

National Climate Summary – July 2011: Lows anchored south of country; freezing polar blast

- **Wind:** Westerly winds south of Christchurch extremely strong and frequent.
- **Temperature:** Monthly mean temperatures near average in many regions, but temperatures on some days during the month anything but typical.
- **Precipitation:** Well above normal for the west and south of the South Island, as well as for Wanganui to Waikouaiti. Very dry in the eastern South Island. Heavy snowfall event on 25 July.
- **Sunshine:** An extremely sunny July for the east of the South Island, as well as coastal Wairarapa. Cloudy for the west and south of the South Island.

Low pressures were anchored south of New Zealand and the Chatham Islands during July, producing an extremely windy and stormy month overall. Mean sea level pressures over the southern half of the South Island were unusually low for the month as a whole, and the monthly “westerly wind” index for Christchurch southwards was the second-strongest for July, since records began in 1941.

The month of July started out unusually warm in eastern areas of both islands, but a polar blast during 24-26 July delivered a bitterly cold air mass over the country – so that mean temperatures for July were near average, overall, for many regions of the country. Extremely cold air affected Canterbury, the Kaikoura coast, Nelson, Wellington, Wairarapa, Manawatu, Hawkes Bay and Taranaki during 25-26 July, and snowfall was heavy and to low levels over Canterbury, the Kaikoura Ranges (both Inland and Seaward), the Richmond Ranges, Tararua and Rimutaka Ranges, the Central Plateau, and around Mt Egmont. Brief dustings of snow were also reported in the ranges of Motueka and Northland on the 25th. The average temperature in July 2011 was 8.0°C (0.1°C above the 1971–2000 June average) using NIWA’s seven-station temperature series which begins in 1909.

The frequent westerly winds during July resulted in a very wet month for western areas of both islands. July rainfall totals were well above normal (exceeding 150 percent of July normal) across the south and west of the South Island, as well as for Wanganui to Waikouaiti, reflecting the stormy, southwesterly nature of the month. It was the wettest July on record around Invercargill, with more than 200 percent (double normal) July rainfall there. Two localised areas which were also very wet were the Firth of Thames, and Tolaga Bay. In sharp contrast, the entire eastern South Island was extremely dry (with less than 50 percent of July normal rainfall). Below normal rainfall (between 50 and 79 percent of July normal) was also experienced around Wellington, the Bay of Plenty, and eastern parts of Northland. Elsewhere, July rainfall was close to normal.

Sunshine totals were well above normal (exceeding 125 percent of July normal) for the entire east coast of the South Island, as well as coastal Wairarapa. It was the sunniest July on record at Cheviot. In contrast, it was very cloudy for the southwest of the South Island (Westland, Fiordland, Southland and central Otago). This contrast in sunshine hours across the Southern Alps reflects the enhanced westerly winds experienced during the month. It was also rather sunny for Nelson, Hawkes Bay, and much of Northland and Auckland (with totals between 110 and 125 percent of July normal). Elsewhere, July sunshine hours were close to normal.

Further Highlights:

- The highest temperature recorded was 19.1°C at Hastings on 11 July.
- The lowest temperature recorded was -10.2°C at Manapouri on 26 July (a new July and all-time record there).
- The highest 1-day rainfall experienced was 128 mm recorded at Arthurs Pass on 10 July.
- The highest gust was 189 km/hr observed at Cape Turnagain on 12 July.
- Of the six main centres in July 2011, Auckland was the warmest, Christchurch the coldest, Tauranga, Auckland and Christchurch jointly the sunniest, Hamilton the wettest and Dunedin the driest.

For further information, please contact:

**Ms Georgina Griffiths – Climate Scientist– NIWA National Climate Centre, Auckland,
Tel. (09) 375 4506 (office) or (027) 293 6545 (mobile)**

TEMPERATURES: NEAR AVERAGE IN MANY REGIONS – ALTHOUGH TEMPERATURES ON SOME DAYS DURING THE MONTH ANYTHING BUT TYPICAL.

