

**National Climate Summary – January 2011: Tropical Visitors produce Wild Weather\***

- **Rainfall:** Three ex-tropical cyclones affected New Zealand during the month, bringing torrential rainfall to numerous regions. Rainfall totals were four times January normal in eastern Northland and Auckland, the Firth of Thames, Coromandel and western Bay of Plenty, and double January normal over much of the rest of the North Island. Rainfall was also above normal for Westland, Kaikoura Coast and parts of Southland and Otago. In contrast, it was rather dry for parts of inland south Canterbury and the Nelson Ranges.
- **At the end of January, significant soil moisture deficits (more than 110 mm of deficit) remained in parts of Canterbury and Central Otago, but soils in the North Island were much wetter than usual for the time of year.**
- **Temperatures:** Well above average in parts of Northland, Auckland, Waikato, Bay of Plenty, and above average across much of the remainder of the North Island, coastal Westland and Fiordland. Near average for much of the South Island, as well as Wellington, Wairarapa, Hawkes Bay.
- **Sunshine:** Very cloudy in Coromandel, Bay of Plenty, Gisborne, Wellington, Wairarapa, Marlborough, north Canterbury and Otago, due to easterly winds. Well above normal sunshine totals in south Canterbury, and rather sunny in Taranaki and the Ruapehu District. Near normal January sunshine totals elsewhere.

In January 2011 much lower-than-usual pressures affected the region north of New Zealand, resulting in more easterly winds than normal over the country. During the month, three lows of tropical origin brought torrential rain and gales; former tropical cyclones Vania and Zelia produced heavy rain on the 18<sup>th</sup> on the West Coast, resulting in the Fox River bursting its banks. A low of tropical origin (which formed near New Caledonia) moved towards New Zealand on January 22/23, producing extremely heavy rainfall, flooding, slips and road closures over much of the North Island, north of about Wanganui. Also, Tropical Cyclone Wilma moved rapidly across the northeastern North Island on the 28<sup>th</sup>/29<sup>th</sup>, causing widespread deluge rainfalls, severe flooding and slips, in northeastern regions of the North Island.

Rainfall totals were about four times (400 percent of) January normal in eastern Northland and Auckland, the Firth of Thames, Coromandel and western Bay of Plenty - with many new records set - and at least double (200 percent of) January normal over the rest of the North Island (the exceptions were Wellington, the Kapiti Coast and parts of the Manawatu, which recorded between 120 and 150 percent of normal). January rainfall totals were also above normal (more than 120 percent of normal) for Westland, the Kaikoura Coast and parts of Southland and Otago. In contrast, it was a rather dry month for parts of inland south Canterbury and the Nelson Ranges (which recorded less than 50 percent of normal). Elsewhere, January 2011 rainfall totals were closer to January normal (between 80 and 120 percent of normal).

At the end of January, soil moisture levels were well above normal across the entire North Island due to the extremely wet month, replacing significant soil moisture deficits that had previously affected parts of western Northland, Waikato, Bay of Plenty, Gisborne, Manawatu and Wairarapa. Significant soil moisture deficits (more than 110 mm of deficit) remain, however, in parts of Canterbury and Central Otago.

Mean monthly temperatures for January 2011 were well above average (at least 1.2 °C above average) in parts of Northland, Auckland, Waikato, and Bay of Plenty, and above average (between 0.5 °C and 1.2 °C above average) across much of the remainder of the North Island, as well as for coastal Westland and Fiordland. Temperatures were near average (within 0.5 °C of average) over much of the South Island, as well as in Wellington, Wairarapa and Hawkes Bay. The New Zealand national average temperature was 17.4°C (0.3°C above the 1971–2000 January average).

