

National Climate Summary – Autumn 2007: Warm; record dry in east of the North Island

- **Rainfall: Well below normal in the east, and Manawatu and Wellington**
- **Soil moisture: Significant deficits in several eastern regions**
- **Temperature: Above average, especially in the east and inland areas of the South Island**
- **Sunshine: Well above normal in Gisborne, Marlborough and parts of Canterbury**

Low rainfall records tumbled in the east of the North Island, with the driest autumn on record. It was very dry and sunny in the east, from Gisborne to Otago, and Manawatu and Wellington. Mean autumn temperatures were above average, especially in inland and eastern areas of the South Island. Queenstown experienced its warmest autumn in over 135 years of record. The national average temperature of 14.0 °C was 0.7 °C above normal, the highest for autumn since 1999.

Rainfall was less than 50 percent (half) of normal in many eastern regions, from Gisborne to Otago, and also below normal in the west of the North Island from Waikato to Wellington, as well as eastern Bay of Plenty. Unusually, significant soil moisture deficits (at least 110 mm) still existed at the end of autumn in many eastern regions, especially Hawke's Bay and Central Otago. Autumn temperatures were above average throughout New Zealand. Frequent north westerlies produced mean temperatures 1.5 °C above average in parts of Canterbury and Central Otago. March was warmer than normal, April cooler than normal, and May was the warmest on record. Sunshine hours were above normal in eastern regions of both islands from Gisborne to Otago, with Gisborne having its sunniest autumn in over 100 years. The overall autumn climate pattern was dominated by more anticyclones over the North Island and to the east with stronger westerly flow over the South Island.

Major Highlights:

- The highest temperature recorded during the autumn was 32 °C recorded at Darfield on 5 March, and Culverden on 24 March. On 1 May, many Northland locations recorded new extreme May maximum temperatures ranging from 24 to 25 °C. The lowest temperature for the autumn was -4.1 °C recorded at Motu on 31 May.
- There were at several high rainfall/flood-producing events – the worst being that of 28-29 March when extremely high rainfall totalling over 400 mm in eastern parts of Northland resulting in severe flooding. Two-day rainfall totals were amongst the highest on record in the area. Significant soil moisture deficits still existed at the end of autumn in the east of the North Island and eastern Otago. This resulted in Hawke's Bay farmers selling stock due to insufficient feed for winter.
- Unseasonable snowfall occurred at Lake Rotoiti on 14 March.
- Damaging winds, with gusts, exceeding 130 km/h, were measured in Auckland with westerly gales and winds blew over grape vines in part of Marlborough over 13-15 March. Damaging winds attributed to a tornado occurred in Stratford on 21 March. High gusts, exceeding 130 km/h from the southwest, were measured in parts of Auckland over 12-13 April, and a wind gust as high as 156 km/h was recorded from the west at Taiaroa Head on 27 May.
- Lightning strikes resulted in power outages to many homes in the Wellington region over the night of 13/14 March.
- Of the five main centres, Auckland was easily the warmest, and wettest, Dunedin the driest and coolest, and Wellington the sunniest. Autumn temperatures were above average in all five main centres. Rainfall was near normal in Auckland, and below normal in the four other centres. Autumn sunshine was near normal in Hamilton, and above normal in the four other main centres.

Rainfall: Autumn rainfall was less than 50 percent (half) of normal in many eastern regions, from Gisborne to Otago, and below normal in the west of the North Island from Waikato to Wellington, as well as eastern Bay of Plenty. Autumn rainfall was near normal elsewhere.

Temperature: Seasonal mean temperatures were at least 0.5 °C above average throughout much of the North Island and at least 1.0 °C above average throughout much of the South Island. Temperatures were about 1.5°C above average in parts of Canterbury and Central Otago.

Sunshine: Autumn sunshine hours and/or solar radiation were at least 110 percent of normal in eastern regions of both islands from Gisborne to Otago, and near normal elsewhere.

