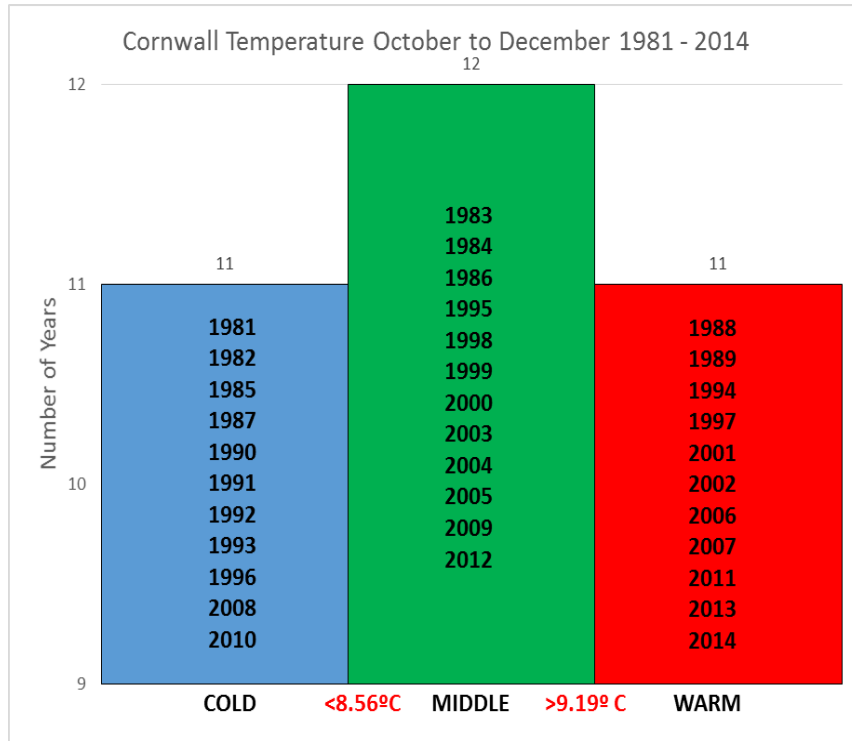
*EG. you can see that 2012 was wetter than average, with rainfall greater than 155.74mm*



This graph shows how close each year's rainfall lies to the boundaries of Drier than average, average and wetter than average.

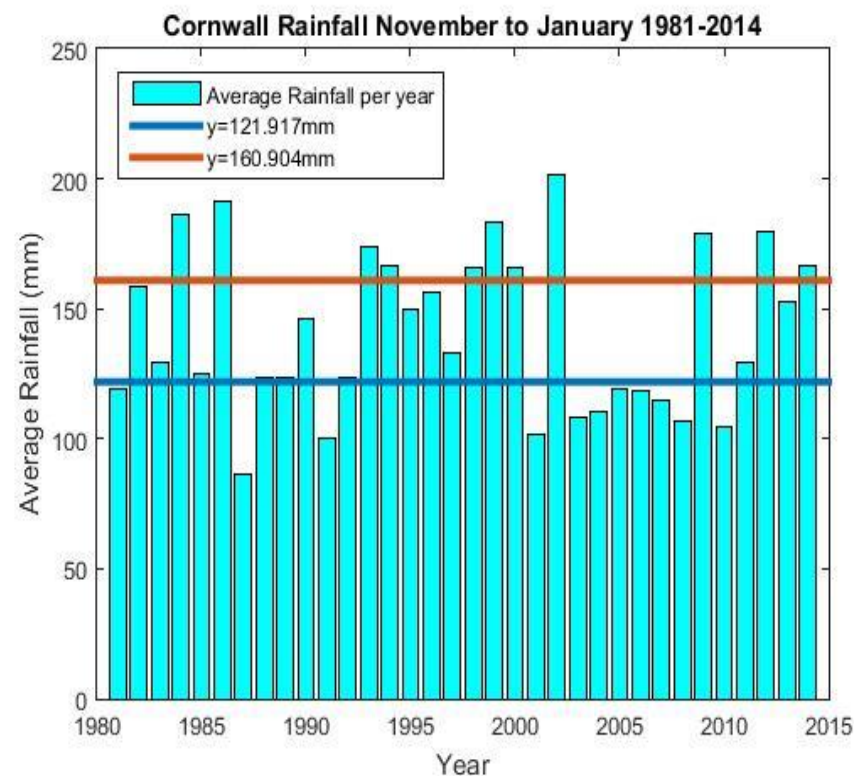
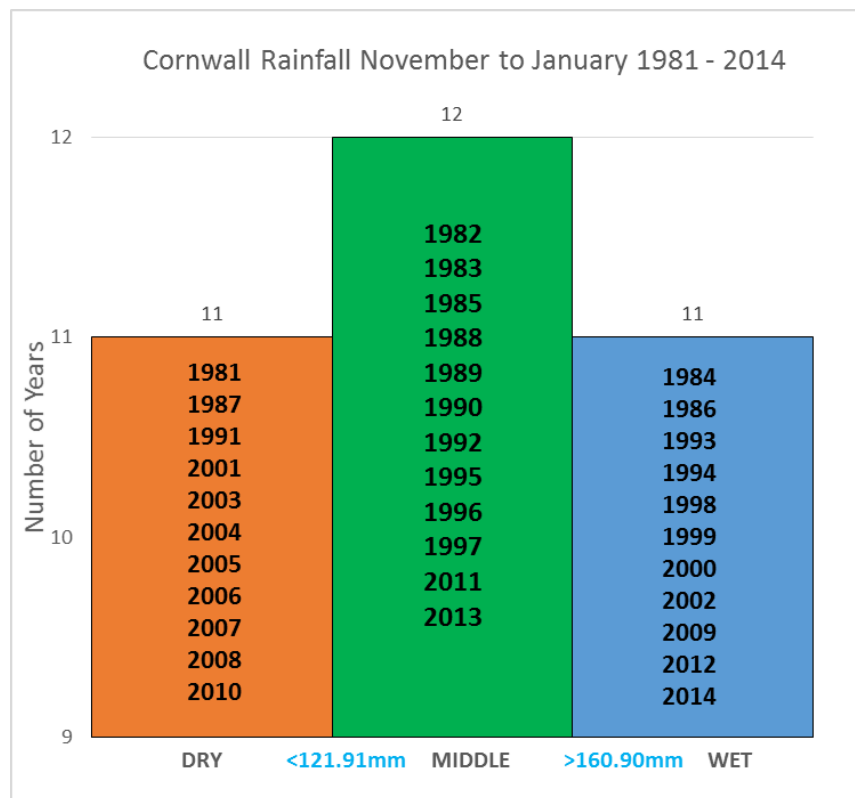
*EG. 2009 was just in the wetter than average category, so 2009's rainfall was only a bit greater than 155.74mm*