*\*NOTE: This climate summary has subsequently been amended due to a fault with the rainfall recordings at the Firth of Thames gauge, including the reading on 28 January 2011. Rainfall data from Firth of Thames were subsequently corrected in the National Climate Database (<http://cliflo.niwa.co.nz/>). Please use the amended version of this climate summary.*

Sunshine totals in Coromandel, Bay of Plenty, Gisborne, Wellington, Wairarapa and Marlborough were below normal (between 75 and 90 percent of January normal), showing the effect of the prevailing easterly winds during the month. In contrast, it was very sunny in south Canterbury with well above normal sunshine totals (more than 125 percent). Sunshine totals in Taranaki and the Ruapehu District were also above normal (between 110 and 125 percent of normal). Elsewhere, January sunshine totals were near normal.

**Further Highlights:**

- The highest temperature was 35.8°C, recorded at Timaru on the 16<sup>th</sup>.
- The lowest temperature was -0.1°C, recorded at Masterton on the 14<sup>th</sup>.
- The highest 1-day rainfall was 276 mm recorded in the Firth of Thames on the 28<sup>th</sup>.
- The highest wind gust was 165 km/hr, recorded at Cape Turnagain on the 16<sup>th</sup>.
- Of the six main centres in January 2011, Tauranga was the wettest but also the sunniest, Christchurch the driest, Auckland the warmest and Dunedin the coolest. For all of the six main centres except Dunedin, it was a wetter-than-usual January.

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**RAINFALL: THREE EX-TROPICAL CYCLONES BRING TORRENTIAL RAINFALL TO NUMEROUS REGIONS. RAINFALL TOTALS FOUR TIMES JANUARY NORMAL IN EASTERN NORTHLAND AND AUCKLAND, THE FIRTH OF THAMES, COROMANDEL AND WESTERN BAY OF PLENTY, AND DOUBLE JANUARY NORMAL OVER MUCH OF THE REST OF THE NORTH ISLAND. RAINFALL WAS ALSO ABOVE NORMAL FOR WESTLAND, KAIKOURA COAST AND PARTS OF SOUTHLAND AND OTAGO. IN CONTRAST, IT WAS RATHER DRY FOR PARTS OF INLAND SOUTH CANTERBURY AND THE NELSON RANGES.**

Rainfall totals were about four times (400 percent of) January normal in eastern Northland and Auckland, the Firth of Thames, Coromandel and western Bay of Plenty - with many, many new records set - and at least double (200 percent of) January normal over the rest of the North Island (the exceptions were Wellington, the Kapiti Coast and parts of the Manawatu, which recorded between 120 and 150 percent of normal). January rainfall totals were also above normal (more than 120 percent of normal) for Westland, the Kaikoura Coast and parts of Southland and Otago. In contrast, it was a rather dry month for parts of inland south Canterbury and the Nelson Ranges (which recorded less than 50 percent of normal). Elsewhere, January 2011 rainfall totals were closer to January normal (between 80 and 120 percent of normal).

At the end of January, soil moisture levels were well above normal across the entire North Island due to the extremely wet month, replacing significant soil moisture deficits that had previously affected parts of western Northland, Waikato, Bay of Plenty, Gisborne, Manawatu and Wairarapa. Significant soil moisture deficits (more than 110 mm of deficit) remain, however, in parts of Canterbury and Central Otago.

**Record or near-record January rainfall totals were recorded at:**

Location	Rainfall total (mm)	Percentage of normal	Year records began	Comments
Kaitaia	274	321	1985	2nd-highest
Kaikohe	366	351	1956	2nd-highest
Dargaville	212	307	1943	Highest
Whangarei	359	443	1937	2nd-highest

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Leigh	383	517	1966	Highest
Warkworth	320	347	1966	2nd-highest
Whitianga	418	427	1961	Highest
Matamata	268	349	1951	Highest
Tauranga	347	475	1898	2nd-highest
Te Puke	425	423	1973	Highest
Whakatane	337	423	1952	Highest
Rotorua	424	471	1963	Highest
Taupo	279	331	1949	Highest
Pukekohe	185	215	1944	2nd-highest
Whatawhata	279	281	1952	Highest
Hamilton	225	281	1935	Highest
Te Kuiti	203	182	1950	3rd-highest
Taumarunui	236	206	1913	2nd-highest
Turangi	241	204	1968	3rd-highest
Takapau Plains	203	293	1962	2nd-highest
Napier	212	398	1870	2nd-highest
Waipawa	160	422	1945	4th-highest
Wairoa	285	296	1964	2nd-highest
Hawera	148	208	1977	3rd-highest
Ohakune	183	176	1961	3rd-highest
Waiouru	159	174	1950	4th-highest
Wanganui	156	252	1890	3rd-highest