The average temperature in July 2011 was 8.0°C (0.1°C above the 1971–2000 July average) using NIWA's seven-station temperature series which begins in 1909)¹. Monthly mean temperatures for July as a whole were close to average (within 0.5°C of July average) for many regions of the country – although temperatures during the month were anything but typical (see below). Regions where monthly mean temperatures were below average (between -1.2°C and -0.5°C below July average) included the Central Plateau, the Buller and Gray Districts, and north Otago. Areas which experienced above average monthly mean temperatures were located in the north and east of the North Island (parts of Northland and Auckland, as well as the Bay of Plenty, Gisborne, and southern Hawkes Bay), as well as the Lakes District. There were no records set for July with regards monthly mean temperatures.

The month of July started out unusually warm in eastern areas of both islands, but a polar blast during 24-26 July delivered a bitterly cold air mass over the country. Extremely cold air affected Canterbury, the Kaikoura coast, Nelson, Wellington, Wairarapa, Manawatu, Hawkes Bay and Taranaki during 25-26 July, with many July and all-time temperature records broken (see table below and overleaf) on these 2 days. Maximum temperatures on the afternoon of 25 July and minimum temperatures on the morning of 26 July were extremely low at many climate stations between Canterbury and the Hawkes Bay (see tables below and overleaf), as well as for the central North Island, Manawatu, Central Plateau, Taranaki and even parts of Auckland and Northland. Snowfall was heavy and to very low levels over Canterbury, the Kaikoura Ranges (both Inland and Seaward), the Richmond Ranges, Tararua and Rimutaka Ranges, the Central Plateau, and around Mt Egmont. Brief dustings of snow were also reported in the ranges of Motueka and Northland on the 25th.

The highest temperature recorded in July 2011 was 19.1°C at Hastings on 11 July (not a record), while the lowest temperature recorded was -10.2°C at Manapouri on 26 July (a new July and all-time record low minimum air temperature there, since records began in 1963). All-time low minimum temperature records were also set at Leigh, Whangaparaoa, New Plymouth, and Le Bons Bay (Banks Peninsula) during this polar blast.

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

Location	Extreme minimum temperature (°C)	Date of extreme temperature	Year records began	July ranking [An asterisk (*) indicates an all-time (any-month) record low rank]
Kaikohe	13.3	22nd	1973	4th-highest
Cheviot	9.5	29th	1982	2nd-highest
Kaitia	1.8	26th	1985	Equal 4th-lowest
Kerikeri	0.4	26th	1981	Equal lowest
Leigh	2.7	26th	1966	Lowest (*)
Whangaparaoa	3.4	26th	1982	Lowest (*)
Port Taharoa	0.9	26th	1973	2nd-lowest
New Plymouth	-2.6	26th	1944	Lowest (*)
Takapau Plains	-3.7	19th	1962	Equal 3rd-lowest
Ngawi	1.6	25th	1972	2nd-lowest
Westport	-1.5	26th	1937	Lowest
Greymouth	-2.3	26th	1947	2nd-lowest
Le Bons Bay (Banks Peninsula)	-1.2	25th	1984	Lowest (*)
Timaru	-7.8	26th	1906	2nd-lowest
Manapouri	-10.2	26th	1963	Lowest (*)
Queenstown	-8.9	26th	1871	2nd-lowest

¹ Interim monthly value.

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

Location	Extreme maximum temperature (°C)	Date of extreme temperature	Year Records Began	July ranking [An asterisk (*) indicates an all-time (any-month) record low rank]
Port Taharoa	18.5	23rd	1973	2nd-highest
Levin	17.9	23rd	1895	4th-highest
Kaitaia	11.2	25th	1971	Equal 4th-lowest
Warkworth	8.8	25th	1966	Lowest
Whangaparaoa	10.0	25th	1982	Equal 3rd-lowest
Port Taharoa	9.9	25th	1974	2nd-lowest
New Plymouth	6.7	25th	1944	2nd-lowest
Masterton	4.6	25th	1943	2nd-lowest
Takapau Plains	4.6	25th	1972	3rd-lowest
Castlepoint	5.8	25th	1972	Lowest (*)
Martinborough	5.6	25th	1986	2nd-lowest
Ngawi	8.0	24th	1972	Equal 2nd-lowest
Napier	7.4	25th	1940	3rd-lowest
Hastings	7.7	25th	1972	4th-lowest
Waipawa	6.1	25th	1945	4th-lowest
Wairoa	7.4	25th	1972	Lowest
Levin	6.9	25th	1950	Equal 3rd-lowest
Wallaceville	4.7	25th	1972	2nd-lowest
Stratford	4.8	25th	1972	2nd-lowest
Hawera	7.1	25th	1977	Equal lowest
Ohakune	2.2	25th	1972	3rd-lowest
Waiouru	-0.4	25th	1972	Lowest
Wanganui	8.2	25th	1987	2nd-lowest
Cape Campbell	6.7	25th	1972	Equal 3rd-lowest
Hanmer Forest	0.6	25th	1972	Lowest
Arthurs Pass	-0.3	24th	1973	4th-lowest
Cheviot	4.2	25th	1982	2nd-lowest
Le Bons Bay	4.3	25th	1984	Equal 4th-lowest
Manapouri	0.9	24th	1973	3rd-lowest
Lumsden	1.0	24th	1982	Equal 4th-lowest
Nugget Point	3.9	14th	1972	4th-lowest

