

National Climate Summary – September 2010: Wet and wild westerlies

- **Rainfall: Double normal rainfall in the southwest of North Island, the north and northwest of South Island, and around Invercargill. Many September rainfall records broken in these areas. Very wet in most other regions, but dry in south Canterbury and coastal Gisborne.**
- **Temperatures: Above average in the north and east of the North Island, and the eastern South Island. Well below average in the west and south of the South Island.**
- **Sunshine: Well below normal sunshine hours in western areas of both islands.**

September 2010 was characterised by extremely low pressures over New Zealand, bringing wild westerly winds. The effect of the stronger-than-normal westerly winds during September was very clear – rainfall was record high or well above average, and sunshine hours were well below average, in western areas of both islands. It was also much cooler than usual in the west and south of the South Island, but warmer than average in eastern areas; both are trademarks of enhanced westerly circulation.

September rainfall was more than double normal (at least 200 percent) in the southwest of the North Island, from Turangi to Taranaki to the Kapiti Coast, as well as the north and northwest of the South Island – including Nelson, Blenheim and Buller – and around Invercargill. Many locations in these areas experienced their wettest September on record. Most other regions around the country also received above normal rainfall (between 120 and 150 percent of normal). The only exceptions were eastern Northland and coastal north Canterbury (which experienced near normal rainfall), and Gisborne and south Canterbury (which received less than 50 percent of usual September falls).

Extremely warm temperatures affected the country at both the start and end of the month – but an intense southwesterly event from the 17th until 24th brought snow to very low levels in the far south, and record low temperatures there. Overall, monthly mean temperatures were above average (between 0.5°C and 1.2°C above average) in eastern regions of both islands, as well as from Taranaki down to Wellington. In contrast, much of the west and south of the South Island experienced below average temperatures (1.2°C to 0.5°C below average). The New Zealand national average temperature was 10.9°C (0.5°C above the 1971–2000 September average).

Well below average sunshine totals (less than 75 percent of normal) were recorded in western areas of both islands, due to the stronger-than-normal westerly winds during September. In contrast, above normal sunshine hours were received in south Canterbury (between 110 and 125 percent of normal). In most other regions, September sunshine totals were closer to normal (ranging between 90 and 110 percent of normal).

Further Highlights:

- The highest temperature was 24.6°C, recorded at Kaikoura on the 6th (near record).
- The lowest temperature was -6.2°C, recorded at Lake Tekapo on the 22nd.
- The highest 1-day rainfall was 135.0 mm recorded at Milford Sound on the 5th.
- The highest wind gust was 204 km/hr, recorded at Cape Turnagain on the 23rd.
- Of the six main centres, Tauranga was the warmest, Dunedin the coolest, Christchurch the sunniest and driest, and Wellington the wettest.

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RAINFALL: DOUBLE NORMAL RAINFALL IN THE SOUTHWEST NORTH ISLAND, THE NORTH AND NORTHWEST SOUTH ISLAND, AND AROUND INVERCARGILL. MANY SEPTEMBER RECORDS BROKEN.

September rainfall was more than double normal (at least 200 percent) in the southwest of the North Island, from Turangi to Taranaki to the Kapiti Coast, as well as the north and northwest of the South Island – including Nelson, Blenheim and Buller – and around Invercargill. Many locations in these areas experienced their wettest September on record (see below). Most other regions around the country also received above normal rainfall (between 120 and 150 percent of normal). The only exceptions were eastern Northland and coastal north Canterbury (which experienced near normal rainfall), and Gisborne and south Canterbury (which received less than 50 percent of usual September falls).