**TEMPERATURE: WELL ABOVE AVERAGE IN PARTS OF NORTHLAND, AUCKLAND, WAIKATO, BAY OF PLENTY, AND ABOVE AVERAGE ACROSS MUCH OF THE REST OF THE NORTH ISLAND, COASTAL WESTLAND AND FIORDLAND. TEMPERATURES WERE NEAR AVERAGE OVER MUCH OF THE SOUTH ISLAND, AS WELL AS WELLINGTON, WAIRARAPA, HAWKES BAY.**

Mean monthly temperatures for January 2011 were well above average (at least 1.2 °C above average) in parts of Northland, Auckland, Waikato and Bay of Plenty, and above average (between 0.5 °C and 1.2 °C above average) across much of the remainder of the North Island, as well as for coastal Westland and Fiordland. Temperatures were near average (within 0.5 °C of average) over much of the South Island, as well as in Wellington, Wairarapa and Hawkes Bay. Several locations experienced near-record high temperatures for the month (see tables below).

The New Zealand national average temperature in January 2011 was 17.4 °C (0.3 °C above the 1971–2000 January average)<sup>1</sup>.

**Record or near-record January mean minimum daily air temperatures were recorded at:**

Location	Mean minimum air temperature (°C)	Departure from normal (°C)	Year records began	Comments
Kaitaia	16.3	1.5	1985	4th-highest
Kaikohe	16.4	2.1	1973	2nd-highest
Whangarei	16.8	1.2	1967	4th-highest
Tauranga	16.9	2.3	1913	2nd-highest
Whakatane	15.4	1.5	1974	3rd-highest

<sup>1</sup> Interim monthly value.

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**Record or near-record January mean maximum daily air temperatures were recorded at:**

Location	Mean maximum air temperature (°C)	Departure from normal (°C)	Year records began	Comments
Kaitaia	24.8	0.4	1985	3rd-highest
Kaikohe	25.7	2.9	1973	Highest
Leigh	24.0	1.5	1966	3rd-highest
Whangaparaoa	24.2	1.9	1982	2nd-highest
Mahia	22.6	0.7	1990	4th-highest

**SUNSHINE: CLOUDY IN COROMANDEL, BAY OF PLENTY, GISBORNE, WELLINGTON, WAIRARAPA, MARLBOROUGH AND OTAGO DUE TO EASTERLY WINDS. SUNNY FOR SOUTH CANTERBURY, TARANAKI AND THE RUAPEHU DISTRICT. NEAR NORMAL ELSEWHERE.**

Sunshine totals in Coromandel, Bay of Plenty, Gisborne, Wellington, Wairarapa and Marlborough, and Otago were below normal (between 75 and 90 percent of January normal), showing the effect of the prevailing easterly winds during the month. In contrast, it was very sunny in south Canterbury with well above normal sunshine totals (more than 125 percent). Sunshine totals in Taranaki and the Ruapehu District were above normal (between 110 and 125 percent of normal). Elsewhere, January sunshine totals were near normal.

**Record or near-record January sunshine hours were recorded at:**

Location	Sunshine (hours)	Percentage Of normal	Year records began	Comments
Martinborough	200	86	1986	4th-lowest

**JANUARY CLIMATE IN THE SIX MAIN CENTRES**

Of the six main centres in January 2011, Tauranga was the wettest but also the sunniest, Christchurch the driest, Auckland the warmest and Dunedin the coolest. For all of the six main centres except Dunedin, it was a wetter-than-usual January, and overall, it was a relatively cloudy January for five of the six main centres (the exception was Hamilton, with near normal sunshine hours).

