

Autumn 2012

National Climate Summary – Autumn 2012:

Dry and record sunshine over South Island.

- **Rainfall:** Dry over the South Island as well as in Manawatu-Wanganui and the Tararua District. Above normal autumn rainfall for Northland, north Auckland, Gisborne, parts of Hawkes Bay and the south Wairarapa coast. Near normal elsewhere.
- **Sunshine:** Record sunny across much of the South Island and western North Island. Closer to normal sunshine for Northland, Coromandel, and the eastern North Island.
- **Temperatures:** Below average for the north and east of the South Island, and for most North Island areas south of Taupo. Near average autumn temperatures elsewhere.
- **Soils:** Unusually dry at the end of autumn in Canterbury and Nelson, as well as the Tararua District and around Palmerston North.

Autumn was characterised by higher pressures than normal southeast of New Zealand, and extending across the South Island. Lower pressures than usual were observed north of the country, resulting in more easterly quarter winds than usual over the North Island. The higher than usual pressures over the South Island resulted in a very dry month there, while the easterly winds contributed to below average temperatures in eastern regions.

It was a dry autumn over the South Island, with less than three quarters of normal autumn rainfall recorded for most regions (the exception being the Kaikoura Coast, with near normal rainfall). Notably dry were Canterbury and parts of Nelson, with less than half of seasonal normal rainfall observed. It was also rather dry for Manawatu-Wanganui and the Tararua District. In contrast, above normal rainfalls were recorded in Northland, north Auckland, Gisborne, parts of Hawkes Bay, and the south Wairarapa coast. Elsewhere, rainfalls were near normal. At the end of autumn, soils were much drier than normal for the time of year in Canterbury and Nelson, as well as the Tararua District and around Palmerston North.

Autumn was extremely sunny over the South Island, and for the western North Island between Waikato and Taranaki, with many records set. Sunshine totals were also above normal in most other regions. The exceptions were Northland, Coromandel, Wellington and the eastern North Island (Gisborne, Hawkes Bay, Wairarapa), which experienced near normal sunshine totals.

Mean temperatures for autumn were below average across the north and east of the South Island, and for much of the North Island south of Taupo. Autumn temperatures were near average (within 0.5°C of the autumn average) elsewhere, namely in the southwest of the country (Southland, Fiordland, Westland), as well as in Taranaki, around Wanganui, Bay of Plenty, Coromandel, and parts of Waikato, Auckland and Northland. Morning (minimum) temperatures across the country showed much the same pattern; but were near-record low for autumn at many eastern or inland locations. The nation-wide average temperature in autumn was 12.9°C (0.4°C below the 1971–2000 autumn average), using NIWA's seven-station temperature series which begins in 1909.

- 28th - Chilly 13C maximums in Darfield, Ashburton, and Timaru, as cloud cover and a cool southerly affect Canterbury.

APRIL

- 1st-5th - Heavy rain in east of North Island and gales further west. (see details below),
- 5th - Warm again in some northern areas, eg 25C maximums in Tauranga and Hamilton.
- 6th - 0C minimum at Pukaki, but rising to a 23C maximum there by 4pm.
- 7th - 24C maximums in Whanganui and Alexandra.
- 10th - Summery 24C maximum in Takaka, under sunshine in a light northwesterly flow.
- 11th - Some heavy rain in west of North Island, under moist northerly flow and a warm front. Only 10C maximum in Ashburton, under a cold, damp southerly flow.
- 12th - Scattered thunderstorms in North island, eg Gisborne ranges and southwestern Taranaki.
- 16th - Rare combination of fog and rain In Hamilton in morning. (slack pressure system over North Island)
- 19th - Light frosts in many inland areas, as intense high covers most of NZ.
- 24th - Warm, humid northeasterly flow over north of North Island. Hamilton records record April high overnight minimum of 19C.
- 24th/25th - Combination of clear nights and a light northerly flow over the South Island results in wide temperature variations, as morning frosts are replaced by warm daytime temperatures. Culverden records 23C maximum on 24th, while Alexandra rises from a 0C minimum to a 24C maximum on the 25th. Pukaki records lowest temperature of -3C. (24th)
- 25th - Alexandra rises from a chilly 0C minimum to a warm 24C maximum.
- 27th - Heavy rain on South Island West Coast, and Nelson. (where flooding causes some local damage to properties) Strong winds cause some damage in new Plymouth.
- 28th - Heavy rain in strong winds in central North Island means a group of trampers need to be rescued from the Tongariro Crossing. (several of them suffering from hypothermia)
- 29th - Cold front crosses South Island with thunderstorms and heavy rain about and west of the Southern Alps, also Southern Lakes. Small tornado damages property and knocks out power in Hokitika. (same thunderstorm also cuts power to Greymouth) Northwesterly gales in Central Otago and inland Canterbury later in day, with power outages in the Hororata area. 104 km/hr gust recorded in Lauder.
- 30th - West to northwest gales in lower North Island, damaging some trees and buildings about Wellington and the Horowhenua. Gust of 152 km/hr recorded at Akitio, Wairarapa. Very cold in far south, with hail and snow showers to low levels in Southland and South Otago. Record low April maximums of 7C at Dunedin Airport and 6C at Nugget Point. Thunderstorm lashes Invercargill, with lightning strikes affecting traffic lights and forcing evacuation of Southland Girls High School.