PRECIPITATION: WELL ABOVE NORMAL FOR THE WEST AND SOUTH OF THE SOUTH ISLAND, AS WELL AS WANGANUI AND THE CENTRAL PLATEAU. VERY DRY FOR THE EASTERN SOUTH ISLAND. HEAVY SNOWFALL EVENT ON THE 25TH.

July rainfall totals were well above normal (exceeding 150 percent of July normal) across the south and west of the South Island, as well as for Wanganui to Waiouru, reflecting the stormy, frequent southwest to westerly winds during the month. It was the wettest July on record at Invercargill and Tiwai Point, with more than 200 percent (double normal) July rainfall there. Two localised areas which also recorded above normal rainfall (between 120 and 149 percent of July normal) were the Firth of Thames, and Tolaga Bay.

In sharp contrast, the entire eastern South Island was extremely dry (with less than 50 percent of July normal rainfall) between Dunedin and Kaikoura. Below normal rainfall (between 50 and 79 percent of July normal) was also experienced around Wellington, the Bay of Plenty, and eastern parts of Northland. Elsewhere, July rainfall was close to normal (ranging between 80 and 119 percent of July normal).

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

Location	Rainfall total (mm)	Percentage of normal	Year records began	Comments
Wanganui	175	198	1987	2nd-highest
Manapouri	158	186	1961	2nd-highest
Invercargill	183	232	1939	Highest
Tiwai Point	243	273	1970	Highest
Dunedin	20	30	1918	4th-lowest

SUNSHINE: AN EXTREMELY SUNNY JULY FOR THE EAST OF THE SOUTH ISLAND, AS WELL AS COASTAL WAIRARAPA. CLOUDY FOR THE WEST AND SOUTH OF THE SOUTH ISLAND.

Sunshine totals for July 2011 were well above normal (exceeding 125 percent of July normal) for the entire east coast of the South Island, as well as coastal Wairarapa. It was the sunniest July on record at Cheviot. In contrast, it was very cloudy for the southwest of the South Island (Westland, Fiordland, Southland and central Otago), with below normal totals (between 75 and 90 percent of July normal). This contrast in sunshine hours across the Southern Alps reflects the enhanced westerly winds experienced during the month. It was also rather sunny for Nelson, Hawkes Bay, and much of Northland and Auckland (with totals between 110 and 125 percent of July normal). Elsewhere, July sunshine hours were close to normal (with totals ranging between 90 and 110 percent of normal).

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

Location	Sunshine (hours)	Percentage Of normal	Year records began	Comments
Waipawa	162	129	1945	4th-highest
Cheviot	170	160	1983	Highest
Dunedin	151	149	1947	2nd-highest
Balclutha	138	144	1964	3rd-highest

JULY CLIMATE IN THE SIX MAIN CENTRES

Of the six main centres in July 2011, Auckland was the warmest, Christchurch the coldest, Tauranga, Auckland and Christchurch jointly the sunniest, Hamilton the wettest and Dunedin the driest. Notably, Dunedin was unusually dry and sunny for July, with the monthly rainfall being the 4th lowest on record for July, and the sunshine hours being the 2nd highest observed in July.

