Met Society Newsletter

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NIWA
Taihoro Nukurangi

Climate Summary for Summer 2008-09

Wet in many areas; mild and sunny in the North Island and northern South Island; heat wave in early February.

- **Rainfall:** Above normal in the north, west and south of the North Island, Marlborough, mid- and south Canterbury and Otago; below normal in Hawke's Bay and Westport
- **Temperature:** Above average for most of the North Island and the north of the South Island; below average in mid- and south Canterbury, Otago and coastal Southland.
- **Sunshine:** Near normal for most of New Zealand; below normal in Otago and Southland

Summer rainfall was above normal (120 – 150% of normal) in parts of Northland, Auckland, Waikato, Manawatu, Wellington and Otago. Some locations in Marlborough and south Canterbury received nearly double their normal summer rainfall totals. Hawke's Bay and Westport received between 50 and 80 percent of normal summer rainfall. Other areas received near normal rainfall for summer. Severe soil moisture deficits in many eastern areas of the country eased to near normal levels by the end of February.

Summer overall was warmer than average (by between 0.5 and 1.5°C) for most of the North Island and the north of the South Island. A significant heat wave was experienced in many parts of the country from 7 – 12 February, when several record high temperatures were set. Temperatures were below the long-term summer average by between 0.5 and 1.5°C throughout much of inland mid- and south Canterbury, Otago and coastal Southland. The national average temperature of 16.7 °C was 0.1 °C above average for summer.

December and January's climate was dominated by more 'highs' (anticyclones) to the east of the country and more 'lows' (depressions) than normal in the Tasman sea, resulting in stronger than normal north-easterly winds over the country. In February, the first two weeks were very warm, associated with frequent warm north-westerly wind flows onto the country, whereas the last two weeks were dominated by more southerly airflows onto the South Island than normal for this time of year, which contributed to the cool temperatures in the south.

Major Highlights

- Heavy rain fell in Queenstown and on the West Coast overnight on 2 January. River levels in the Haast and Callery (near Franz Josef) Rivers rose quickly as a result. On 3 January, thunder and hail in Christchurch forced the postponement of the international cricket match against the West Indies, while large, 2 cm hailstones whipped across roads and buildings in Waipara, bringing traffic to a standstill, and denting cars.
- On 20 February, severe rain caused surface flooding in parts of Wellington, Levin, and Palmerston North, and caused raw sewage to overflow into central Wellington, the harbour, and Lyall Bay. In Tauranga, the severe rain caused the postponement of the Kapa Haka festival, the first time this had happened in 36 years. In South Canterbury and north Otago, surface flooding affected SH1 and SH8, and closed some minor roads.
- Several locations experienced record or near-record high summer maximum and minimum temperatures in the six day "heat wave" from the 7th to the 12th of February. The highest temperature during summer 2008/09 was 38.0°C recorded at Culverden on the 8th of February (the highest summer maximum temperature for this location). The minimum temperature of 22.5°C at Tauranga airport on the night of the 10th/11thof February was the highest minimum for the country for summer (and the highest summer minimum temperature at that location since records began in 1941).
- The lowest temperature during summer was recorded at Hanmer Forest on 6 December where the minimum temperature was -1.7°C (not a summer record for this location). A cold southerly air flow persisted for three days from 11 – 14 February resulting in minimum temperatures of -1.0°C at Ranfurly, -0.6°C at Manapouri, 1.7°C at Queenstown and 1.9°C at Dunedin airport.
- Of the six main centres, Tauranga was the warmest and sunniest, Wellington the wettest, and Christchurch was the driest.

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NOTABLE WEATHER IN NEW ZEALAND - SUMMER 2008-09

This summer was a mixed bag, with spells of settled and often warm weather, but some unsettled periods as well. The second half of February was the most unsettled, with two major low pressure systems affecting the country.