**January 2011 main centre climate statistics:**

Location	Mean temp. (°C)	Departure from normal (°C)		Rainfall (mm)	% of normal		Sunshine (hours)	% of normal	
Auckland <sup>a</sup>	20.7	1.0	Above average	235	387%	Well above normal	206	90%	Below normal
Tauranga <sup>b</sup>	20.6	1.4	Well above average	347	475%	2 <sup>nd</sup> -highest since 1898	238	94%	Near normal
Hamilton <sup>c</sup>	19.5	1.3	Well above average	225	281%	Highest since 1935	235 <sup>e</sup>	102%	Near normal
Wellington <sup>d</sup>	16.8	-0.1	Near average	83	115%	Near normal	211	86%	Below normal
Christchurch <sup>e</sup>	17.4	0.3	Near average	58	136%	Well above normal	209	91%	Near normal
Dunedin <sup>f</sup>	14.9	-0.3	Near average	65	91%	Near normal	143	80%	Below normal

<sup>a</sup> Mangere <sup>b</sup> Tauranga Airport <sup>c</sup> Hamilton Airport <sup>d</sup> Kelburn <sup>e</sup> Christchurch Airport <sup>f</sup> Musselburgh <sup>g</sup> Ruakura

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## HIGHLIGHTS AND EXTREME EVENTS

- **Heavy rain and slips**

January 2011 was an extraordinary month for rainfall events. Heavy rainfall was observed on the 18<sup>th</sup>/19<sup>th</sup> of the month, associated with ex-tropical cyclones Vania and Zelia, which produced flooding on the West Coast and caused the Fox River to burst its banks, forcing some township residents to leave their property. SH6 was flooded north of Punakaiki, as well as between Greymouth and Runanga, and was closed by a mud slide near Reefton. Roads in the Grey Valley near Ngahere were also flooded.

A low of tropical origin (which formed near New Caledonia) moved towards New Zealand on January 22/23, producing extremely heavy rainfall, flooding, slips and road closures over much of the North Island, north of about Wanganui. Many daily rainfall records were broken during this event between Taranaki and Wanganui. In Auckland, flooding and a King Tide resulted in the Northern and Northwestern motorways being partially closed, and homes and businesses in the central city and coastal suburbs being flooded. Several yachts were beached. A Taupo camping ground was evacuated, and the Desert Road was closed by a slip. On 24 January, the Waitomo Caves were closed to visitors because of rising river levels after heavy rain. Surface flooding covered the farm paddocks in the area.

Lastly, Tropical Cyclone Wilma moved rapidly towards the northeastern North Island during the 28<sup>th</sup>, causing widespread deluge rainfalls and severe flooding in northeastern regions of the North Island.

On 28 January, SH10 in Kerikeri was closed by surface flooding after heavy rainfall associated with the cyclone. The waterfront at Paihia was flooded, and Paihia's water treatment plant was damaged. Residents were asked to conserve water, while power was lost in other areas of the Far North, and in Whangarei.

On 29 January, Wilma continued to affect the upper half of the North Island bringing torrential rain, although it was downgrading to an extra-tropical cyclone. SH25, the Thames coast road, was closed by a huge slip at Ruamahanga, with several other smaller slips also along the road. More than 500 visitors were stranded in Coromandel township, and Tapu camping ground also housed hundreds of campers. Flooding closed SH2 at Waimana Gorge, and also between Tauranga and Whakatane, with the access road to Tawharanui Beach near Matakana also cut off. Slips caused delays on SH25 near Whitianga, Kuaotunu and Whangamata, and on SH2 at Waioka Gorge and Waiotahi Beach. Also in Whangamata, the heavy rain forced raw sewage to flow over properties and into the harbour after the treatment station at Awarua Point failed. On Waiheke Island, an 80 year-old house plunged down a cliff after a retaining wall was washed away. People from Kaeo to Kawakawa were evacuated from their homes because of rising floodwaters. In Whangarei, the Kamo bypass and parts of SH1 were closed, with detours in place. SH1 was also closed at Springs Flat, Kaeo, and Puketona Junction, with more than a kilometre of road under water at Kaeo. SH11 was closed by floodwaters between Kawakawa and Paihia. At Waihi Beach, motel units had to be evacuated because of flooding. Nine patients were evacuated from Waipuna Hospice at Te Puna until flood waters surrounding the hospital receded. All tracks on and around Mount Maunganui were closed by slips and mud slides. Sections of SH2 in Tauranga were affected by surface flooding, but remained open.