# October to December - Temperature



*As you can see in the first graph, 2010 is colder than average with temperature lower than  $8.56^{\circ}\text{C}$ . From the second graph you can then see that 2010's temperature was dramatically lower than the colder than average boundary.*

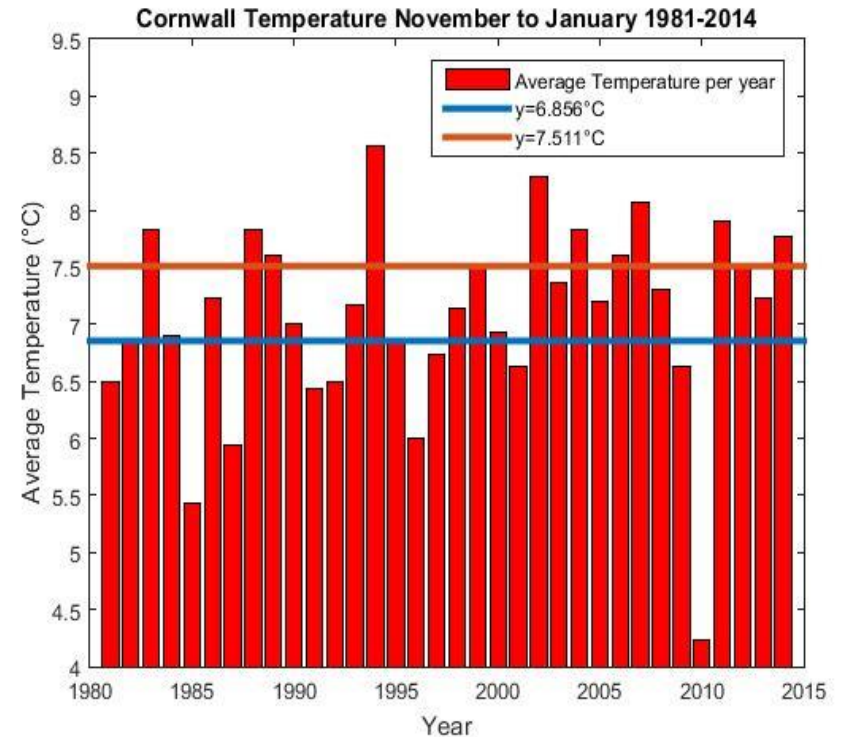
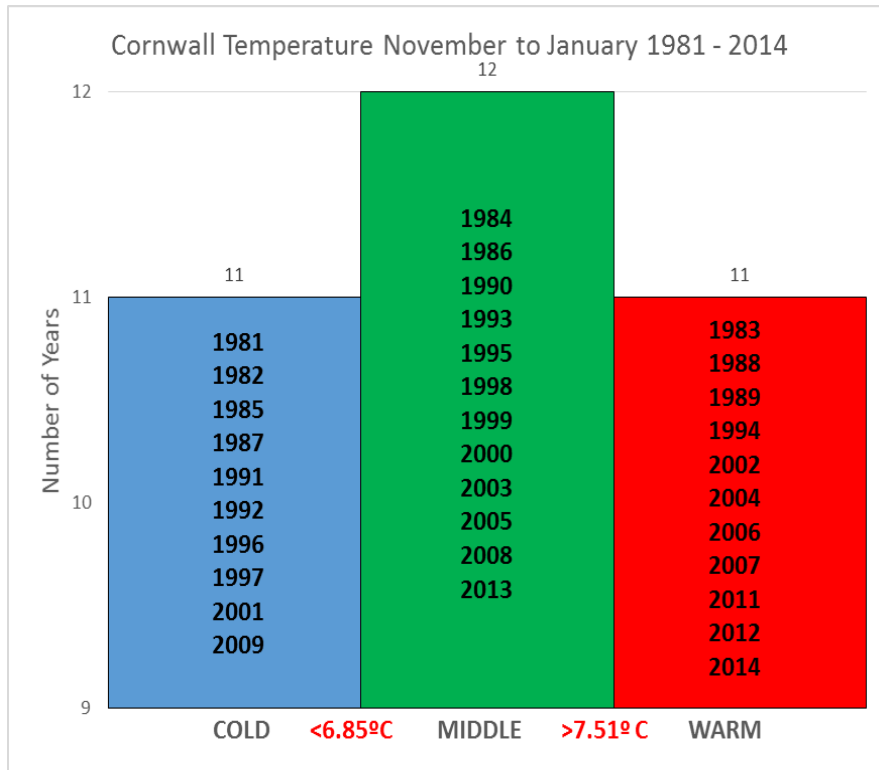