Record or near-record September rainfall totals were recorded at:

Location	Rainfall total (mm)	Percentage of normal	Year records began	Comments
Whitianga	286	172	1961	4th-highest
Matamata	197	192	1951	3rd-highest
Te Puke	225	165	1973	2nd-highest
Whatawhata	291	198	1952	2nd-highest
Hamilton	181	168	1935	4th-highest
Te Kuiti	296	199	1950	Highest
Taumarunui	345	236	1913	Highest
Turangi	370	257	1968	Highest
Takapau Plains	170	188	1962	3rd-highest
Dannevirke	234	265	1951	2nd-highest
Paraparaumu	241	288	1945	Highest
Palmerston North	261	328	1928	Highest
Levin	189	207	1895	3rd-highest
Wallaceville	236	211	1924	2nd-highest
Stratford	338	197	1960	4th-highest
Hawera	212	230	1977	Highest
Ohakune	361	269	1961	Highest
Waiouru	280	285	1950	Highest
Wanganui	197	275	1890	Highest
Takaka	329	187	1976	2nd-highest
Westport	316	162	1944	4th-highest
Lake Rotoiti	349	248	1933	Highest
Hokitika	442	177	1963	3rd-highest
Reefton	352	198	1960	4th-highest
Greymouth	365	176	1947	3rd-highest
Blenheim	141	219	1927	2nd-highest
Lumsden	78	121	1982	3rd-highest
Alexandra	41	199	1983	3rd-highest
Invercargill	192	250	1939	Highest
Balclutha	93	193	1964	2nd-highest

TEMPERATURES: ABOVE AVERAGE IN THE NORTH AND EAST OF THE NORTH ISLAND, AND EASTERN SOUTH ISLAND. WELL BELOW AVERAGE FOR MUCH OF THE SOUTH AND WEST OF THE SOUTH ISLAND.

Extremely warm temperatures affected the country at both the start and end of the month – but an intense southwesterly event from the 17th until 24th brought snow to very low levels in the far south, and record low temperatures there. Monthly mean temperatures were above average overall (between 0.5°C and 1.2°C above average) in eastern regions of both islands, as well as from Taranaki down to Wellington. In contrast, much of the west and south of the South Island experienced below average temperatures (1.2°C to 0.5°C below average). Near average temperatures (within 0.5°C of average) were recorded around the Central Plateau, as well as in parts of Fiordland. The New Zealand national average temperature was 10.9°C (0.5°C above the 1971-2000 September average)¹.

Arthurs Pass recorded its coldest mean September maximum temperature since records began in 1973. In stark contrast, the windy nature of the month showed in the widespread elevation of monthly minimum temperatures. These were near-record or well above average (exceeding 1.2°C above average) at numerous locations in the North Island, as well as in the east of the South Island.

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

Location	Mean maximum air temperature (°C)	Departure from normal (°C)	Year records began	Comments
Kaikohe	16.8	1.4	1973	4th-highest
Whangarei	18.4	1.4	1967	2nd-highest
Leigh	17.9	1.7	1966	2nd-highest
Whangaparaoa	17.2	1.9	1982	2nd-highest
Kumeu	17.2	0.9	1978	2nd-highest
Motueka	17.6	2.0	1956	2nd-highest
Arthurs Pass	7.7	-3.1	1973	Lowest
Manapouri	10.8	-1.8	1963	2nd-lowest

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

Location	Mean minimum air temperature (°C)	Departure from normal (°C)	Year records began	Comments
Kaikohe	10.5	1.8	1973	Equal 2nd-highest
Dargaville	10.2	1.5	1943	Equal highest
Whangarei	10.5	1.4	1967	Equal 2nd-highest
Kumeu	9.3	1.1	1978	3rd-highest
Whenuapai	9.8	1.6	1945	2nd-highest
Whitianga	9.5	2.2	1962	Equal 3rd-highest
Paeroa	9.1	1.7	1947	Equal 2nd-highest
Tauranga	9.7	2.0	1913	Equal 3rd-highest
Te Puke	8.4	1.5	1973	Equal 4th-highest
Whakatane	8.4	2.0	1974	Equal 3rd-highest
Taupo	6.3	2.1	1949	Equal 2nd-highest
Hamilton (Ruakura)	8.7	2.1	1906	2nd-highest
Hamilton (Airport)	8.0	2.1	1946	Equal 3rd-highest
New Plymouth	9.3	1.4	1944	Equal 4th-highest

¹ Interim monthly value.

