

National Climate Summary – Autumn 2005

- **A season of regional contrasts**
- **Sunshine: Record high sunshine in the north of the North Island, above average over much of the South Island**
- **Rainfall: Record rainfall in parts of the Bay of Plenty, above average in Hawke's Bay and Wairarapa; well below average in Northland**
- **Soil moisture: Severe deficits throughout Northland during early and mid autumn**
- **Temperature: Above average in the north of the North Island, below average in south Canterbury and north Otago**

Autumn was a season of regional contrasts. There were record sunshine totals in Northland and Auckland with some areas having their sunniest autumn in over forty years. Autumn rainfall in Bay of Plenty, however, was double its normal level in a number of districts that suffered extremely high rainfall events. Tauranga Airport recorded 751 mm, the highest autumn rainfall since records commenced in 1898. In contrast, rainfall was less than 50 percent (half) of normal in much of Northland. Kaikohe recorded 151 mm, the lowest autumn rainfall since recording began in 1972. Severe significant soil moisture deficits occurred in Northland during March and April. Seasonal mean temperatures were above average in the north of the North Island, as well as parts of Manawatu. However, they were below average in south Canterbury and north Otago. The autumn national average temperature of 13.4°C was the same as the 1971-2000 normal. The overall autumn climate pattern was dominated by more frequent troughs of low pressure over the North Island with westerlies over southern New Zealand.

Major Highlights:

- The highest temperature during the 2005 autumn was 32.9°C recorded at Darfield in hot northwesterly conditions on 5 March. The lowest temperature was -6.7°C, recorded at Ranfurly on the 18th of May.
- Several tornadoes or tornado-like features occurred in autumn. On 10 March a severe tornado tracked through Greymouth, with damages estimated of at least \$10 million. Three people were injured and 30 left homeless. On 25 March damaging tornado-like winds struck parts of Bay of Plenty.
- Huge waves generated by an offshore low pressure system northeast of Gisborne and strong easterlies, resulted in flooding and damage in the Hawke's Bay coastal settlement of Haumoana on 17 March, six houses being evacuated and 60 people being affected.
- Fog and low cloud occurred at Wellington Airport on 17-18 March, 20-22 March, 12 April and 19-20 May resulting in airport closures and disruption for many travellers. Fog hours at Wellington airport for 2005 are the highest they have been for 45 years.
- High rainfall occurred throughout much of Taranaki, Wairarapa and Wellington over 29-31 March, some areas recording more than 100 mm, with flooding in parts of Wairarapa. For the 24-hours to 9am on 31 March, Wellington Airport recorded its highest 1-day rainfall total (94 mm) since 1981.
- Torrential rainfall over 3-4 May resulted in serious widespread flooding in parts of Tauranga. A phenomenal high-rainfall flood-producing event affected Bay of Plenty on 17-18 May, resulting in a state of emergency from Tauranga to Matata. Tauranga Airport recorded a massive 347 mm of rainfall in 24-hours. Hundreds of people were evacuated from and many homes destroyed. The cost of the damage from this event has been estimated to be at least \$40-50 million.

Of the four main centres Auckland was the sunniest, and Dunedin the driest. Rainfall was below average in Auckland and Dunedin, above average in Wellington, and average in Christchurch. Temperatures were above average in Auckland, average in Wellington, and below average in the two other main centres. Well above

average sunshine hours occurred in Auckland and Dunedin, near average in Wellington and Christchurch.

Sunshine: Sunshine hours were well above average in Northland, Auckland, south Canterbury, and Otago. It was also sunnier than average in Coromandel, Buller, north Westland, and Southland.

Rainfall: Autumn rainfall was more than 200 percent (double) of normal in parts of Bay of Plenty. It was also wetter than normal in Hawke's Bay, Wairarapa, parts of Wellington, and the Kaikoura Coast. Rainfall was less than 50 percent (half) of normal in much of Northland, and less than 75 percent (three quarters) of normal in Buller, Westland, south Canterbury, and parts of Otago.

Temperature: Mean temperatures were near average overall in many regions. However, they were above average in the north of the North Island, as well as parts of Manawatu. Temperatures were below average in south Canterbury and north Otago.

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RECORD HIGH SUNSHINE IN THE NORTH OF THE NORTH ISLAND, SUNNY OVER MUCH OF THE SOUTH ISLAND

Sunshine hours were at least 120 percent of average in Northland, Auckland, south Canterbury, and Otago, and at least 110 percent of average in Coromandel, Buller, north Westland, and Southland. Totals were near average elsewhere.