# November to January – Rainfall



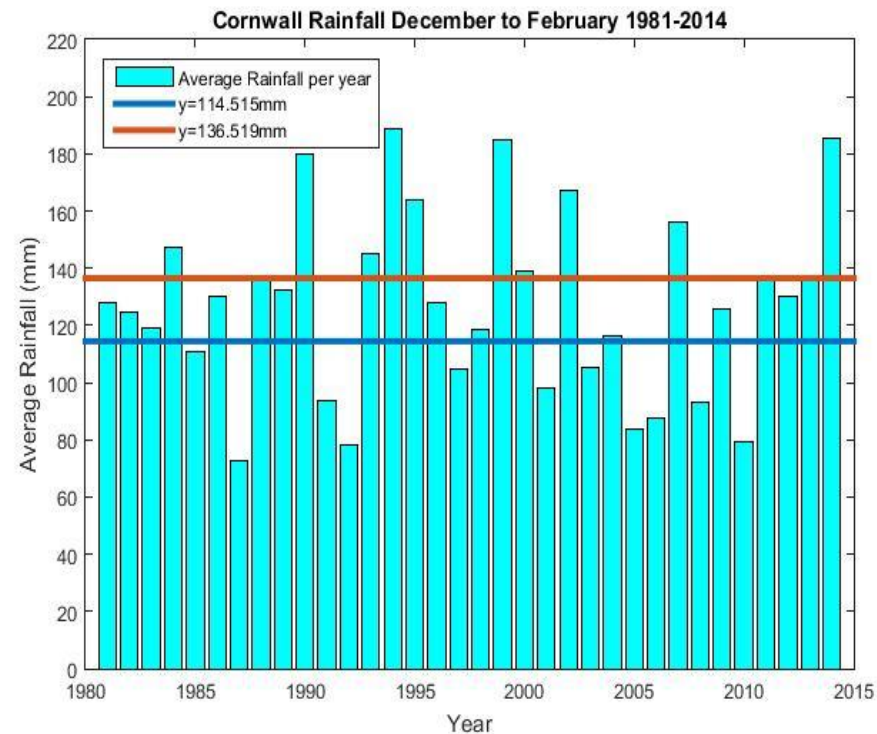
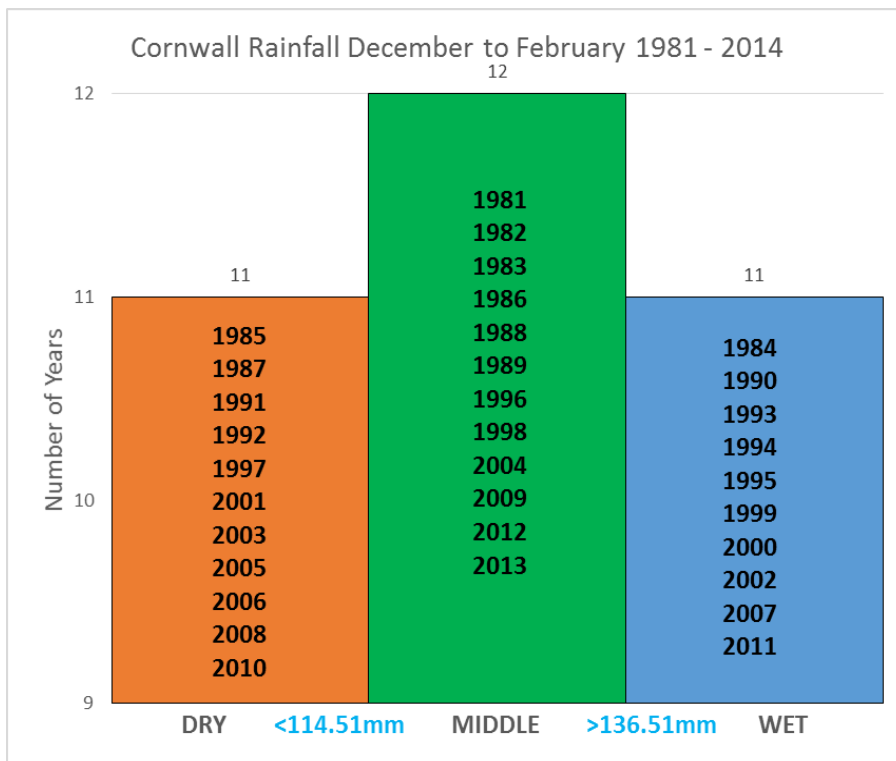
*From the first graph you can see that 1988 and 1989 as in the average rainfall category, however from the second graph you can see that they are only just in this category, with their temperature being very close to the lower 121.91mm boundary value.*