July 2011 main centre climate statistics:

Location	Mean temp. (°C)	Departure from normal (°C)		Rainfall (mm)	% of normal		Sunshine (hours)	% of normal	
Auckland ^a	11.6	+0.7	Above average	106	76%	Below normal	153	117%	Above normal
Tauranga ^b	11.2	+1.2	Well above average	94	73%	Below normal	153	101%	Near normal
Hamilton ^c	9.3	+0.8	Above average	169	123%	Above normal	139 ^g	115%	Above normal
Wellington ^d	8.9	+0.1	Near average	95	69%	Below normal	116	99%	Near normal
Christchurch ^e	5.7	-0.1	Near average	29	41%	Well below normal	153	124%	Above normal
Dunedin ^f	6.7	+0.1	Near average	20	30%	4 th lowest for July	151	149%	2 nd highest for July

^a Mangere ^b Tauranga Airport ^c Hamilton Airport ^d Kelburn ^e Christchurch Airport ^f Musselburgh ^g Ruakura

HIGHLIGHTS AND EXTREME EVENTS

- **Rain and slips**

The highest 1-day rainfall experienced in July 2011 was 128 mm recorded at Arthurs Pass on 10 July.

On 5 July, heavy rain in Gisborne caused surface flooding, and overloaded the stormwater and sewerage systems. Gisborne Girls High School was closed because the toilet drains were blocked. A large slip blocked Waingake Road, about 16 km up the valley, and many other roads were closed by flooding, including Kaiti Beach Road where cars could not get in or out of the settlement.

On 6 July, heavy rain and strong winds in the Wanganui area damaged the Marangai sub-station, cutting power to the central city, the airport, Kaitoke, Marybank and Putiki.

On 11 July, heavy rain closed SH53 at Waihenga Bridge, between Featherston and Martinborough. In Wellington the heavy rain and strong winds caused power outages and interrupted TelstraClear internet services. In Ruapehu District, Okahukura Saddle Road was blocked by a slip, and Oio Road, was closed as it had been undermined by a large sinkhole.

On 13 July, many roads in the Golden Bay and Motueka areas were closed by slips and fallen trees, after persistent heavy rain.

On 14 July, many slips and washouts were reported in Wanganui and the wider Wanganui District, with power outages at Kaiwhaiki, Makirikiri, Parihauhau, Parikino, River Road and Upokongaro. A slip blocked one lane of SH3 south of Ratana, and several slips came down on SH3 at Whenuakura Bridge partially blocking the road. SH56 was closed by flooding at Opiki. In the Nelson and Tasman districts all sports grounds were closed because they were waterlogged.

On 22 July, heavy rain caused a sewage spill in Whangarei, flooded several roads in the city, and flooded pasture to a depth of about a metre at Hikurangi, Otaika, and Maungatapere. In Napier, home-owners were evacuated after two more slips came down on Napier Hill.

On 24 July, SH35 around East cape was closed between Ruatoria and Tokomaru Bay after heavy rain washed out the approaches to a bailey bridge at Kopuaroa.

On 26 July, a massive slip, about 500 m upstream from the Bridge to Nowhere, closed the Mangapurua section of the Ruapehu to Whanganui cycle trail.

On 27 July, a slip blocked the south-bound lane of the Rimutaka Hill Road. A slip also came down on SH3 just north of Wanganui city.

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
Kerikeri	72	22nd	1981	4th-highest
Wanganui	51	13th	1987	2nd-highest
Invercargill	33	8th	1939	4th-highest
Tiwai Point	30	13th	1970	4th-highest

- **Wind**

The highest gust recorded during July 2011 was 189 km/hr observed at Cape Turnagain on 12 July.

Gale force winds closed Northcote wharf on Auckland's North Shore on July 8th, with ferry services disrupted. In Wellington early morning trains were cancelled on the Johnsonville line between Johnsonville and Ngaio for about an hour.

On 9 July, a tornado tore through Peka Peka beach, just north of Waikanae. Trees were brought down, crushing cars and a caravan, injuring the occupants. Sheds were demolished, roofs blown off, and cars blown over. One vehicle on SH1 was tossed 30 m into a paddock, with the driver suffering only minor injuries. A woman walking near the coast also suffered minor injuries when she was blown over. Power lines were damaged cutting power to some areas. In Wairarapa, a building wall was blown loose at Matahiwi Vineyard, north of Masterton, and dozens of line disconnections were caused by the strong winds.