DECEMBER 2008

- 2nd - Thunderstorms in Otago and Southland.
- 3rd - Heavy rain in Fiordland. 30C maximum in Hastings.
- 4th - Thunderstorms with heavy rain about and west of the Southern Alps. Cropp records 250mm; Mt Cook Village 296mm. Two Japanese climbers trapped by storm near summit of Mt Cook. (One dies before the other is rescued) 32C maximum in Napier; 31C in Kaikoura.
- 5th - A few heavy showers in Northland.
- 6th - Chilly start to day in inland South Island, eg -1C minimum at Hanmer Forest.

- 8th - Heavy rain in Fiordland and Westland, eg 130mm at Homer Tunnel, and 121mm at Cropp.
- 9th - Only 12C maximum in Ashburton, as a damp, cool southerly affects Canterbury.
- 12th - Cool 12C maximum in Dunedin in a southerly flow. (Overnight hail in city affects cricket pitch prior to test)
- 15th - Heavy rain (especially about the ranges) in west from Westland to Taranaki; also Nelson. (Maitai River close to flooding by evening) Cropp records 145mm; North Egmont 212mm.
- 19th - Heavy rain developing about and west of the Southern Alps. Totals through to 20th, include 369mm at Cropp, and 187mm at Arthurs Pass.
- 20th - Heavy rain in northwest of South Island; also some (welcome) heavy falls in Canterbury and North Otago. Fresh snow on Canterbury and Otago mountains, with 10cm locally settling as low as Mt Cook Village where maximum temperature is only 5C. Other unusually low daytime maximums include only 8C in Wanaka (lowest December maximum since records began in 1972), 9C in Queenstown and Darfield, and 10C in Oamaru, Timaru and Dunedin.
- 21st - Only 12C maximum in Ashburton in a light southerly flow.
- 24th - Welcome rain in east of North Island.
- 25th - Rather chilly Christmas day about east coast of South Island. Only 12C maximum in Dunedin, and 13C maximums in Timaru and Ashburton.
- 28th - Very warm day in many eastern parts of South Island. 32C maximum in Culverden; 31C In Timaru; 30C in Dunedin.
- 29th - 33C maximum in Culverden; 31C in Alexandra.
- 30th - 31C maximum in Hanmer.

JANUARY 2009

- 1st-3rd - Storms, including gales, thunder, hail and a small tornado. (see details below)
- 4th - Chilly 3C minimum in Taupo.
- 8th - Very high temperatures in many areas, especially in east. 37C maximums recorded at Waione (Wairarapa), Culverden and Hillmorton. (Christchurch) January records include 30C in Ohakune and 36C in Cheviot.
- 9th - Wind gusts (reported in some media as small tornado) causes damage at Bannockburn, Central Otago.
- 10th - Heavy rain in central NZ areas exposed to northwest. Some heavy showers in Auckland in afternoon, due to sea-breeze convergence.
- 11th/12th - Welcome rain in Gisborne and Hawkes Bay, with heavy falls about the ranges of northern Hawkes Bay and Gisborne.
- 12th -14th - Afternoon thunderstorms in northern and central North Island; also inland Buller on 13th. A line of severe thunderstorms from west of Taupo north to Great Barrier Island on afternoon and evening of 14th. Heavy downpours cause surface flooding in some places, plus heavy hail disrupts travel across Kaimai Range between Tauranga and Waikato. (giving a snow-like appearance to the countryside) Waterspout gust lifts boat out of water at Great Barrier. Aucklanders are able to watch a spectacular lightning display out to the east in the evening.
- 15th - Very warm day in many inland areas of South island, eg 34C maximum in Hanmer; 32C in Alexandra.

- 16th - 33C maximum in Ashburton; 32C in Dunedin. Heavy rain in Fiordland, eg 101mm at Milford Sound.
- 18th - Waterspout visible offshore from Sumner, Christchurch in morning. Afternoon thunder and hail storms in Canterbury; lightning causing some power outages near Christchurch. Torrential rain and hail results in surface flooding in Ashburton.
- 21st - Northwesterly gales in the far south. Gust of 130 km/ph recorded at Southwest Cape is highest ever recorded in NZ during January.
- 23rd-26th - Warm spell in eastern areas. Maximums include 35C (or 37C?) in Culverden (24th); 35C in Darfield (25th); and 33C in Ashburton and Blenheim. (25th)
- 27th - Cool southerly brings considerable drop in temperature; some 15-20C cooler than previous few days in many eastern parts of South Island. (only 13C maximum in Gore).
- 28th - Overnight 2C minimums in Waiouru and Middlemarch, in wake of cool southerly airmass.
- 31st - Very warm in many eastern areas, eg 35C maximum in Hanmer; 33C maximums in Ashburton, Masterton, and Hastings.