Dannevirke	8.1	2.0	1951	Equal 3rd-highest
Martinborough	8.1	2.2	1986	Equal 2nd-highest
Gisborne	9.5	2.7	1905	Equal highest
Hastings	7.9	1.7	1965	4th-highest
Paraparaumu	8.9	1.6	1953	Equal 3rd-highest
Palmerston North	8.2	1.4	1928	3rd-highest
Wallaceville	7.6	1.6	1939	Equal 4th-highest
Hawera	8.3	1.7	1977	Equal 3rd-highest
Ohakune	5.1	1.5	1962	Equal 3rd-highest
Wanganui	9.3	1.3	1937	3rd-highest
Blenheim	7.6	2.0	1941	Highest
Culverden	6.3	3.4	1928	Highest
Waipara West	6.7	2.5	1973	Equal 2nd-highest
Darfield	5.7	1.8	1939	2nd-highest
Timaru	5.3	1.6	1885	4th-highest
Alexandra	3.5	1.5	1983	4th-highest

SUNSHINE: WELL BELOW NORMAL IN WESTERN AREAS OF BOTH ISLANDS.

Well below normal sunshine totals (less than 75 percent of September normal) were experienced in western areas of both islands, due to the stronger-than-normal westerly winds during the month. It was the cloudiest September on record for Turangi, in records that began in 1976. In contrast, above normal sunshine hours were received in south Canterbury (between 110 and 125 percent of normal). But in most other regions, September sunshine totals were closer to normal (ranging between 90 and 110 percent of normal).

Record or near-record September sunshine hours were recorded at:

Location	Sunshine (hours)	Percentage Of normal	Year records began	Comments
Turangi	92	68	1976	Lowest
New Plymouth	121	76	1972	2nd-lowest
Hokitika	100	70	1964	3rd-lowest
Mt Cook	65	53	1930	2nd-lowest

SEPTEMBER CLIMATE IN THE SIX MAIN CENTRES

Of the six main centres, Tauranga was the warmest, Dunedin the coolest, Christchurch the sunniest and driest, and Wellington the wettest.

September 2010 main centre climate statistics:

Location	Mean temp. (°C)	Departure from normal (°C)		Rainfall (mm)	% of normal		Sunshine (hours)	% of normal	
Auckland ^a	13.0	+0.1	Near average	117	109%	Near normal	139	93%	Near normal
Tauranga ^b	13.4	+1.4	3 rd highest	140	135%	Above normal	161	98%	Near normal
Hamilton ^c	12.0	+0.9	Above average	181	168%	4 th highest	121 ^f	83%	Below normal
Wellington ^d	11.3	+0.7	Above average	209	208%	Well above normal	167	107%	Near normal
Christchurch ^e	10.1	+0.8	Above average	42	92%	Near normal	176	107%	Near normal
Dunedin ^f	9.5	+0.2	Average	51*	96%	Near normal	136	105%	Near normal

^a Mangere ^b Tauranga Airport ^c Hamilton Airport ^d Kelburn ^e Christchurch Airport ^f Musselburgh (*data on last day of month yet to be confirmed) ^g Ruakura

HIGHLIGHTS AND EXTREME EVENTS

• Heavy rain and slips

On 5 September, the old Waimakariri River Bridge on Main North Road, north of Christchurch, was closed because of rising water. On the West Coast, heavy rain caused widespread flooding, with extreme care needed on SH6, between Fox Glacier and Hokitika.