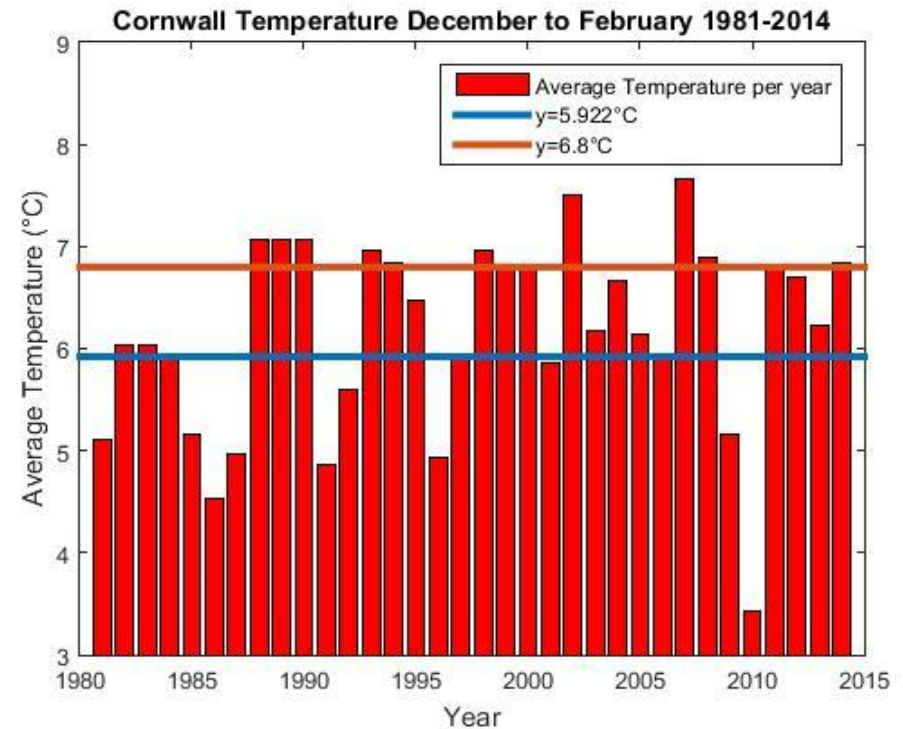
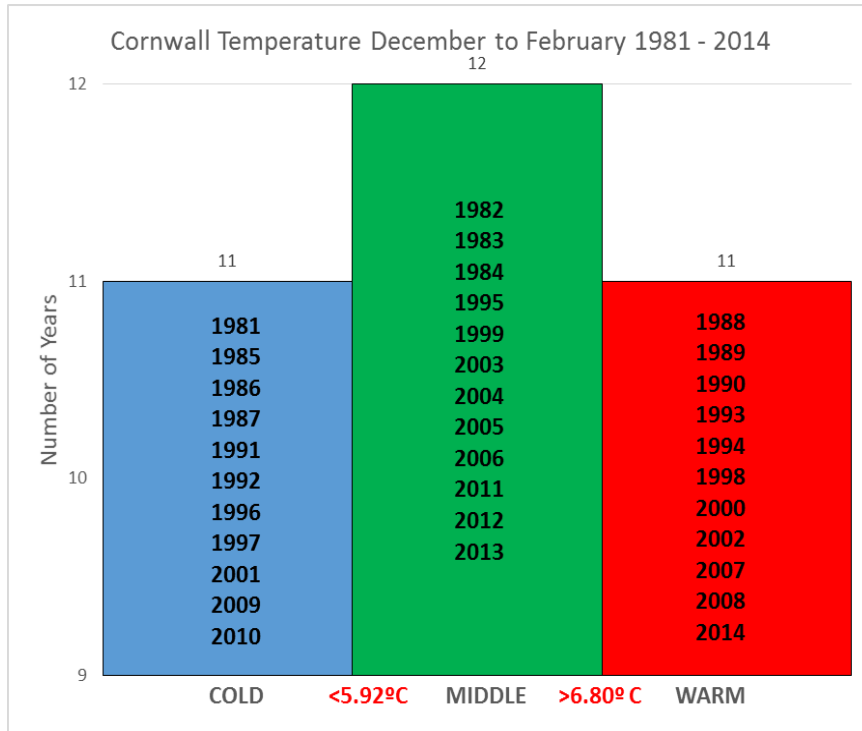
# November to January - Temperature