FEBRUARY

- 1st - Hot day in east of North Island, with record highs of 37C in Napier, Hastings and Wairoa; also 35C maximum in Gisborne. Combination of heat and strong northwesterly winds fan bush fire near Mahia. Very warm also in Malborough and Canterbury (34C maximum in Kaikoura; 33C in Christchurch), but cool southerly change in afternoon sends temperatures dropping to the high teens.
- 2nd - 30C maximum in Kerikeri, but cooler airmass in wake of southerly keeps maximums to only 13C in Darfield and Gore.
- 5th - Wanganui reaches 29C under a fohn northeasterly.
- 6th - 30C maximums at Dunedin and Christchurch Airports.
- 7th - Very warm in many areas, with record maximums in several places, eg 31C Kaitaia and Kaikohe, 32C in Whitianga, 30C in Ohakune. High temperatures in many inland parts of Canterbury (eg 38C maximums in Culverden and Cheviot) only surpassed by February 1973 record maximums.
- 8th - Warm air from Australia results in high temperatures in many eastern areas, eg 34C maximum in Masterton, and 33C maximums in Alexandra and Dunedin. The airflow also carries smoke from deadly bushfires in Victoria into the higher atmosphere, resulting in a brownish tinge to the skies.
- 9th - Still very warm in many eastern areas, eg 30C maximum at Le Bons Bay.
- 10th - Very humid in north of North Island, after warm, muggy night (overnight minimum of 23C in Auckland). Heavy rain in central NZ; some surface flooding in Palmerston North (49mm in 5 hours) and Wanganui. (55mm in 6 hours) Only 13C maximum in Timaru, as east of South Island is under a cool airmass and cloud.
- 11th - Very warm in some northern parts of North Island, with 31C maximums in Thames and Paeroa.
- 12th - Heavy rain in central NZ, eg 174mm at Angle Knob and 162mm at North Egmont. Some surface flooding in Wellington. Rather chilly in Canterbury under a damp southerly.
- 13th - Cold southerly flow affects east and south of the South Island and south of North Island, resulting in only 13C maximums in Kaikoura, Christchurch Airport, and Invercargill. Hanmer is even colder, reaching only 9C. Light snow on southern ranges, including Remarkables and reported on higher peaks of Stewart Island.

- 14th - Chilly start to the day in the south in wake of previous day's southerly; 2C minimum in Middlemarch and 4C in Alexandra. Auckland area shivers with unseasonable 14-15C temperatures (rising later to about 18C, while Pukekohe records its lowest February maximum of 16C) under cloud and showers from a frontal disturbance.
- 15th - Chilly dawn again in many areas, with 2C minimum in Waiouru and 4C in Masterton.
- 16th - Only 13C maximum in Ashburton, as cool southerly flow spreads over South Island.
- 18th - Cool onshore northeasterly about east coast of South Island; only 13C maximum at Le Bons Bay.
- 19th - Localised rainstorm overnight causes flash flooding in Ohope, Bay of Plenty.
- 20th- 23rd - Heavy rain causes flooding and other disruption to several areas. (see details below)
- 24th - Only 11C maximums in Gore and Darfield and 12C in Dunedin, thanks to a cool southerly flow. Scattered heavy showers about northern and central NZ, with some thunderstorms about Taupo and eastern Bay of Plenty.
- 27th February to 1st March - Another low pressure system delivers heavy rain and gales. (see details below)