On 6 September, heavy rain overnight caused flooding and some road closures in Hutt Valley. The rain also caused slips and surface flooding on SH56 and SH57 between Levin and Palmerston North, and at the SH1/Kimberley Road junction. Many rural roads in Manawatu, Wanganui and Horowhenua were closed by slips and flooding. In Otaki, the Waitohu Stream breached its banks, flooding one home, and threatening others. The Levin Water Treatment Plant had to be closed. Several small slips closed the Manawatu Gorge near Palmerston North, and a detour via Saddle Road was partially blocked. In northern Wairarapa, SH2 between Eketahuna and Pahiatua was closed by extensive flooding, with no alternative routes available as local roads were also flooded. Mangamaire School between Eketahuna and Pahiatua, Ruahine School and Tararua College in Pahiatua, and Kuranui College in Greytown were closed. Farmers in Shannon lost lambs in the flooding. The Ruamahunga River Bridge at Bidwell's Crossing in Martinborough was closed. Slips and floods closed SH3 south of Wanganui and SH43 in the King Country between Whangamomona and the Moki Tunnel. Falling trees blocked both lanes of SH1 near Bulls, and Calico Line, the link road from SH1 to Marton, 13 km north of Bulls, was closed.

On 7 September, heavy rain cut a swath through the Matahiia cemetery near Ruatoria, flushing four bodies into the Mata River.

In Carterton, raw sewage bubbled up through gully traps on 11 September after heavy rain over the preceding days caused the sewage treatment plant to fail. After heavy overnight rain, a slip in Wadestown closed the Johnsonville railway line for a few hours on 13 September.

On 14 September, a large slip covered SH2, closing the Waioeka Gorge overnight. The road was cleared the following morning. On 16 September, a mini-lake formed on Shirriffs Road in Palmerston North.

On 18 September, several slips came down and trees fell over on SH43 from Stratford to Taumarunui

causing the closure of the road to non-residents. On 19 September, SH41 at Waihi Hill, between Turangi and Kuratau, SH4 between Whanganui and Raetahi, SH3 at Ratana south of Whanganui, and SH1 between Taihape and Mangaweka, were closed by slips. SH56 at Tiakitahuna in Taranaki, and SH1 north of Bulls, were closed by flooding, with detours in place. The SH1 underpass at Calico Line filled up with water, and two cars had to be towed out. In Wanganui, residents were advised to leave, after a slip from Bastia Hill threatened their homes. At Turakina Beach, where natural topography directs the run-off into the village, an old drain running around the back of the village was re-opened to help ease the flood waters. Three properties were evacuated. Houses in Marton were also evacuated because of flooding.

On 20 September SH43 between Stratford and Taumurunui remained closed by several slips. In Scotts Ferry, at the Rangitikei River mouth near Bulls, entire paddocks and roads were under water and four houses flooded. On 21 September, SH54, from Hunterville to Cheltenham, was re-opened to a single lane after slips were partly cleared.

On 22 September, a 25 m landslip closed SH2 between Woodville and Dannevirke. SH43 from Stratford to Taumarunui remained closed. Slips on the Manawtu Gorge and debris on SH4 between Wanganui and Raetihi also caused traffic problems. Surface flooding affected SH1, south of Levin. The only road to Taumarunui Hospital was blocked for more than an hour as a slip covered the road. On 23 September, large slips reduced SH1 to one lane between Taihape and Utiku, and at Irirangi south of Waiouru.

On 25 September, a large slip blocked the railway line through the Manawatu Gorge, derailing a freight train.

On 30 September, SH6 was flooded north of Pelorus Bridge, and motorists advised to use SH63. Many minor roads in the Nelson area were closed after continuous heavy rain. In Cable Bay, northeast of Nelson, a farmer could only watch as floodwaters rose and swept away a flock of ewes and lambs. They had been shifted to higher ground but had returned. In the Wellington region, Grays Road, the Paekakariki Hill Road and Takarau Gorge Road in Ohariu were closed by slips and flooding, and surface flooding was also reported on SH1 near Lindale. A slip on SH1 south of Tawa reduced the road to one lane, and slips also caused delays on SH2 near Petone and Normandale, and SH58 near Whitby in Porirua. A slip near Whenua Tapu Cemetery, between Plimmerton and Pukerua Bay, blocked a southbound lane of SH1. A passenger train heading north to Paraparaumu hit a slip north of Plimmerton, causing it to derail and pushing it sideways. A south-bound train then collided with the cab of the derailed train. Both trains were badly damaged, but there were no serious injuries. Another slip closed the Johnsonville line, and tracks subsided near Muri, in Pukerua Bay, with a 15 m slip causing the earth to fall away from beneath the tracks. The Karori Tunnel was also closed for an hour by a slip. In Melrose, Wellington, a retaining wall collapsed on to a house, forcing the family out of the building, and properties in Khandallah were undermined by a slip. In the Aro Valley, a slip brought down a power pole when a section of footpath fell away. Many homes on the Kapiti Coast were flooded.