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RAINFALL: WELL BELOW NORMAL IN THE EAST, INCLUDING MANAWATU AND WELLINGTON

Autumn rainfall was less than 50 percent (half) of normal in many eastern regions, from Gisborne to Otago, and less than 75 percent (three quarters) of normal in the west of the North Island from Waikato to Wellington, as well as eastern Bay of Plenty. Record low rainfall occurred in the east of the North Island. Rainfall was near normal elsewhere. No region recorded above normal rainfall.

Near or record low autumn rainfall was recorded at:

| Location | Autumn 2007 rainfall (mm) | Percentage of normal | Year Records began | Comments |
|--------------------------|---------------------------------|-------------------------|--------------------------|------------------------|
| Waione | 88 | 28 | 1997 | Lowest |
| Castlepoint | 83 | 32 | 1902 | 2 nd lowest |
| East Taratahi | 88 | 37 | 1973 | Lowest |
| Martinborough EWS | 85 | 40 | 2002 | Lowest |
| Hicks Bay | 133 | 35 | 1991 | Lowest |
| Gisborne | 70 | 23 | 1905 | Lowest |
| Napier Airport | 68 | 28 | 1951 | Lowest |
| Wairoa, North Clyde | 119 | 28 | 1992 | Lowest |
| Paraparaumu Airport | 109 | 43 | 1945 | Lowest |
| Palmerston North Airport | 126 | 57 | 1944 | 2 nd lowest |
| Wallaceville | 140 | 44 | 1924 | 3 rd lowest |
| Kaikoura | 76 | 31 | 1950 | 3 rd lowest |
| Le Bons Bay | 131 | 53 | 1985 | 3 rd lowest |
| Dunedin Airport | 75 | 45 | 1963 | 3 rd lowest |
| Dunedin, Musselburgh | 73 | 36 | 1918 | 2 nd lowest |
| Nugget Point | 130 | 52 | 1930 | 3 rd lowest |

TEMPERATURE: ABOVE AVERAGE THROUGHOUT NEW ZEALAND, ESPECIALLY IN THE EAST OF THE SOUTH ISLAND

Seasonal mean temperatures were at least 0.5 °C above average throughout much of the North Island and at least 1.0 °C above average throughout much of the South Island. Temperatures were about 1.5°C above average in parts of Canterbury and Central Otago. The national average temperature of 14.0°C was 0.7°C above normal and the highest for autumn since 1999.

Near or record high autumn mean air temperatures were recorded at:

| Location | Mean temperature | Departure from average (°C) | Records Began | Comments |
|--------------------------|------------------|-----------------------------|---------------|-------------------------|
| Palmerston North Airport | 14.6 | +1.1 | 1962 | 3 rd highest |
| Farewell Spit | 15.4 | +1.0 | 1971 | 3 rd highest |
| Winchmore | 13.1 | +1.6 | 1950 | Highest |
| Christchurch Gardens | 13.6 | +1.0 | 1864 | 3 rd highest |
| Lake Tekapo | 11.2 | +1.9 | 1927 | Highest |
| Tara Hills, Omarama | 11.2 | +1.4 | 1950 | Equal highest |
| Wanaka Airport | 12.2 | +1.2 | 1993 | Highest |
| Manapouri Airport | 11.3 | +1.9 | 1991 | Highest |
| Queenstown | 12.6 | +1.5 | 1872 | Highest |
| Queenstown Airport | 11.1 | +1.4 | 1969 | Highest |
| Lauder | 11.8 | +2.3 | 1987 | Highest |
| Clyde EWS | 12.1 | +1.9 | 1983 | Highest |
| Gore | 11.0 | +0.8 | 1988 | 2 nd highest |
| Invercargill Airport | 11.4 | +1.1 | 1949 | Equal highest |
| Raoul Island | 21.5 | +0.9 | 1940 | 3 rd highest |

SUNSHINE: WELL ABOVE NORMAL IN GISBORNE AND PARTS OF CANTERBURY

Autumn sunshine hours and/or solar radiation were at least 110 percent of normal in eastern regions of both islands from Gisborne to Otago, and near normal elsewhere. Gisborne recorded its sunniest autumn on record.