MAY

- 1st - Cold southerly flow over NZ; some heavy showers with thunder and hail about eastern coasts of North Island.
- 2nd - Some more hail in east of North Island, as cold southerly continues. Heavy early frosts in many other parts of NZ, eg -4C in Waiouru (rising to only 6C maximum there) and Blenheim, and -6C at Pukaki.
- 4th/5th - Frosty high over NZ -5C minimum in Raetihi and -4C at Pukaki on 4th.
- 7th - Warm in inland South Island under sunshine in a northerly flow. 22C maximum in Hanmer; 20C at Mt Cook Village. Heavy overnight rain causes some disruption about Auckland and Bay of Plenty, with fallen trees affecting some roads.
- 7th/8th - Fog disrupts operations at Timaru Airport during both days.
- 8th - Unseasonably warm in many parts of North Island under a north to northeast flow. 22C maximum in Whanganui; 21C in Napier, and 20C in several other northern and eastern North Island places.
- 9th - 23C maximums in Kaitiaki and Whangarei; 21C in Greymouth. (foehn easterly flow there) Northerly gales in far north, eg 139 km/hr at Cape Reinga.
- 10th - Some heavy rain in lower North Island, eg 44mm in Whanganui. Fog disrupts domestic flights to and from Auckland Airport.
- 11th - Southerly gales and some heavy rain in coastal eastern parts of North Island.
- 13th - Warm northwesterly flow over northern and central NZ. 22C maximum in Whangarei; 21C in Napier.
- 14th - Heavy downpours and thunderstorms in many northern and western areas. One of these in northwest Wellington causes a roof to collapse in a Porirua warehouse and floods a Titahi supermarket. Waterspout seen offshore from Oakura, Taranaki, while a tornado damages some property in Papamoa. Warm 21C maximum in Napier.
- 15th-16th - Cold south to southwest change spreading onto lower South Island late on 15th and rest of NZ during 16th. Some hail and thunder with the change; Air New Zealand flight returns to Auckland after flying into thunderstorm. Snow showers on high country of both islands, falling down to 400m in south of South Island and 800m in central North Island on 16th. Snow already blankets Mt Ruapehu ski-fields on 15th, closing access roads.
- 18th-19th - Cold in eastern areas, thanks to south to southwest flow. Only 8C maximum in Dunedin on 18th.
- 19th - Heavy fog blankets parts of South Canterbury.
- 20th - Heavy frosts in many South Island areas, eg -8C minimum at Pukaki; -6C at Dunedin Airport. Ice on tracks and overhead lines delays commuter trains in Wellington region.
- 21st - Frosty in many parts of NZ, eg -4C minimums in Taupo and Tekapo.
- 24th - Foggy in some northern areas of North Island, including both Auckland and Hamilton. (disrupting airport operations in both places)
- 26th - Morning fog again in many northern areas of North Island, worst in Auckland. (badly affecting airport)
- 27th - More morning fog in north of North Island. Thunderstorms and heavy rain about and west of the Southern Alps; also Mt Taranaki. (207mm recorded at North Egmont) Northwesterly gales in many eastern parts of South Island, with

some damage in Canterbury and Kaikoura. Warm in eastern areas, eg 22C maximums in Timaru, Christchurch Airport, and Kaikoura, and 21C in Napier.