The highest 1-day rainfall recorded in September 2010 was 135.0 mm recorded at Milford Sound on the 5th (not a record).

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
Te Puke	66	9th	1973	3rd-highest
Paraparaumu	72	30th	1951	Highest
Levin	51	30th	1949	Equal highest
Wallaceville	56	30th	1939	3rd-highest
Hawera	37	30th	1977	Equal 4th-highest
Waiouru	37	18th	1950	4th-highest
Wanganui	39	6th	1937	Highest
Takaka	118	29th	1976	2nd-highest
Blenheim	47	29th	1927	Equal 4th-highest

Alexandra	16	6th	1983	2nd-highest
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- **Temperature**

The highest temperature recorded in September 2010 was 24.6°C, recorded at Kaikoura on the 6th (a near-record for September there). Multiple North Island locations recorded near-record high maximum temperatures during the period 26-29 September, associated with strong northwesterly winds. During the 29th and 30th, the same strong northwesterly winds produced near-record or record high morning temperatures in many locations. In contrast, extremely heavy snowfall on 17th/18th September in the far south of the country caused record cold September minimum temperatures in several locations. The lowest temperature recorded in September 2010 was -6.2°C, recorded at Lake Tekapo on the 22nd (not a record there).

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

Location	Extreme maximum temperature (°C)	Date of extreme temperature	Year Records began	Comments
Kaikohe	21.2	27th	1973	3rd-highest
Dargaville	22.3	29th	1943	4th-highest
Leigh	20.4	26th	1966	4th-highest
Whangaparaoa	20.8	27th	1982	3rd-highest
Kumeu	21.4	28th	1978	2nd-highest
Hamilton	22.3	29th	1906	2nd-highest
Takapau Plains	22.1	29th	1962	Highest
Hicks Bay	21.3	27th	1969	4th-highest
Hawera	19.3	29th	1977	2nd-highest
Wanganui	21.2	29th	1987	3rd-highest
Motueka	23.5	26th	1956	Highest
Kaikoura	24.6	6th	1963	3rd-highest
Lake Rotoiti	4.3	20th	1972	3rd-lowest
Reefton	8.9	21st	1972	4th-lowest
Puysegur Point	5.5	18th	1978	Lowest
Tara Hills	3.2	17th	1949	Equal 3rd-lowest
Manapouri	4.7	17th	1973	Equal 4th-lowest
Gore	2.5	18th	1972	Lowest
Invercargill	4.1	18th	1948	Lowest
Tiwai Point	5.3	18th	1972	Lowest
Balclutha	4.5	18th	1972	Lowest
Nugget Point	2.5	18th	1972	Equal lowest

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

Location	Extreme minimum temperature (°C)	Date of extreme temperature	Year records began	Comments
Le Bons Bay	1.0	22nd	1984	Equal 3rd-lowest
Oamaru	-3.9	19th	1908	4th-lowest
Nugget Point	-0.8	18th	1970	Equal lowest
Whangaparaoa	14.7	30th	1982	Equal 2nd-highest
New Plymouth	14.5	30th	1944	Equal highest
Masterton	14.7	30th	1943	Equal highest
Ngawi	15.0	28th	1972	Equal 4th-highest