MAJOR EVENTS

1st-3rd January - Storms, including gales, thunder, hail and a small tornado

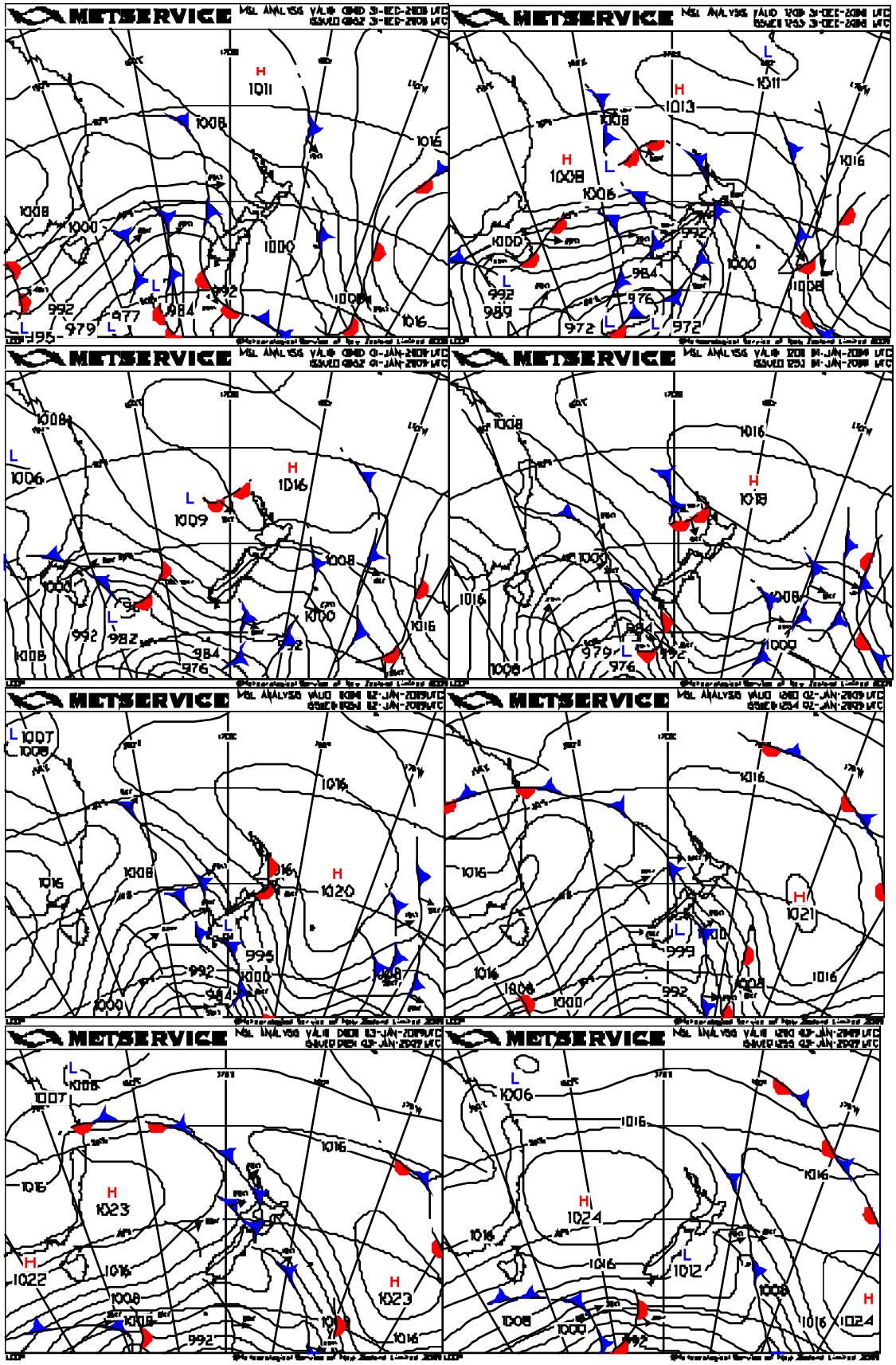
While many parts of NZ enjoyed a fine, warm start to the New Year, a cold front in a strong northwesterly flow crossed the South Island with rain on the West Coast. A brief spell of severe gales (downbursts?) lashed the Lake Brunner area about 4am, forcing campers to flee. Northwesterly gales also caused some damage and disruption in parts of Canterbury and Kaikoura.