On 11 July, a trampoline was blown onto railway tracks in Upper Hutt, and power lines were blown down in Johnsonville. Several homes in Greymouth, and one in Kaiwaka had their roofs blown off. In Ohope, garden furniture was blown all over the town. Powerlines were blown down in Matamata, while Wellington City Council asked residents to not put out their recycling, after rubbish was strewn around some suburbs. In Masterton, falling branches crushed cemetery headstones. Power was cut to customers in Taranaki after a tree was blown down over 11,000 volt lines, lightning strikes damaged transformers, and severe winds damaged network equipment.

Wanganui's Cooks Gardens were closed on 12 July after strong winds undermined the floodlight towers. Homes in Omaui, Southland were left without electricity overnight after strong winds tore down power lines, with telephone lines also brought down. In Hawke's Bay a caravan being towed on SH2 near Waipawa was toppled on to its side by the strong gusts across the Takapau Plains. At Whangara near Gisborne, a hayshed was blown down, and trees were blown into power lines causing power outages in Tauwhareparae and Wairoa. In New Plymouth, a gust lifted a plastic giant ice-cream scoop off the top of a shop and sent it hurtling down St Aubyn Street, and in coastal Kaupokonui, power lines snapped in high winds. A large tree fell on to SH3 north of Normanby, and several road signs were blown down on the Surf Highway north of Eltham.

On 13 July, strong winds battered the Kapiti Coast, uprooting trees, lifting roofs, and bringing down powerlines in Paraparaumu. All along the west coast from Kapiti to Taranaki, sea birds, mainly prions and petrels, were blown inland by the strong westerly winds, and many birds were killed. Wind warnings were issued for SH6, Whataroa to Haast. In Greymouth, the roof the West Coast Regional Council in Paroa had to be secured after it began to lift in the wind, and the nearby pony club roof was blown across SH6, stopping

traffic. Many trees were felled in the Hokitika, Greymouth and Blackball area, roofs and fences damaged, and some windows blown out.

Wind warnings were issued for SH1 between Allanton and Gore on 14 July.

On 22 July, two trucks were overturned by wind on SH57 between Shannon and Opiki, and power lines were blown down in the Kapiti area. A tornado was recorded in Waipu, destroying caravans and sheds in its path.

On 27 July, wind warnings were in place on SH8 between Lawrence and Milton, SH90 between Tapanui and Gore, and SH1 between Milton and Gore. On the 28th, wind warnings remained in place for SH1, Milton to Gore, SH8, Lawrence to Milton, and SH90, Tapanui to Gore.

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

Location	Extreme wind gust speed (km/hr)	Date of extreme gust	Year records began	Comments
Kaikohe	80	8th	1986	Equal 4th-highest
Whenuapai	96	6th	1972	Equal 3rd-highest
Taupo	85	22nd	1982	Equal 4th-highest
Hamilton	85	6th	1978	3rd-highest
New Plymouth	111	13th	1972	Equal 2nd-highest
Castlepoint	145	29th	1972	Equal highest
Hawera	100	12th	1986	3rd-highest
Farewell Spit	109	9th	1973	Equal highest
Westport	106	11th	1973	2nd-highest
Hokitika	98	9th	1972	3rd-highest
Puysegur Point	152	11th	1986	3rd-highest
Tara Hills	76	12th	1985	3rd-highest
Tiwai Point	117	27th	1971	Equal 3rd-highest

- **Snow and ice**

On 7 July, snow closed both SH8, Omarama to Tarras, the Lindis Pass, and SH94, Te Anau to Milford Sound. Some vehicles had to be towed off the Lindis Pass. Chains were required on the Crown Range between Queenstown and Wanaka. SH94 remained closed on 8 July, and chains were required on SH73 between Arthurs Pass and Otira, on SH6 at the Haast Pass. Warnings were in place for SH85, Palmerston to Kyeburn, and SH8, the Lindis Pass.

On 9 July, snow closed the Crown Range until it was cleared by snow ploughs at 1 pm on the 10th. The snow and ice-covered Haast and Lindis Passes were also closed overnight. Heavy snow prevented both Wanaka ski fields, and the Remarkables, from opening on 10 July. Several flights in and out of Queenstown Airport were cancelled. Snow also closed SH94, the Milford Road, between Knobs Flat and Milford Sound, with other parts of the road closed to towing vehicles.