Napier	15.5	30th	1940	Equal 2nd-highest
Paraparaumu	13.7	30th	1972	Equal 4th-highest
Levin	13.5	30th	1950	Equal 4th-highest
Wellington	14.1	30th	1972	Equal 2nd-highest
Wallaceville	13.8	30th	1972	Equal 3rd-highest
Hawera	13.8	30th	1977	Equal highest
Ohakune	11.5	30th	1972	Equal highest
Waiouru	10.0	30th	1972	3rd-highest
Wanganui	15.6	30th	1972	2nd-highest
Takaka	12.8	30th	1978	Equal 4th-highest
Farewell Spit	13.6	30th	1972	Equal 3rd-highest
Motueka	12.8	30th	1972	2nd-highest
Nelson	13.4	30th	1943	Equal 3rd-highest
Hanmer Forest	13.4	29th	1972	Equal 2nd-highest
Kaikoura	13.0	29th	1972	Equal 2nd-highest
Waipara West	15.1	29th	1973	Equal 3rd-highest
Darfield	14.8	29th	1954	2nd-highest
Le Bons Bay	13.6	29th	1984	Equal highest

- **High winds**

On 5 September, an ambulance with three people inside was blown over south of Featherston, and a truck was blown over on nearby Western Lake Road. In Dunedin, high winds brought down trees and power lines, closing some roads, and trapping a dozen cars on Portobello Road between fallen trees, for about two hours. Several flights were cancelled and many others were delayed by extremely strong crosswinds at Dunedin International Airport. Power was out in North Dunedin, Outram, parts of Mosgiel and Highcliff Road on the Otago peninsula after winds toppled powerlines. In the Leith Valley, a wind gust broke a large wattle tree off at ground level, blowing it on to a house, and destroying half the roof. Water was cut to about 300 houses in Opoho when a tree fell on a water main about 10 pm. In Oturehua, high winds shattered house windows, and blew down power lines and massive, 125-year old, pine trees. About 500 homes in Becks, Etrick and Millers Flat were without power for several hours after trees were blown down on lines and one power pole was broken. Ten road signs along a stretch of SH85 between Omakau and Wedderburn were either snapped or damaged by the wind. Trees in plantations near Oamaru were blown over or damaged, and will be felled early for safety reasons. In Fiordland, wind caused a 6-metre boat to break free from its moorings and drift into Thompson Sound. The Te Anau-Milford highway was closed from the lower Hollyford section.

On 6 September, a bus was blown off the road near Dannevirke.

On 14 September, a tornado swept across two farms near Oaonui (Taranaki), destroying fences and a hay barn on one property, and downing trees and ripping the roof of the cowshed at the other. Debris was scattered up to 500 m.

On 17 September, a violent overnight storm lifted roofs, sent trampolines flying, and brought down trees and power lines, causing power outages to as many as 30,000 people from Dome Valley near Warkworth to Huntly, including, Remuera, Mangere, and large parts of west Auckland. The Coromandel Peninsula, Hauraki, Bay of Plenty, Waikato, Taranaki, Whanganui, Rangitikei and Wairarapa were also hit by power cuts. Farmers were forced to miss milkings because of the outage and Powerco supplied generators in some cases. SH1 at Rangiriri was reduced to one lane by a fallen tree, and large trees also fell on to the Waikato Expressway, 50 km south of Auckland, hitting one vehicle. The west-bound lanes on Auckland's Northwestern Motorway, were closed after an overhead sign fell between Newton Road and St Lukes. At Clarks Beach on the southern Manukau Harbour, a home was destroyed by strong winds, and two 30 m tall macrocarpa trees were up-rooted into the tide. At Eureka, in the Waikato, 10 macrocarpa trees, up to 20 m tall, were felled by a tornado. Near Tauranga, the barrier arm at Te Maunga rail crossing was snapped in half by the storm. In Te Puna, heavy wind collapsed a large section of the roof of a large storage shed. In Te Puke, a large artificial shelter, which covered three rows of a kiwifruit orchard, was destroyed and lay strewn across the orchard, with 10 heavy wooden poles uprooted from the ground. In Whakamarama, four

avocado trees were brought down by the wind, but damage to orchards in the Western Bay of Plenty was patchy rather than widespread. Further south, Mt Hutt ski field was closed as high winds meant the lifts could not be used.

