Weather Forecast Accuracy : Part 3
The 14 Day Regional Forecast

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Last month we looked at the accuracy of temperature forecasts. This month we have the difficult job of looking at the accuracy of the 14 day regional forecasts. The forecasts cover the period 2004 to 2008 and were produced at about 11am each day and cover the whole country. The locations covered are shown in Table 1. You can instantly see my first problem. The forecast covers a whole region and I have had to select a weather station as a candidate for each region. Table 1 shows which weather station I have chosen. This might not be fair. For example showers may be forecast but they fall in one place and not another. A territorial map of each region will show how big they are.

Table 1

Region	Climate Station
NORTHLAND	Kerikeri Research Centre
AUCKLAND	Pukekohe Research Station
WAIKATO	Blands Research Orchard, Rukuhia, Waikato
BAY OF PLENTY	Te Puke Research Orchard
GISBORNE	Illawarra Farm, Matawhero - Awapuni, Gisborne
HAWKES BAY	Crosses Road, Havelock North
WAIRARAPA	Martinborough
MARLBOROUGH	Marlborough Research Centre, Blenheim
NELSON	Riwaka Research Station, Plant and Food Research
CANTERBURY	Lincoln University, Canterbury
CENTRAL OTAGO	Clyde Research Orchard

The second problem I faced is exactly what do you validate? It is after all a text based forecast. In the end I looked for certain words in the forecast and compared them to what actually happened on the day. The words were **rain, showers and frost**. The outcome of rain and showers is shown in Figure 1.

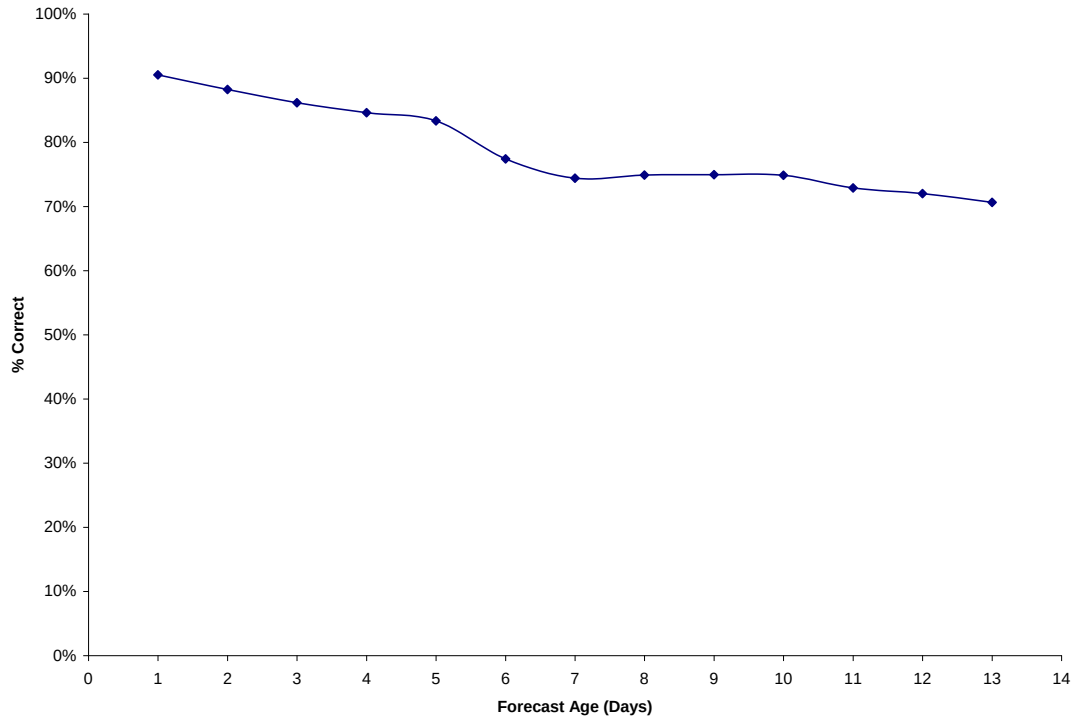

Figure 1
If the forecast mentioned rain or showers and it rained on that day it was treated as a success. This figure is quite impressive. What will happen tomorrow (Forecast Age 1) is 90% accurate. By 1 week (Forecast Age 7) we are at 75% accurate and after 2 weeks the accuracy fall to 70%. Not bad.

I found that the rainfall forecast accuracy could be improved by about 5% if adjacent days were joined together. It must be very hard to predict rainfall over 7 days away so by looking for rainfall in adjacent days yours odds of getting a downpour increase.

The word 'frost' is hard to gauge over such a wide area. The variation in district temperatures, as documented in previous articles, is huge. What I can say is whenever the word 'frost' is used, expect a cool night. Whether you will get a frost depends on the frost profile of where your property is.

Other words are difficult to check. I tried various word combinations without much success. The forecasts use various words which may mean the same thing or the forecast suggest several things might happen.

I have often had people claiming some service is better than another using all sorts of methods for medium to long range forecasts. Methods include the moon and sunspots. I have even seen that the Nintendo Wii I got the other day has one. These forecasts are all over the internet and are mostly free. In my opinion these forecast are not very accurate and you get what you pay for. Occasionally when looking at a short sequence of forecasts they might get lucky and produce the correct forecast. When this happens people get an almost religious devotion to the service. However, over the long term they get it wrong more often than they get it right. I have had a look at the number of rain days occurring in New Zealand each year, going back to 1920. On average we get about 140 rain days each year. If I said to you it would rain on August 15th 2009 I have a 140 in 365 or 38% of getting it right. Looking at it another way if I said it would not rain I have a 62% chance of being correct. Not bad odds for a random guess.

So what is the take home message? Having analysed the data I have I can say:

1. Text forecasts are hard to verify.
2. The long range rain forecast starts at about 90% accuracy and falls to 70% after 14 days.
3. The forecast accuracy can be improved by an extra 5% if multiple days are considered.
4. Free forecasts from the internet are frequently wrong. Don't rely on them as a business tool.

As usual if you have any questions, feel free to send me an email. You can also trial Metwatch Online for free as well. This service includes a 14 day forecast as well as other forecasts including frost, spray drift and warnings of severe weather. Just send us an email.