Near or record high autumn sunshine was recorded at:

Location	Autumn 2005 sunshine (hours)	Percentage of normal	Year Records began	Comments
Kaitia	592	120	1985	Highest
Dargaville	536	123	1943	Highest
Auckland, Mangere	590	123	1963	Highest
Tekapo	492	124	1928	3 rd highest

WELL ABOVE AVERAGE RAINFALL IN BAY OF PLENTY, HAWKE'S BAY AND WAIRARPA WELL BELOW AVERAGE RAINFALL IN NORTHLAND

Rainfall was more than 200 percent (double) of normal in parts of Bay of Plenty, and at least 150 percent of normal in parts of Hawke's Bay and Wairarapa. Totals were about 125 percent (one and a quarter) of normal in parts of Wellington, and the Kaikoura Coast. In contrast, rainfall was less than 50 percent (half) of normal in much of Northland, and less than 75 percent (three quarters) of normal in Buller, Westland, south Canterbury, and parts of Otago.

Near or record high autumn rainfall was recorded at:

Location	Autumn 2005 rainfall (mm)	Percentage of normal	Year Records began	Comments
Tauranga Airport	751	232	1898	Highest
East Taratahi	367	155	1972	Highest
Napier Airport	397	163	1950	3 rd highest

Mahia	438	171	1992	2 nd highest
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Near or record low autumn rainfall was recorded at:

Location	Autumn 2005 rainfall (mm)	Percentage of normal	Year Records began	Comments
Cape Reinga	117	45	1920	3 rd lowest
Kaitaia	158	52	1986	Lowest
Kerikeri	229	58	1982	2 nd lowest
Kaikohe	151	39	1972	Lowest
Whangarei Airport	137	35	1937	2 nd lowest
Westport Airport	326	57	1946	2 nd equal lowest

**WARMER IN THE NORTH OF THE NORTH ISLAND
COOLER IN SOUTH CANTERBURY AND NORTH OTAGO**

Mean temperatures were at least 0.5°C above average in Northland, Auckland, Coromandel, Thames, Waikato, Taupo, and Bay of Plenty, as well as parts of Manawatu. Temperatures were at least 0.5°C below average in south Canterbury and north Otago, and near average elsewhere. In many regions March had near normal temperatures, April was cooler than normal, and May warmer than normal.

AUTUMN CLIMATE IN THE FOUR MAIN CENTRES

Of the four main centres Auckland was, by far, the sunniest and Dunedin the driest. Rainfall was above average in Wellington, near average in Christchurch, and below average in Auckland and Dunedin. Temperatures were above average in Auckland, near average in Wellington, and below average in the two other main centres. Sunshine hours were well above average in Auckland and Dunedin, and near average in Wellington and Christchurch. Record autumn sunshine hours were observed in Auckland.

Location	Autumn Mean Temp. (°C)	Dep. from normal (°C)		Autumn rainfall (mm)	% of normal		Autumn Sunshine (hours)	% of normal	
Auckland	16.8 ^a	+0.6	Above average	234 ^b	77	Below average	590 ^a	123	Well above average
Wellington	13.8	+0.1	Near average	363	118	Above average	472	100	Average
Christchurch	11.8 ^c	-0.3	Below average	171 ^c	107	Near Average	502	104	Near average
Dunedin	11.3	-0.3	Below average	162	81	Below average	433	120	Well above average

a Mangere b Mt Albert c Christchurch Airport

HIGHLIGHTS AND EXTREME EVENTS

• **Extreme temperatures**

The highest temperature during the 2005 autumn was 32.9°C recorded at Darfield in hot northwesterly conditions on 5 March. The lowest temperature for the season was -6.7°C, recorded at Ranfurly on 18 May.

• **Waterspouts and Tornadoes**

Tornado-like winds struck Blaketown (Westland) about 6.15pm on 8 March, damaging three properties. A

severe, damaging, tornado tracked through parts of Greymouth just after 1 pm on 10 March. Many buildings, houses, and dozens of motor vehicles were seriously damaged (some overturned) by the high winds and flying debris (roofs lifted and window panes smashed), with damages estimated to be at least \$10 million. A power pole even snapped in half. About 30 people were left homeless, and three injured. There were no fatalities. The tornado left a 400-500 m wide and 4 km long track of damage from the river mouth, southeast through the township, toward the hills. Estimates of maximum wind speeds, based on the international Fujita tornado scale, range from 180 km/h to 250 km/h. The tornado was preceded by lightning. More tornadoes struck parts of Bay of Plenty, damaging trees and properties on 25 March, leaving a trail, of damage from Te Puke to Otamarakau, and from Kawerau to Thornton. A series of waterspouts were sighted off the Whangamata coast on 1 April. A small tornado was sighted in Greymouth on 4 April.

- **High winds and rough seas**

Huge waves, with 6 metre swells, generated by an offshore low pressure system northeast of Gisborne and strong easterlies, resulted in flooding and damage in the Hawke's Bay coastal settlement of Haumoana on 17 March, six houses being evacuated and 60 people being affected. The highest wind gust recorded for autumn 2005 was 174 km/h from the northwest, measured at Southwest Cape (Stewart Island) on 3 April.