On 18 September, a flight from Sydney to Rotorua was redirected to Auckland when cross-winds prevented a safe landing in Rotorua. In Mokoia, south-east of Hawera, one farmer lost several heifers after power lines fell and left all of his fences electrified. In South Taranaki, stock were electrocuted on two other farms, with one farm losing five animals, and the other losing one. In Midhurst a roof was blown off a house.

On 19 September, a semi-submerged yacht was found washed up on rocks near the northern end of Auckland Harbour Bridge. Turoa ski field closed after high wind, snowstorms and damage to the chairlift. In Wanaka, blustery winds prevented Swedish skiing star Jon Olsson's attempt at a world-first big air trick at Treble Cone ski field.

On 20 September, a 6.5-tonne trailer was blown over on SH2, about 17 kilometres north of Masterton. The winds also toppled trees and downed power lines.

On 21 September, high winds in Rotorua blew down power lines and trees, including one tree which blocked SH30 at Lake Rotoma. In Kaikoura, pupils arrived at Hapuku School to find a 30 m high, 40-year-old eucalyptus tree had fallen down in the playground.

Severe winds on 22 September caused power cuts in west Auckland, Waiheke Island, North Shore, Wellsford, western Bay of Plenty, Taranaki, Manawatu and Wairarapa. A twister brought down power lines on SH45 near Oakura southwest of New Plymouth, with property and trees also being damaged. In Auckland, a piece of roofing iron was blown off the Lion Nathan Breweries building and on to train tracks below where it got stuck under the wheel of a train. A small part of the roof was also blown off the domestic terminal at Auckland International Airport.

On 23 September high winds made driving hazardous on SH8 from Raes Junction to Milton, SH1 from Waiholo to Gore, and SH90 from Raes Junction to the SH1 intersection. Parts of Dunedin also lost power after gales battered the city. Further north, more trees and powerlines were brought down overnight, cutting power in Manawatu, Taranaki, Rangitikei and western Bay of Plenty. In Wanganui, a fallen tree had to be cleared from SH3 at Kaitoke, and property damage was reported in the city.

On 24 September, SH73 from Arthurs Pass to Springfield was closed because of strong winds. Other roads with wind warnings in place were SH1 from Oamaru to Ashburton, SH83 from Kurow to Oamarama, and SH79 from Oamarama to Geraldine.

On 30 September, high winds forced the Department of Conservation to postpone an attempt to locate and free a humpback whale tangled in rope off the Far North coast.

The highest wind gust was 204 km/hr, recorded at Cape Turnagain on the 23rd. Numerous locations broke wind records for September, between the 17th and 22nd, associated with the intense southwesterly event.

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

Location	Extreme wind gust speed (km/hr)	Date of extreme gust	Year records began	Comments
Cape Reinga	139	17th	1974	4th-highest
Kaikohe	95	17th	1986	2nd-highest
Whangarei	91	22nd	1973	Equal 3rd-highest
Whenuapai	100	17th	1972	2nd-highest
Tauranga	95	23rd	1973	3rd-highest
Rotorua	115	17th	1972	Highest
Auckland	120	17th	1971	2nd-highest
Pukekohe	98	17th	1986	Highest

Hamilton	82	18th	1978	Equal 4th-highest
Turangi	104	21st	1973	Highest
Levin	91	18th	1971	Equal 2nd-highest
Hawera	91	18th	1986	3rd-highest
Wanganui	87	22nd	1977	Equal 3rd-highest
Farewell Spit	104	20th	1973	Highest
Westport	104	23rd	1973	Highest
Blenheim	91	18th	1972	4th-highest
Tara Hills	89	5th	1985	4th-highest
Dunedin	117	5th	1972	2nd-highest

- **Snow and ice**

On 3 September, snow was reported in the Cashmere Hills suburbs of Christchurch in the early afternoon. Chains were essential on Arthur's Pass, and Otira was closed to towing vehicles.