SH94 remained closed from Knobs Flat to Milford Sound on July 11th, with chains essential on SH73 at Porters Pass and at Arthurs Pass to Otira, SH8 at Lindis Pass, and SH6 at Haast Pass. Ice warnings were in force for SH6 from Kingston to Five Rivers. Ironically, ski fields were also closed because of too much snow, the danger of avalanche, and the difficult driving conditions. Many schools in Central Otago were closed for the day. A Saudi Arabian family was freed early afternoon after they spent the night trapped in their campervan on the snow-bound Crown Range pass.

On 12 July, the snow caused havoc in Queenstown with schools closed, vehicles trapped, and the road from Queenstown to Frankton closed. Two flights were cancelled, one diverted, and others delayed. Trucks were stuck in snow on SH8 between Roxburgh and Shingle Creek, with traffic diverted along SH85, the Pigroot.

The Crown Range and Lindis Pass were closed, as was SH82 between Te Anau and Milford Sound. SH94 remained closed. Snow-loading on power lines was also responsible for power trips, or brief cuts, in the Gore area.

On 13 July, heavy snow brought down trees and power lines in Tasman District, closing roads, and cutting power to about 500 homes. Chains were essential on SH63 from Wairau to Kawatiri, while snow closed SH6 at the Hope Saddle and Spooner Range, stranding trucks and campervans. Snow-loading caused trees to fall across SH6 in the Motupiko area. Lake Rotoiti School at St Arnaud was closed for a second day. Rainbow Skifield, the Mt Robert Road, Tophouse Road to St Arnaud, and all local or back roads south of Wakefield were also closed. Heavy snow loading on lines and trees brought down power lines and disrupted supply to about 500 customers in St Arnaud, the Howard Valley, the Buller River Valley, the Gowan Valley, and parts of Rainy River. Further south, snow closed the Crown Range Road again, SH93 from Clinton to Matura, and SH94 between Milford Sound and Te Anau remained closed. Black ice warnings were issued for SH6, between Winton and Centre Bush, and for SH8, the Lindis Pass, from Tarras to Omarama. Chains were essential for SH6 at the Haast Pass.

SH94 remained closed by snow on 14 July, with severe gales hampering efforts to clear it. SH93 from Clinton to Matura was also closed. Clinton Primary School closed at lunchtime. Chains were essential on SH73 between Arthur's Pass and Otira, and SH8 between Omarama and Tarras, the Lindis Pass, with both roads closed to towing vehicles. The Crown Range was re-opened but chains were essential. Snow was reported in Invercargill, the Tokanui school in The Catlins was closed, and doctors from Balclutha were not able to get through to Tokanui for a planned clinic. On 15 July, ice closed SH87 between Outram and Middlesmarch, with cautions in place for black ice on SH8 from Lawrence to Raes Junction, SH94 from Mossburn to Te Anau, SH1 from Clinton to Gore, and from Balclutha to Gore.

On 24 July, snow closed SH1 on the Desert Road section, SH2 at the Rimutaka Hill Road, and SH5 between Napier and Taupo in the North Island. In the South Island, SH8 from Lawrence to Milton was closed by snow, and chains were required on SH96 and SH85 from Ranfurly to Naseby. Towing restrictions were in place, and chains had to be carried on SH94 between Mossburn and Te Anau or Milford Sound, SH6 between Five Rivers and Dipton, and SH93 between Clinton and Matura. Queenstown Airport was closed. In Invercargill, children from Ohai-Otautau could not get to the ILT Kidzone Festival, while attendees from Te Anau were an hour late after chains had to be fitted.