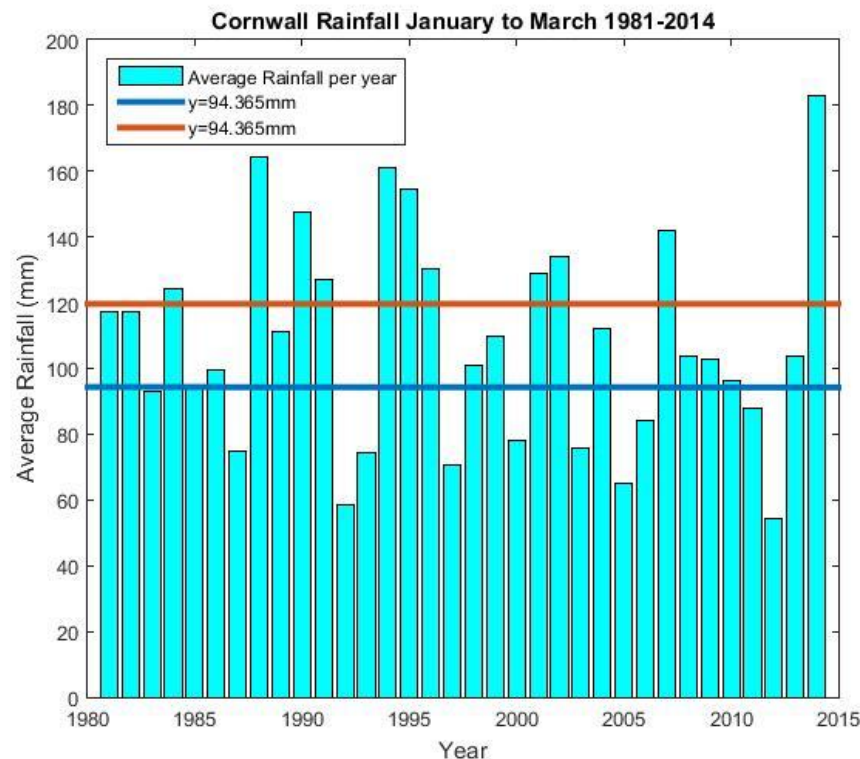
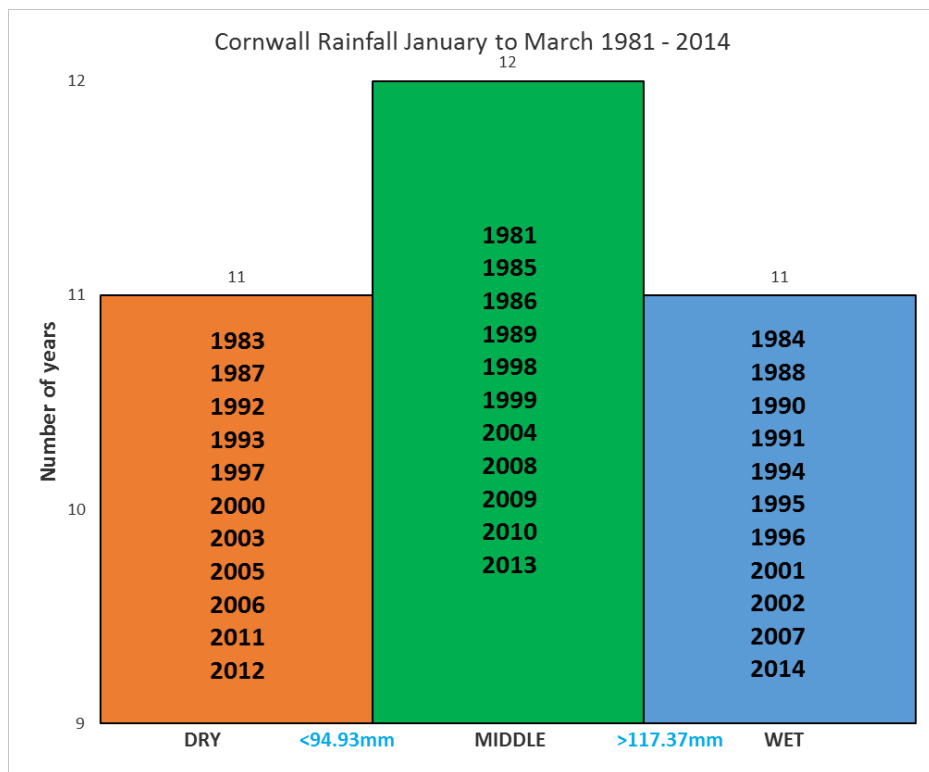
# December to February - Rainfall