- **Fog and low cloud**

Persistent fog and low cloud occurred at Wellington Airport over the 17-18 March and 20-22 March resulting in airport closures and the disruption of more than 500 flights affecting tens of thousands of travellers. Many flights had to be diverted to Palmerston North. Wellington Airport was closed briefly, due to fog, from late afternoon through evening on 12 April. Wellington Airport was closed for several hours by fog and low cloud on 19 and 20 May. There have been 48 hours with fog there this year, the highest for any year in 45-years of measurement.

- **High rainfall, floods**

5-10 March

Rainfall was extremely high in Fiordland, with 306 mm recorded at Milford Sound on 5 March, and 702 mm for the 6-day period.

17 March

Rainfall totalling 50-75 mm occurred in Bay of Plenty and Hawke's Bay.

24 March

Rainfall totalled 137, 96, and 50-60 mm at Lake Rotoiti (Nelson Lakes), Takaka, and Nelson respectively.

29-31 March

Rainfall, totalling 60-100 mm occurred throughout much of Taranaki, Wairarapa and Wellington, some areas recording more than 100 mm. Six houses were evacuated after flooding occurred in the Riversdale-Castlepoint district. Torrential rainfall totalling 57 mm was recorded at Castlepoint between 5 and 6pm on 30 March, with 115 mm between 5 and 8 pm that evening. For the 24-hours to 9 am on 31 March, Wellington Airport recorded its highest 1-day rainfall (94 mm) total since 1981.

1-2 May

High rainfall (100 mm reported in 6 hours at Pohokura, and 80 mm in 3 hours at Motunui, Taranaki) resulting in slips and surface flooding closing SH 43, and the closure of a school. High winds, attributed to a tornado, also affected Taranaki, between Motunui and Urenui during the early morning on the 2nd, damaging an orchard, and destroying a farm shed.

3-4 May

Torrential rainfall resulted in serious widespread flooding in Tauranga, especially in Otumoetai, Arataki, and Omanu. Many homes and businesses were flooded, with water a metre deep in areas, and emergency services were stretched to the limit. Rainfall totalling 144 mm was measured at Tauranga Airport in the 24 hours to 8am on the 4th. Heavy rainfall occurred between 3 pm and 11 pm on the 3rd, during which time there was 1-hour with rainfall totalling 67 mm. High rainfall also affected other sites in Bay of Plenty, as well as Hawke's Bay, on the same day, many locations recording 75-100 mm.

17-18 May

A phenomenal, unprecedented high-rainfall flood-producing event affected Bay of Plenty, particularly from Tauranga to Matata. Heavy rainfall occurred between 11 pm on the night of the 17th and 8pm on the night of the 18th, during which time there were 6-hours with rainfall exceeding 30 mm per hour, and one hour with 58 mm. Tauranga Airport recorded a massive 346.8 mm of rainfall in 24-hours. This was well above any other daily rainfall total there in records which commenced in 1910, but comparable with those recorded for shorter durations on 17 April 1948, when 95, 146 and 212 mm was recorded in 1, 2 and 6 hours respectively. Rainfall totalling 94.5 mm in one hour was reported at Awakaponga, inland from Matata. The New Zealand low lying land-station record was 109 mm in an hour recorded at Leigh (north of Auckland) on 30 May 2001.

Some of the effects of the storm were:

A state of emergency was declared on 18 May in Tauranga and Matata. There were hundreds of calls for emergency services. Police and army personnel assisted evacuations, while fire fighters pumped water from homes. Emergency personnel were also called in from outlying districts. About 450 people were evacuated for Tauranga, Papamoa, and Matata. In **Tauranga**, several city homes were destroyed by mudslides and floodwaters and rising waters threatened hundreds of others. The airport was closed by flooding. Landslides threatened several homes and over a hundred residents were evacuated. More than 40 houses in Papamoa were evacuated. Many residents described the scene in Tauranga as a “disaster zone”. Several of the Tauranga houses had to be demolished. Flooding was extreme in **Matata**, where a stream became a torrent of water, mud, huge boulders, and debris. Approximately 200 of the towns 500 people were evacuated. Houses were pushed off their foundations, nearly 100 being damaged, many motor vehicles were swept into the lagoon, some buried. Children were trapped in schools. One family became trapped in the roof of their home. Two houses and several caravans were swept out to sea. Railway lines were buckled, and about 20 motorists trapped. Parts of roads and two bridges near Matata on SH 2 were washed away. There was no drinking water supply. It was stated that the town of Matata looked as through a tsunami had gone through it. At least one house was flooded in **Edgumbe**, and there was surface flooding after 170mm of rainfall at Pongakawa and 150mm at Awakaponga on the 18th on the Rangitaiki Plains. The cost of the damage from this event has been estimated to be at least \$40-50 million.

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