Weak ridging lessened the northwesterly flow over the country later in the day, but during the 2nd, an active trough moved onto the South Island with heavy rain about and west of the Alps. (river levels rose quickly)

This system crossed the North Island the next day, with a colder southwesterly flow spreading onto the South Island, bringing fresh snow to the mountains. The change delivered thunderstorms and hail to many eastern parts of the island. In Christchurch, thunderstorm activity halted the cricket and briefly disrupted airport operations, while a belt of heavy hail damaged crops in a line from about Darfield to Amberley. Lightning also resulted in several power cuts in the Dunsandel and Lincoln areas. Further south, a small tornado was reported to have caused some damage in Waikouaiti, East Otago.

Conditions eased by evening, as the weakening trough moved onto the North Island.

Mean sea level analyses for midday NZDT 31 December 2008 to midnight 3rd January 2009 in 12 hour steps are shown here.



20th- 23rd February - Heavy rain causes flooding and other disruption to several areas

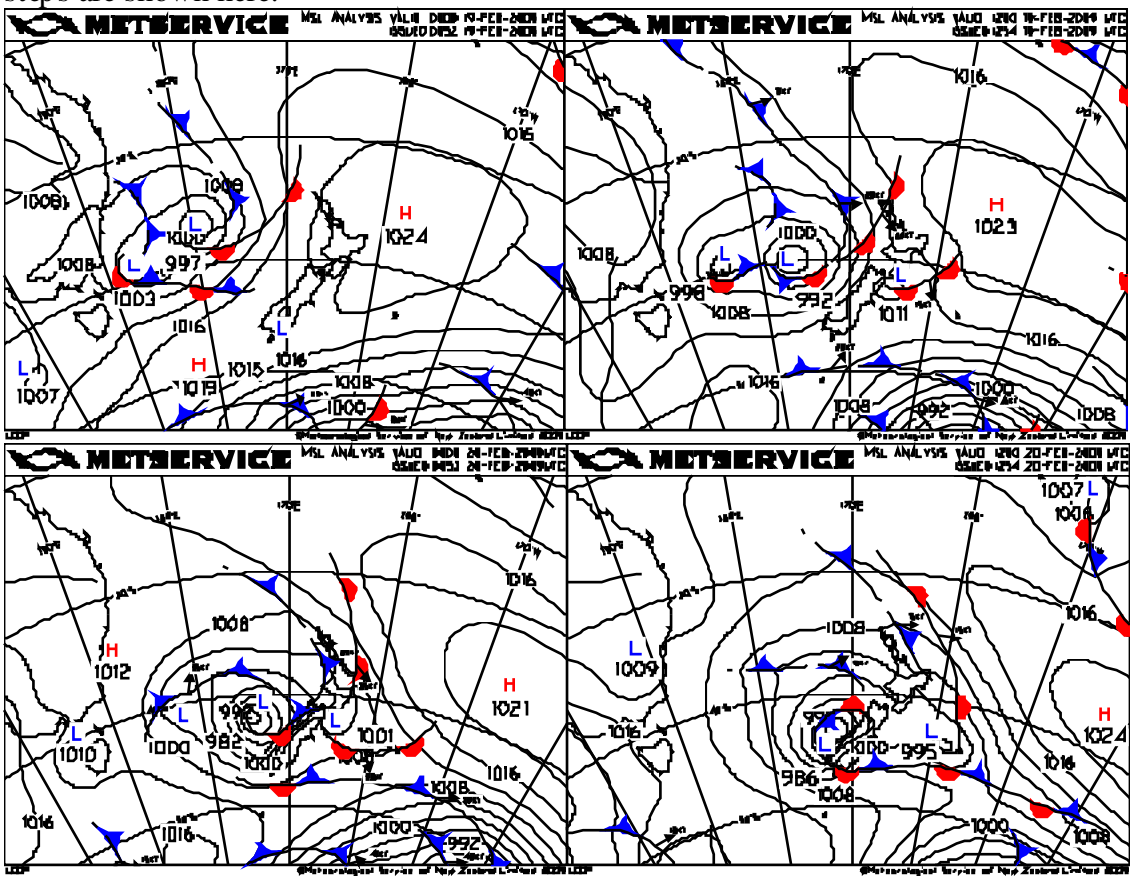
A deep low pressure system resulted in heavy rain and flooding to several areas during this period.

