

## **Climate Change – What does it mean to your region?**

Following on from last month's article on the Kyoto Protocol, and the impacts to farming, this month we look at the predicted weather changes throughout the country from climate change over the next 70-100 years. Climate change is happening and we need to change our farming practices to account for it.

In general, rainfall patterns and intensities will become either drier or wetter, all parts of NZ will become warmer, and as a result sea levels will rise and the frequency of flooding will be 4 times higher.

### **Northland**

Northland has a sub-tropical climate with warm humid summers and mild winters. Northland is likely to become warmer by up to 3°C over the next 70-100 years and up to 10% drier with more varied rainfall patterns.

### **Auckland**

The Auckland region has a sub-tropical climate with warm humid summers and mild winters. Auckland is likely to become warmer by up to 3°C but there will probably be little change in Auckland's average rainfall. Rainfall distribution over the year is likely to change with much longer dry spells that will put pressure on the water supply system. Rainfall intensity or rain dumps are likely to increase resulting in flooding up to four times as frequent by 2070.

### **Waikato**

As it is relatively sheltered by high country, Waikato has a warm, dry and settled climate during summer and fairly cool winters. Some of the predicted impacts of a moderate rate of climate change for Waikato include changes in average temperature, sea level rise and rainfall patterns. In general Waikato is likely to become warmer by up to 3°C and 20% wetter with more varied rainfall patterns.

### **Bay of Plenty**

The Bay of Plenty has a sub-tropical climate with warm humid summers and mild winters. The Bay of Plenty is likely to become up to 3°C warmer with the possibility of less rainfall in eastern areas but more in the west of the region. A sea-level rise of between 30cm and 50cm is expected by 2100.

### **Gisborne-Hawkes Bay**

Sheltered by high country to the west, Hawkes Bay and Gisborne enjoy predominantly warm dry settled weather in summer and relatively mild winters. Some of the predicted impacts of a moderate rate of climate change for Hawkes Bay and Gisborne include changes in average temperature by up to 3°C, sea level rise and rainfall patterns will become 20% drier but with more varied rainfall patterns (dry periods interspersed with very heavy rainfall).

### **Taranaki**

The Taranaki region is often quite windy because of its exposure to disturbed weather systems from the Tasman Sea, but it has few climate extremes with warm summers and reasonably mild winters. It is predicted that Taranaki's temperature could be up to 3°C warmer over the next 70-100 years. Rainfall is likely to be up to 20% higher with more varied rainfall patterns by 2070.

### **Manawatu-Wanganui**

The Manawatu-Whanganui region is often quite windy because of its exposure to disturbed weather systems from the Tasman Sea, but it has relatively few climate extremes with warm summers and reasonably mild winters. The Manawatu-Whanganui region is likely to become up to 3°C warmer and up to 20% wetter with more varied rainfall patterns. Sea levels are also likely to rise.

### **Wellington, Kapiti & Wairarapa**

Wellington and Kapiti are often windy because of their exposure to disturbed weather systems from the Tasman Sea and the Cook Strait, but apart from this they have relatively few climate extremes with warm summers and coolish winters. The Wairarapa region enjoys predominantly warm dry settled weather in summer and relatively mild winters. Some of the predicted impacts of a moderate rate of climate change for Wellington, the Kapiti coast and Wairarapa include changes in average temperature by up to 3°C, sea level rise and rainfall up to 20% wetter in the west and 20% drier in the east. Rainfall patterns will vary significantly with longer drier spills and greater intensity rainfalls.

### **Nelson Marlborough**

Nelson and Marlborough is New Zealand's sunniest region with warm, dry and settled weather during summer, and mild winters. By the year 2100, scientists predict temperatures to rise by up to 2.5°C, sea levels to rise by 30-50cm, and most of the region to be 10% wetter whilst coastal Marlborough to be 10% drier. The rainfall patterns will be more varied.

### **West Coast**

The climate of the West Coast is greatly dependent on its exposure to weather systems from the Tasman Sea and the lie of the Southern Alps, with heavy rainfall, mild summers and cool winters. It is predicted that the West Coast will be 2.5°C warmer, up to 25% wetter.

### **Canterbury**

Canterbury's climate is generally warm and dry in summer and cold in winter with frequent frosts. This region is likely to become 2.5°C warmer, The coastal areas are likely to become 20% drier while the foothills and Southern Alps 20% wetter and have more snow falls. Flooding could also be 4 times as frequent.

### **Otago**

Otago's climate is the most varied and extreme in New Zealand with cold winters and mild summers along the coast and very cold, frosty winters and hot summers inland. Scientists predict Otago to become 2.5°C warmer and up to 30% wetter in inland Otago. The coastal belt is likely to be 10% drier.

### **Southland**

Most of Southland is characterized by cool coastal breezes with mild summers and cold, frosty winters. Scientists estimate that Southland's temperature could be up to 2.5°C warmer, and 30% wetter with more varied rainfall patterns.

### **Benefits/costs/opportunities**

There will be benefits and opportunities from climate change. These will vary depending on the region but could include increased range of crops that can be grown, longer growing seasons, faster pasture growth rates, fewer frosts,

On the down side, in some areas you will expect more flooding, greater erosion, increased metabolic diseases for livestock and forestry, faster rates of nutrient losses, higher fertiliser requirements, flood protection schemes not coping, loss of infrastructure, local and central government intervention etc.

As farmers, we need to start preparing for climate change now by storm proofing our properties as if you start in 70 years time it will be too late.