On 30 January, farms in the low-lying Hikurangi swamp area of Northland remained submerged after flood waters breached stopbanks along the Mangakahia River. SH11 was closed between Opuia and Paihia by flooding, and about 30 properties in Towai, Paroa Bay, Pokapu and Matawaia lost power.

On 31 January, in Whakatane there was a potentially dangerous build-up of debris beneath the main bridge, and some roads were passable only by canoe.

The highest 1-day rainfall was 276 mm recorded in the Firth of Thames on the 28th.

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**Record or near record high extreme 1-day rainfall totals were recorded at:**

Location	Extreme 1-day rainfall (mm)	Date of extreme rainfall	Year records began	Comments
Cape Reinga	130	28th	1919	Highest
Kaitaia	124	28th	1967	Highest
Kaikohe	210	28th	1956	Highest
Dargaville	100	28th	1943	Highest
Whangarei	211	28th	1943	Highest
Leigh	194	28th	1967	Highest
Warkworth	161	28th	1967	Highest
Whangaparaoa	150	28th	1946	Highest
Kumeu	64	28th	1978	Highest
Whitianga	220	28th	1961	Highest
Matamata	86	28th	1951	Highest
Tauranga	174	28th	1910	Highest
Te Puke	175	28th	1973	Highest
Whakatane	109	22nd	1952	3rd-highest
Rotorua	158	28th	1964	3rd-highest
Taupo	114	23rd	1949	Highest
Auckland	73	28th	1959	2nd-highest
Pukekohe	66	22nd	1944	4th-highest
Whatawhata	80	22nd	1952	Highest
Hamilton	69	22nd	1935	4th-highest
Te Kuiti	97	23rd	1957	Highest
Taumarunui	120	23rd	1913	Highest
Turangi	124	23rd	1968	Highest
New Plymouth	90	23rd	1944	2nd-highest
Masterton	72	23rd	1926	4th-highest
Takapau Plains	84	23rd	1962	2nd-highest
Dannevirke	84	23rd	1951	2nd-highest
Martinborough	63	23rd	1924	2nd-highest
Gisborne	65	22nd	1937	3rd-highest
Waipawa	71	23rd	1945	2nd-highest
Wairoa	77	28th	1967	4th-highest
Stratford	164	23rd	1960	Highest
Hawera	118	23rd	1977	Highest
Ohakune	125	23rd	1961	Highest
Waiouru	86	23rd	1950	Highest
Wanganui	125	23rd	1937	Highest
Reefton	84	18th	1960	4th-highest

- **Temperature**

Many extreme temperature records were broken in January 2011 (see tables overleaf).

In particular, extremely high minimum temperatures were observed on the 18<sup>th</sup>/19<sup>th</sup>, and maximum temperatures on the 17<sup>th</sup>/18<sup>th</sup>, when tropical air was delivered to the country via the ex-tropical cyclones Vania and Zelia. The lowest temperature recorded in January 2011 was -0.1°C, recorded at Masterton on the 14<sup>th</sup>. The highest temperature recorded in January 2011 was 35.8°C, recorded at Timaru on the 16<sup>th</sup>.