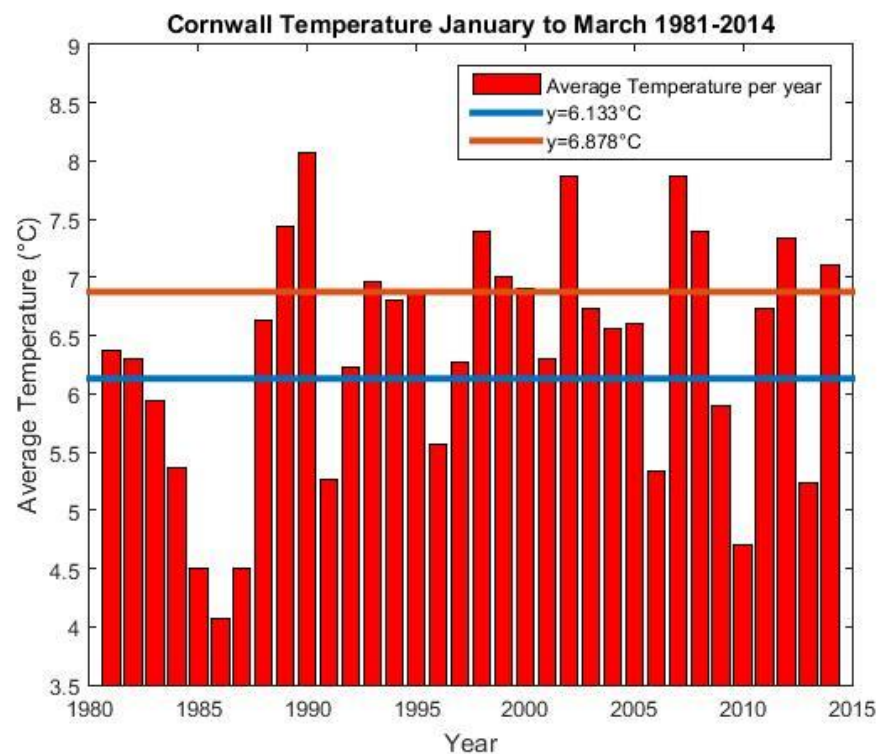
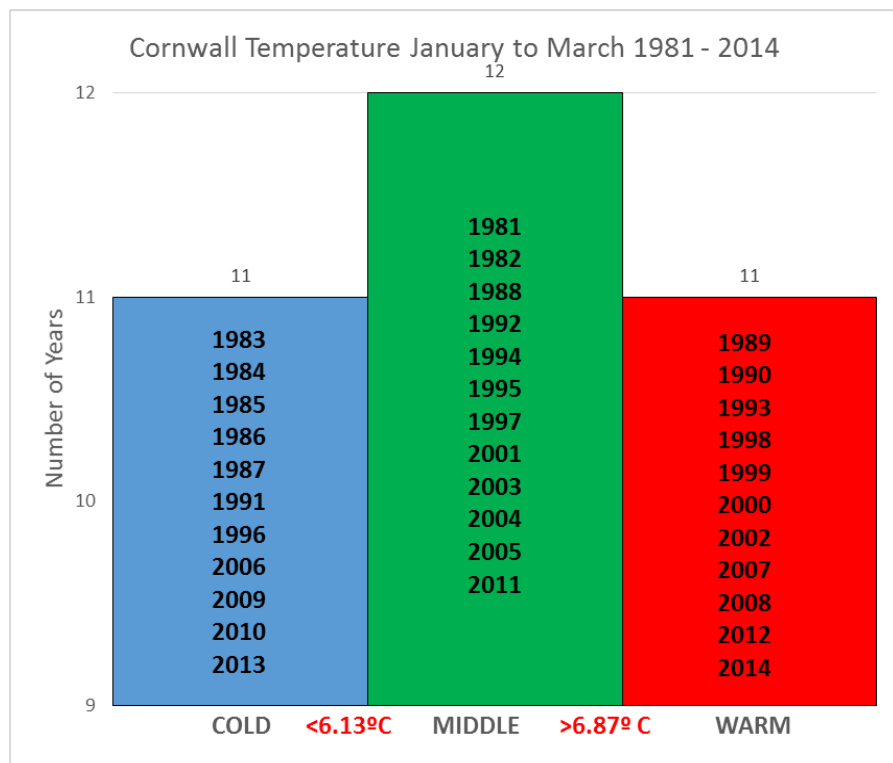
# December to February - Temperature