On 15 September, the Milford Road was closed by snow between Milford Village and the Hollyford turnoff.

On 17 September, snow closed the Lindis Pass, Haast Pass, and SH73 from Arthurs Pass to Otira to towing vehicles. SH94 to Milford Sound remained closed.

On 18 September heavy snow caused the roof to collapse on Stadium Southland in Invercargill. The stadium was demolished. After a paint shop roof also collapsed, the central Invercargill street was cordoned off because of concerns the building's windows would explode on to the street. Several other commercial properties all had sagging roofs and were closed. In Tweed Street an 18 year-old, 1000 m2 glasshouse was destroyed by the snow. Fonterra was unable to collect milk from more than 400 dairy farmers in Edendale, Winton, and Eastern Southland because of the dangerous roads, and some farmers were asked to dump milk. Thousands of lambs were lost, with those born during the weekend storm having little chance of survival. Some farmers reported lambing losses of up to 80 per cent. Invercargill airport was closed by snow all day, and in very poor visibility, an air bridge clipped the wing of an Air New Zealand plane, which had stopped slightly short of its normal position. Snow also closed SH93 between Mataura and Clinton, SH94 from Te Anau to Milford Sound, and the Southern Scenic Route between Owaka and Niagara.

On 19 September, snow closed SH93 from Clinton to Mataura, SH87 between Outram and Middlemarch, and the Chaslands Highway through The Catlins. SH94 from Te Anau to Milford Sound remained closed.

In 20 September, SH7, the Lewis Pass, and SH73, Arthur's Pass To Otira, were closed to towing vehicles. Road warnings remained in place on SH1 between Lorneville and Clifden, Invercargill and Bluff, and Edendale and Invercargill, on SH6 from Winton to Invercargill, and from Athol to Lowther, SH94 from Gore to Mandeville, and SH98 from Lorneville to Dacre. Some schools in Tokanui and Invercargill remained closed while structural checks were made.

On 22 September, snow closed the Rimutaka Road between Wellington and Wairarapa for part of the morning. Drivers had lengthy delays as cars were allowed to cross only in escorted conveyances one direction at a time. Pembroke Road on Mt Taranaki was closed by snow about 4 km from the Mountain House. Snow also closed SH97 between Mossburn and Lowther, SH6 between Kingston and Five Rivers, and SH93 between Mataura and Clinton. SH94 between Te Anau and Milford Sound was closed to towing vehicles. The Remarkables ski field was also closed.

On 23 September, snow closed SH7 from the Hanmer turnoff to Springs Junction, SH87 from Outram to Kyeburn, SH1 from Waitati to Dunedin, and SH93 from Clinton to Mataura. SH85 from Palmerston to Kyeburn was closed by ice. Snow created an avalanche hazard on SH94 from Te Anau to Milford Sound, closing the road for two days. Snow closed SH73 from Arthurs Pass to Otira to towing vehicles, and chains were essential for all vehicles.

- **Lightning and hail**

On 3 September, an electrical storm struck Wellington, with thunder, lightning, and hail. The hail was still banked up in places the following morning.

On 17 September, there were heavy hail storms on the West Coast, with warnings in place for drivers on SH6 between Franz Josef and Fox Glacier. In Wellington, an electrical storm struck about mid-day, causing power outages to thousands of lower North Island residents, and setting alight a shed in Lower Hutt and trees in Wairarapa.

On 19 September, lightning struck cottages at Nga Tawa school, Marton. In the Waikato, lightning strikes damaged transformers and related equipment, causing power cuts.

On 22 September, staff arrived at a Bell Block Orchid nursery to find heavy hail piled up to a metre deep.

- **Fog**

On 28 September, early morning flights out of Hamilton Airport on small aircraft were cancelled because of fog, but larger aircraft were not affected.

On 29 September, fog and low cloud disrupted New Plymouth Airport, with flights diverted or cancelled for much of the day.

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