- 28th - A period of heavy rain in eastern Bay of Plenty. Warm 23C maximum in Napier under northwesterly flow, but cold southwesterlies in lower South Island, with snow lowering on hills. (only 8C maximum at Puysegur Point) A few later afternoon/evening thunderstorms in mid Canterbury, as cold change moves north.
- 29th - Cold southerlies spread over North Island, with hail and high country snow showers in eastern areas. Dusting of snow visible on Rimutaka Range. Heavy hail in Wellington in morning makes roads hazardous for a time.
- 30th - Frosty morning in many North Island areas as ridge follows cold southerly. -4C minimum in Taumaranui; -3C in Dannevirke; -1C in Napier. Cloud cover during day suppresses maximums in west of island, eg only 7C maximum in Taumaranui, and 9C in Hamilton.

MAJOR EVENTS

2nd-3rd March - Bomb depression for NI and northern SI.

A deep 'bomb' low crossed the North Island during this period, resulting in a spell of stormy weather in northern and central areas. The worst affected areas were Whanganui and South Taranaki, where severe gales caused much damage.

Early on the 2nd, a weak ridge covered NZ. However, a low moved into the eastern Tasman Sea during the day and deepened rapidly, with a moist northerly flow spreading over northern and central areas. Meanwhile weaker low pressure developed over the South Island, followed a cold southerly change in the far south later.

During the early hours of the 3rd, the cold southerly spread over the remainder of the South Island (with fresh snow on the ranges), while the interaction between this cold airmass and the existing warm, moist air associated with the low maintained its intensity as it crossed the lower North Island.

Not surprisingly severe gales lashed many parts northern and central NZ as a consequence. The worst of these winds affected South Taranaki and Whanganui areas, with severe damage. This included downed power-lines, fallen trees, and damaged buildings, while many airports had to be closed. The extent of this damage resulted in many areas being cut-off from the outside world, especially in back country areas. Many of the trees felled by the winds were in commercial forestry blocks and the damage claimed hundreds of hectares of forests.

Gusts recorded on this day included 154 km/hr at Mt Kaukau, Wellington, (new March record), 102 km/hr in Wanganui, 98 km/hr at Farewell Spit, and 76 km/hr in Kaikohe.

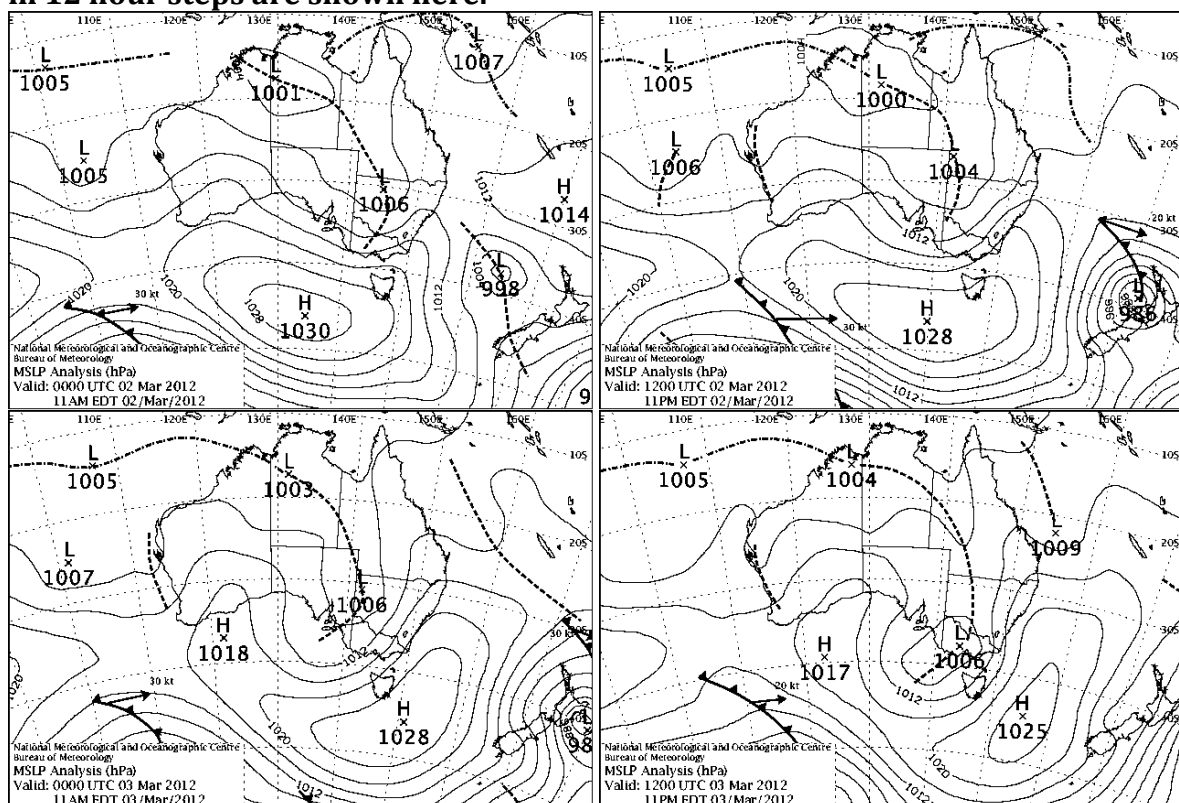
The fronts associated with the low also brought heavy rain to many parts of the North Island, adding to the damage. The Hutt River broke its banks, while