# January to March - Rainfall



# January to March - Temperature



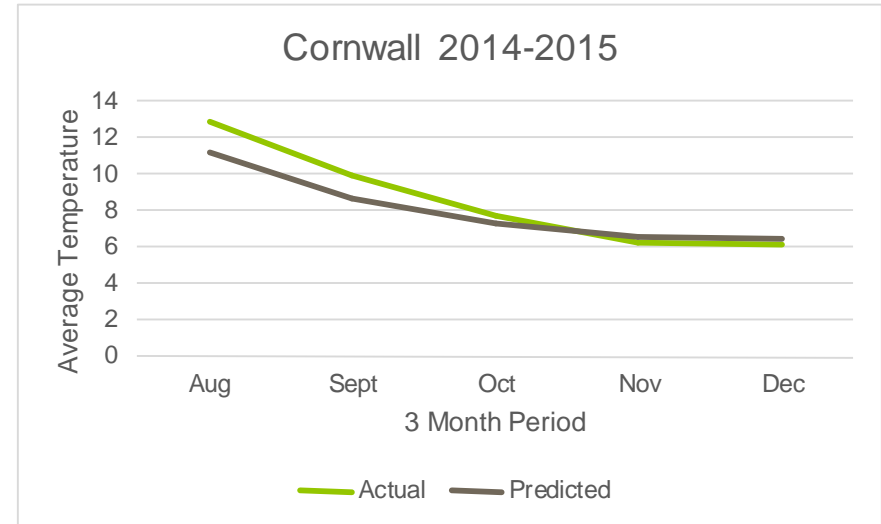
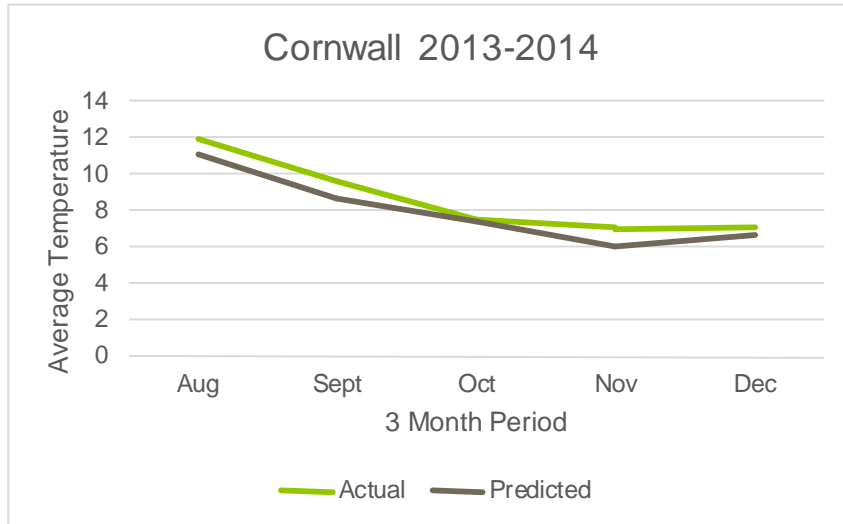
# Extreme Weather