Near or record low autumn sunshine hours were recorded at:

| Location | Autumn 2007 sunshine (hours) | Percentage of normal | Year Records began | Comments |
|----------------------|------------------------------|----------------------|--------------------|-------------------------|
| Gisborne | 623 | 127 | 1905 | Highest |
| Blenheim Research | 657 | 118 | 1986 | 2 nd highest |
| Christchurch Airport | 550 | 114 | 1949 | 3 rd highest |
| Lake Tekapo | 637 | 129 | 1928 | Highest |

AUTUMN CLIMATE IN THE FIVE MAIN CENTRES

Of the five main centres, Auckland was the warmest and wettest, Dunedin the driest and coolest, and Wellington the sunniest. Autumn temperatures were above average in all five main centres. Rainfall was near normal in Auckland, and below normal in the four other centres. Autumn sunshine was near normal in Hamilton, and above normal in the four other main centres.

| Location | Autumn Mean Temp. (°C) | Dep. from normal (°C) | | Autumn rainfall (mm) | % of normal | | Autumn Sunshine (hours) | % of normal | |
|---------------------------|------------------------|-----------------------|---------------|----------------------|-------------|-------------------|-------------------------|-------------|-------------------------|
| Auckland ^a | 17.1 | +0.9 | Above average | 267 | 88 | Near normal | 519 | 108 | Above normal |
| Hamilton | 15.1 | +0.7 | Above average | 180 | 64 | Below normal | 462 | 96 | Near normal |
| Wellington | 14.1 | +0.4 | Above average | 211 | 69 | Below normal | 552 | 117 | Well above normal |
| Christchurch ^b | 12.9 | +0.9 | Above average | 102 | 64 | Below normal | 550 | 114 | 3 rd highest |
| Dunedin | 12.4 | +0.8 | Above average | 71 | 35 | Well below normal | 415 | 115 | Well above normal |

a Mangere, b Christchurch Airport

HIGHLIGHTS AND EXTREME EVENTS

- **Temperature**

The highest temperature recorded during the autumn was 32 °C recorded at Darfield on 5 March, and Culverden on 24 March. On 1 May, many Northland locations recorded new extreme May maximum temperatures ranging from 24 to 25 °C. The lowest temperature for the autumn was -4.1 °C recorded at Motu on 31 May.

- **Drought**

Low rainfall meant that significant soil moisture deficits of 110 mm or more persisted in Gisborne, Hawke's Bay, Wairarapa and eastern Otago throughout the month, a highly unusual situation for late autumn. Rainfall in the eastern North Island had been below average every month so far this year, and May's conditions were severe enough to cause Hawke's Bay farmers to sell stock due to insufficient feed for winter.

- **High rainfall**

28-29 March: Extremely high rainfall totalling over 400 mm in eastern parts of Northland resulting in severe flooding. The highest falls occurred in eastern Northland in the area from Kaeo to the Bay of Islands and just south of Whangarei. Two-day rainfall totals were amongst the highest on record in the area.

6-17 March: Several high rainfall events occurred on the West Coast, with flooding in Westport on the 17th, along with slips and road closures.

10 and 23 April: High rainfall, with at least 75 mm in 24 hours in Fiordland.

22/23 May: Parts of Nelson and Taranaki were hit by heavy rainfall, with localised severe flooding.

- **Snowfall**

14 March: Unseasonable snowfall occurred at Lake Rotoiti.

- **Strong winds**

13-15 March: Damaging winds, with gusts, exceeding 130 km/h, were measured in Auckland with westerly gales. Winds blew over grape vines in part of Marlborough on the 14th.

21 March: Damaging winds attributed to a tornado occurred in Stratford.

12-13 April: Southwest gales with very high gusts, exceeding 130 km/h, were measured in parts of Auckland.

27 May: A wind gust as high as 156 km/h was recorded from the west at Taiaroa Head.

- **Electrical storms and hail**

13/14 March: Lightning strikes resulted in power outages to many homes in the Wellington region over night.

18 March: A thunderstorm, with heavy rainfall, hail, and high winds affected the Christchurch district.

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