classrooms were flooding at a school in Wainuiomata. 60mm was recorded in Masterton.

As the low moved to the southeast of the North Island during the 3rd, the cold southerly still covering the South Island spread north. As the low remained very deep, southerly gales started to lash eastern areas, especially about exposed coasts such as Cook Strait and the Mahia Peninsula. Daytime maximums were well below normal in many areas, eg 10C in Ohakune and Le Bons Bay, 11C at Takapau, 12C in Wallaceville and Stratford, and 13C in Wanganui. Snow fell on the mountains of both islands.

Big swells in Cook Strait forced the cancellation of several Inter Islander ferries early on the 4th, but the southerly flow gradually eased during the day with the weather gradually improving. However, the effects of the storm were to last much longer in the worst affected areas. 40 rural properties in South Taranaki were still without power two weeks later, and in some places, line networks had to be completely rebuilt.

Mean sea-level analyses for midday NZDT 2nd March to midnight NZDT 3rd March in 12 hour steps are shown here.



17th-21st March - Deep low brings stormy weather to NI parts.

A deep low coming from sub-tropical latitudes brought another spell of stormy weather to many parts of the North Island, with severe gales and heavy rain causing more damage to several areas.

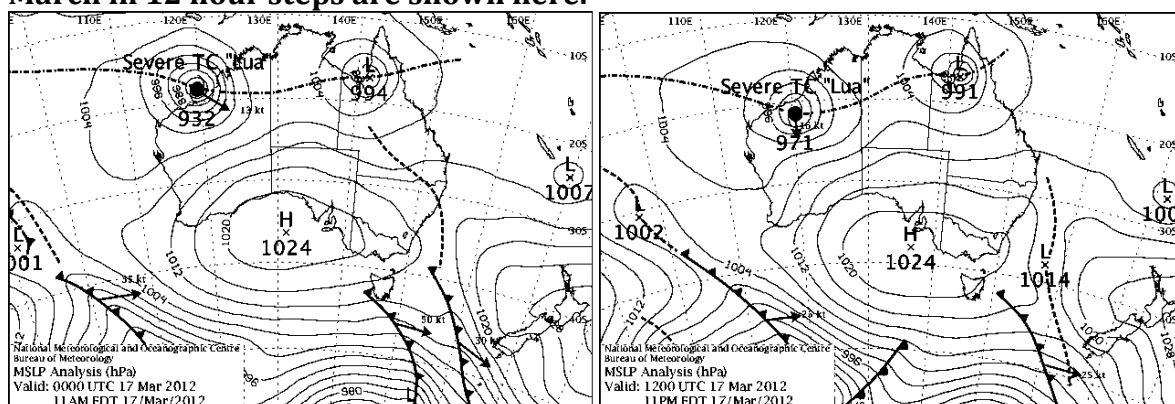
The low developed in sub-tropical latitudes to the north of NZ during the 17th, and moved south during the next day. An east to northeast flow increased over northern North Island during the 18th, with rain becoming very heavy in the far north by late in the day. This rain continued in Northland during the 19th, causing extensive flooding. A family had to be rescued by firefighters (using an inflatable boat) near Ngunguru on the 19th, while a woman was saved by neighbours before she could be swept away by floodwaters near Whangarei. Numerous roads were closed by the flooding, with Kaeo was isolated for a time as flooding inundated the town's streets. Totals included 168mm in Kerikeri, 136mm in Kaikohe, 133mm in Whangarei (all on 18th), and 91mm in Kaitaia. (19th) A station near Kaeo recorded 283 over a 35 hour period.