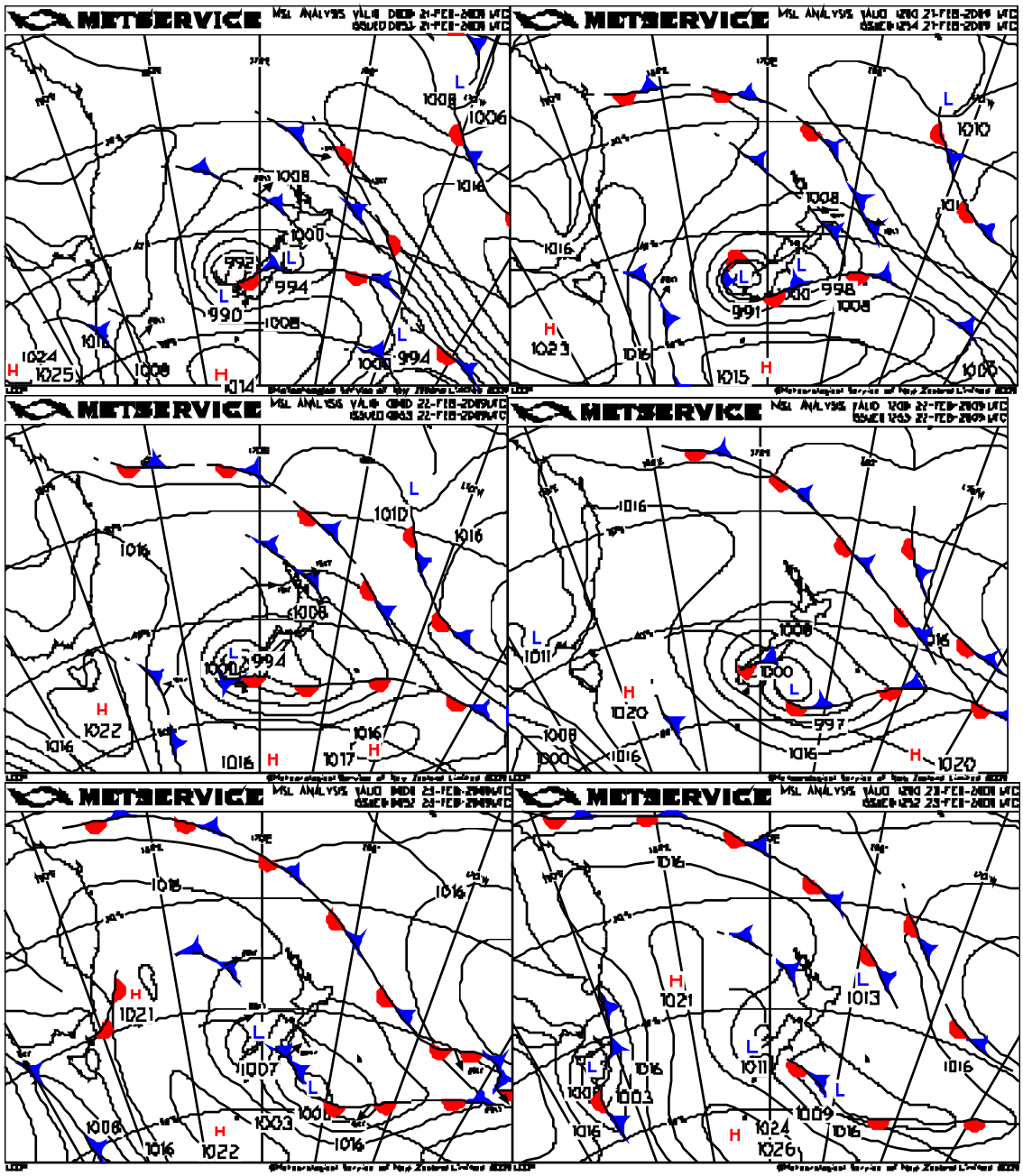
The system, incorporating the remnants of tropical cyclone Innis, had moved into the central Tasman Sea on the 19th and then onto the South Island on the 20th, deepening as it did so. Fronts moving out from it brought heavy rain to the north and west of the North Island and also the top of the South Island. In Tauranga, the rain caused the postponement of the Kapa Haka festival (first time in 36 years), but the worst disruption was in the southwest of the North Island. Flooding affected Palmerston North, Levin, and Wellington. (where sewage overflowed in places, including the central city)