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**Record or near-record daily minimum air temperatures were recorded at:**

Location	Extreme minimum temperature (°C)	Date of extreme temperature	Year records began	Comments
Mahia	8.9	14th	1990	Equal 4th-lowest
Kaitaia	21.5	18th	1985	Highest
Kaikohe	20.9	18th	1973	Highest
Whangarei	21.5	18th	1967	3rd-highest
Whitianga	21.3	19th	1971	Highest
Tauranga	20.9	19th	1941	Equal 2nd-highest
Whakatane	20.4	7th	1975	Equal 4th-highest
Rotorua	20.0	19th	1972	Highest
Hamilton	20.2	19th	1940	Equal 2nd-highest
Masterton	20.8	7th	1943	2nd-highest
Martinborough	19.7	7th	1986	4th-highest
Ngawi	21.4	4th	1972	3rd-highest
Hicks Bay	20.4	19th	1972	3rd-highest
Gisborne	23.2	19th	1940	Highest
Hastings	22.9	19th	1972	Highest
Waipawa	19.5	19th	1945	3rd-highest
Wairoa	23.3	19th	1972	Highest
Stratford	17.7	7th	1972	4th-highest
Waiouru	16.1	18th	1972	Equal 4th-highest
Reefton	17.7	4th	1972	2nd-highest
Le Bons Bay	19.0	3rd	1984	3rd-highest
Lumsden	17.2	16th	1982	3rd-highest

**Record or near-record daily maximum air temperatures were recorded at:**

Location	Extreme maximum temperature (°C)	Date of extreme temperature	Year Records Began	Comments
Kumeu	19.3	22nd	1978	Equal 4th-lowest
Pukekohe	18.0	22nd	1969	2nd-lowest
Martinborough	15.0	23rd	1986	4th-lowest
Stratford	12.7	23rd	1972	Equal 2nd-lowest
Hawera	14.3	23rd	1977	Equal 2nd-lowest
Wanganui	14.9	23rd	1987	2nd-lowest
Warkworth	27.9	7th	1966	3rd-highest
Kumeu	28.0	7th	1978	3rd-highest
Paeroa	31.9	17th	1947	Highest
Port Taharoa	29.9	18th	1973	4th-highest
Dannevirke	31.5	18th	1951	Highest
Mahia	31.5	19th	1990	Equal highest
Paraparaumu	28.4	18th	1953	3rd-highest
Palmerston North	31.2	18th	1918	2nd-highest
Levin	31.4	18th	1895	Highest
Wellington	29.4	18th	1962	Highest
Hawera	30.7	18th	1977	Highest
Ohakune	29.5	17th	1962	2nd-highest
Wanganui	31.1	18th	1937	2nd-highest

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Le Bons Bay	30.5	16th	1984	2nd-highest
Timaru	35.8	16th	1885	3rd-highest

- **High winds**

The highest gust observed during January 2011 was 165 km/hr, recorded at Cape Turnagain (Hawkes Bay) on the 16<sup>th</sup>. Wind gusts on the 16<sup>th</sup> were the highest on record for January at Gore on the 15<sup>th</sup>, and at New Plymouth on the 24<sup>th</sup> (see table below).

On 15 January, a wind gust flipped one small plane on top of another at Queenstown Airport, causing extensive damage to both aircraft. Another plane had its tie-downs broken, but was not badly damaged.

On 30 January, high wind warnings were issued for high sided vehicles on SH8 from fairlie to Twizel, and SH80 from Pukaki to Mt Cook.

On 31 January, wind gusts of more than 100 km/hr lifted roofing iron, uprooted trees, demolished farm sheds, tore apart tunnel houses and felled power lines between Collingwood and Puramahoi. At Waitapu Gardens, a mini-tornado tore a 48 m plastic tunnel house off the pepper crop, flattened the corn crop, destroyed the beans, and ripped the tomato tunnel house in half. The back wall of Golden Bay Air's nearly-completed hangar at Puramahoi Aerodrome was blown out, and Farewell Spit Tours cancelled trips to the spit.

**Near-record high extreme wind gusts for January were recorded at:**

Location	Extreme wind gust speed (km/hr)	Date of extreme gust	Year records began	Comments
Kaikohe	69	23rd	1986	Equal 4th-highest
Whakatane	80	23rd	1974	3rd-highest
Pukekohe	67	18th	1986	3rd-highest
New Plymouth	119	24th	1972	Highest
Castlepoint	152	16th	1972	4th-highest
Hawera	89	18th	1986	2nd-highest
Gore	119	15th	1987	Highest

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