- The winter of 2012/2013 saw prolonged freezing cold temperatures.
- Caused loss of livestock, particularly lambs who died of hypothermia.
- Increased pressures on farmers to provide shelter, heating and feed which caused huge financial strain.
- Keeping livestock indoors promoted the spread of disease such as bovine TB and the Schmallenberg virus .
- Understandably this has a significant impact on the emotional and financial wellbeing of the farmers. Reliable forecasts are essential for better planning to reduce livestock loss and emotional strains.



<http://www.westernmorningnews.co.uk/Farmers-Devon-Cornwall-facing-perfect-storm/story-18585967-detail/story.html>

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

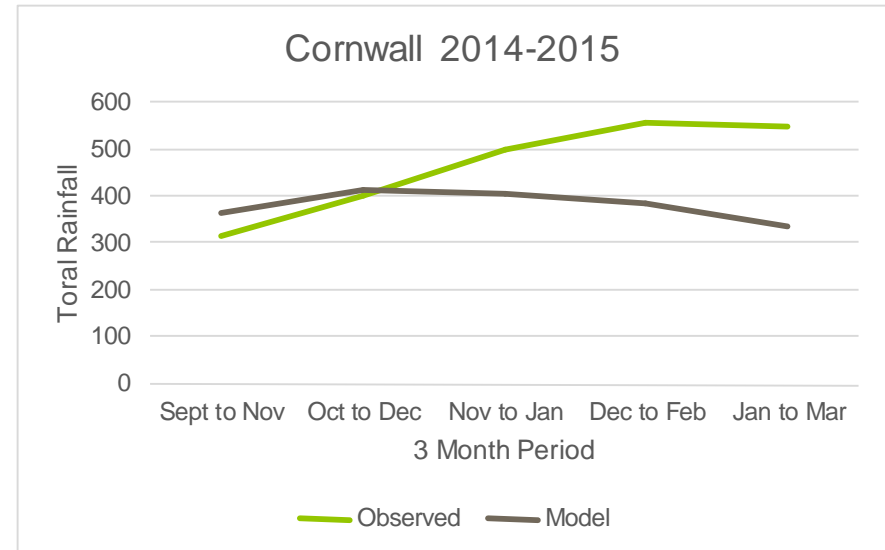
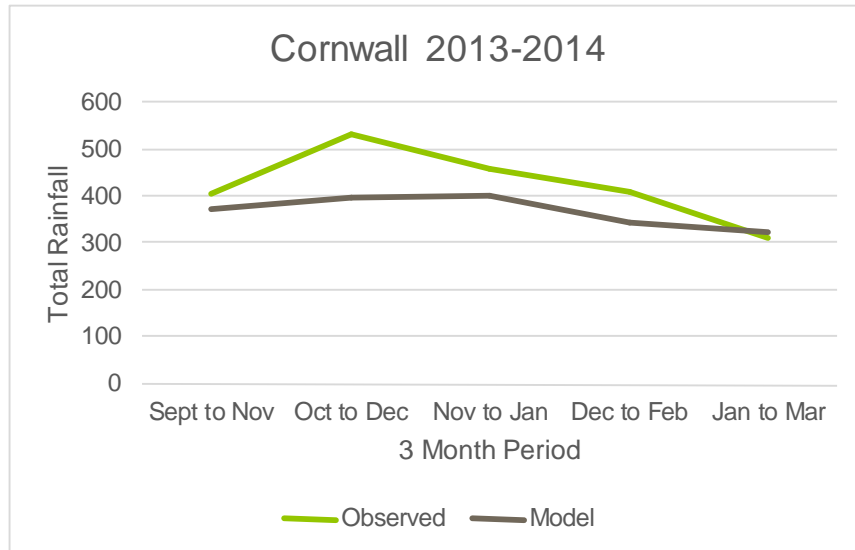


- The graphs show that the model predicts a very similar temperature pattern to the actual weather in both years. This demonstrates that the forecasts are accurate.

## Statistics

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

# 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.

## Statistics

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



# 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	62	A	53	A	35	A	46	A
	Temperature	0	H	0	H	58	H	17	H	39	H
2014	Rainfall	38	D	73	A	16	W	36	W	41	W
	Temperature	0	H	0	H	48	H	62	A	47	A

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