Meanwhile, in the northeasterly flow to the southeast of the low, heavy rain also affected the east of the South Island. This quickly eased in northern and central Canterbury, but persisted through to the next day in South Canterbury and North Otago, as the low remained slow-moving. Surface flooding was reported in places. Westland also received heavy rain on the 21st.

During the 22nd and 23rd, the low pressure system moved only slowly southeastwards, but weakened. Rain persisted over southern parts of the South Island in a chilly southeasterly flow (10-12C maximums in many places), though the falls weren't heavy.

Mean sea level analyses for midday NZDT 19 February to midnight 23 February in 12 hour steps are shown here.





27th February to 1st March - Another low pressure system deliver heavy rain and gales

The summer ended with another low moving in from the north and dumping heavy rain in many areas, especially the North Island.

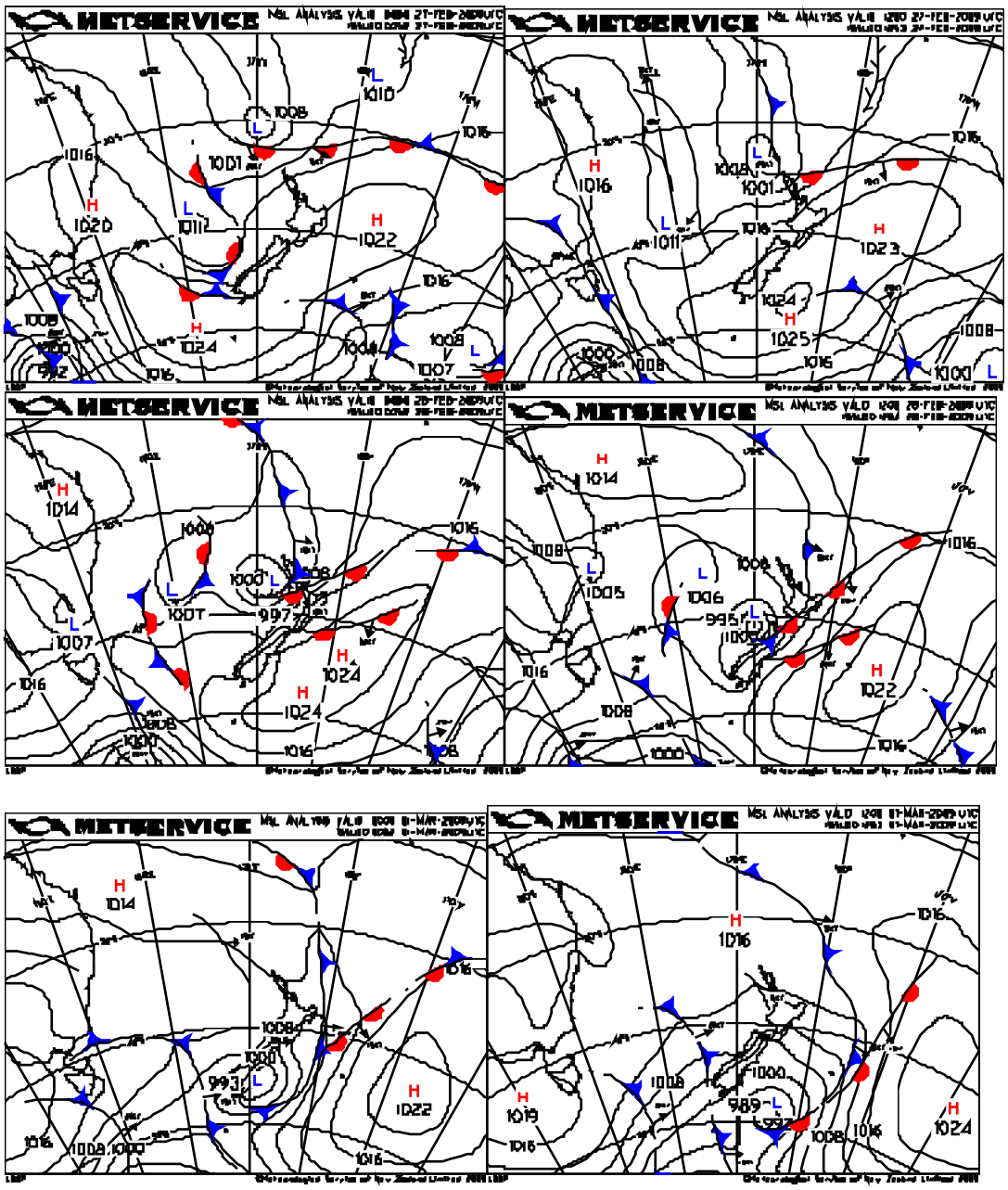
A northeasterly flow already covered NZ on the 27th, while a low deepened to the north of the North Island. Heavy rain set in over the far north later in the day.