On 25 July, snow closed SH1 from Cheviot to Waipara, Oamaru to Dunedin and Dunedin to Gore, SH6 from Queenstown to Kingston, SH75 from Little River to Barrys Bay, SH5 at Rangitaiki, SH87 Outram to Middlesmarch; SH85 Palmerston to Kyeburn, SH8 Raes Junction to Clarkesville, SH93 from Clinton to Matura, SH35 at Waipiro, and SH94 Te Anau to Milford Sound. The Rimutaka Hill Road, the Desert Road, and the Napier-Taupo Road remained closed, and SH2 at both Nuhaka and Mt Bruce between Masterton and Eketahuna, and the Napier-Taihape Road were added to the list. Both Lincoln and Canterbury Universities, and Canterbury Polytechnic Institute of Technology were closed for the day. In Dunedin, Otago Polytechnic closed at 10.30am, many banks and retail businesses did not open, and meals-on-wheels deliveries were cancelled by the District Health Board. Christchurch, Dunedin, Queenstown and Invercargill airports were closed. Snow on the power lines caused power cuts across Canterbury. Elective surgery was cancelled at both Christchurch and Southland Hospitals. Snow was down to sea level at New Brighton and Spencerville beaches. City bus services in Christchurch, Waimakariri and Selwyn districts were cancelled, as were many long distance bus services, and many businesses, including banks, were closed for the day as staff were unable to get into the city. Courier and rural post deliveries were cancelled, and in Balclutha and Queenstown, the day's court proceedings were postponed. More than 200 stranded motorists sheltered in the Waitati Hall overnight. Severe ice on SH6 from south of Lumsden to Kingston caused several accidents. Snow was also reported from the Kaimai Ranges, Taupo, Hawera, Stratford, Wanganui, Palmerston North, the Kapiti Coast, Wellington, Masterton, Greytown, Martinborough, Greymouth, Hokitika, Nelson, Mapua, Motueka, Takaka Hill, Rai Saddle and Kaikoura. In Taranaki, newborn calves had to be rescued from the storm and put indoors, and power was cut to about 1800 properties around Kapaunga and Cardiff.

On 26 July, SH85 from Palmerston to Kyeburn, SH87 from Outram to Middlesmarch, SH2 at the Rimutaka Hill Road, SH1, the Desert Road south to Taihape, and SH4 remained closed by snow and ice. Early morning flights out of Christchurch were cancelled. About 250 skiers were stranded on Mt Lyford overnight after avalanches blocked the road with snow 2-3 m deep.

On 27 July, SH94 from Te Anau to Milford Sound remained closed to towing vehicles, with chains required for all other vehicles. Chains were also needed on Arthurs Pass, and the road closures caused Wanaka to run out of petrol. Removal of rubble from the Christchurch CBD restarted, after snowfalls had stopped work.

- **Lightning and hail**

On 8 July, an RNZAF Boeing 757 was hit by lightning a few minutes after take-off from Whenuapai. It circled the airbase for about 1.5 hours waiting for a break in the weather before landing back at Whenuapai. On the same day in New Plymouth, a ferocious thunderclap, centred above the city, woke many people at about 2 am.

A severe thunderstorm on 9 July crossed the Auckland region, with lightning striking the Sky Tower. In Bulls, hail the size of marbles was reported, causing bullet-sized holes in windows. The Tui Nature Reserve in outer Pelorus Sound had 2 cm hail-stones which damaged corrugated plastic roof panels.

On 10 July, it was the turn of Wanganui, Rangitikei, and Palmerston North, for roaring thunderstorms and lightning. A lightning strike on the Bastia Hill Water Tower in Wanganui took down the wireless network, and blew the pole fuses.

In the early hours of 11 July, a severe lightning storm struck Northland. A lightning strike caused an outage, cutting electricity supplies to customers in the Tophouse area and in the Howard Valley. Telecommunications were also affected when lightning struck the Mt Murchison transmitter.

On 12 July, an Air New Zealand plane was struck by lightning just after taking off from Auckland. The plane returned to Auckland for safety checks. Parts of New Plymouth were without power for about an hour after lightning caused a tree branch to fall on to an overhead line. Lightning is also thought to have started a large bush fire in the Hinewai Reserve on the eastern side of Banks Peninsula. Further south, a lightning strike in Invercargill caused street light outages across parts of the city.

Two cyclists were struck by lightning on 13 July on the Little River Rail Trail near Birdlings Flat in Canterbury. The two boys were thrown from their bicycles and were shaken but uninjured. In Ngahere near Greymouth, a bull was killed by lightning, and several cows were knocked off their feet, but survived. The same storm brought hail about 2 cm deep to Franz Josef township. At Gladstone, birds were reported falling out of the sky after being hit by hail and lying dead on the road.

- **Fog**

On 18 July, Christchurch Airport was affected by fog, causing delays, and affecting the start that day of the Pike River Mine Disaster enquiry.

For further information, please contact:

**Ms Georgina Griffiths – Climate Scientist– NIWA National Climate Centre, Auckland,
Tel. (09) 375 4506 (office) or (027) 293 6545 (mobile)**

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