On the 28th, this low moved only slowly southwards to the west of the North Island, while an anticyclone remained slow moving to the east of the South Island. Heavy rain affected the north of North Island, with two day totals including 103mm at Cape Reinga, 132mm in Kerikeri, 158mm in Kaikohe, and 120mm in Te Puke. Surface flooding was extensive in many areas, causing disruption to roads and outdoor events, though no major damage eventuated.

Gale force winds were another feature of this storm, with gusts reaching 122 km/hr at Cape Reinga on 27th, and 83 km/hr in Tauranga and 70 km/hr in Hamilton on the 28th. However, these winds didn't cause any major damage.

On the 1st March, the low moved further south to lie over the southern South Island by the end of the day. Some heavy rain fell in Westland and Fiordland, but the weather eased elsewhere over the country.

Mean sea level analyses for midday NZDT 27 February to midnight 1 March in 12 hour steps are shown here.



MONTHLY WEATHER NOTES FOR CHRISTCHURCH - SUMMER 2008-09

DECEMBER 2008

While this month was often warm and sunny, there were some unsettled periods. Several troughs crossed over, bringing some light rain and drizzle at times. More significant rain fell on the 19th and 20th, with some heavy falls on the latter day, as a cold southerly flow covered Canterbury. (snow fell on the Alps) By contrast, the period from Boxing Day onwards was dry and settled.

JANUARY 2009

The month, apart from two thunderstorms, was mostly warm and sunny in Christchurch. Indeed, temperatures on the 8th (37C was recorded at a Hillmorton station) were the hottest in the city since the record 41C heat of February 1973. On the other hand, the storms of the 3rd and the 18th delivered thunder and hail to many parts of the city and environs, with surface flooding in places and damage to some crops. Earlier on the 18th, a waterspout was seen offshore from Scarborough Head.

FEBRUARY 2009

The first third of the month saw settled and often warm weather, with temperatures reaching the low 30s on a few occasions. However, the remainder of the month was much more unsettled and cooler was several low pressure systems and onshore flows. Maximums only in the low teens were recorded on the 13th during a cold southerly flow. The wettest days were the 20th and 28th, with moist east to northeast airflows connected to lows crossing to the west.