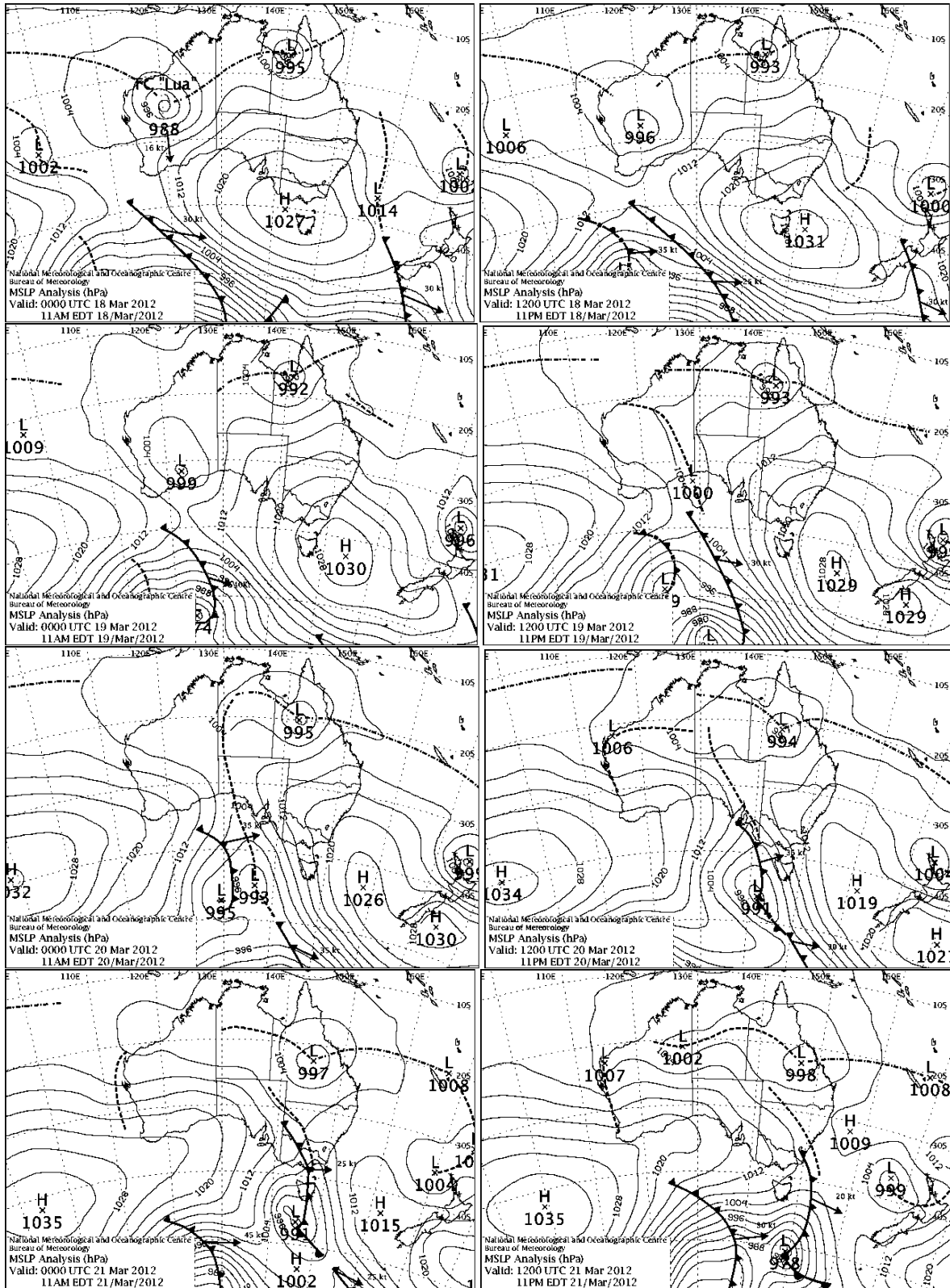
The depression had deepened to below 996ha by the 19th as it moved just northeast from Northland, and then onto the area on the 20th. In the meantime, a weak front and cool south to southeast change over the South Island allowed a ridge to build up over the island during the 19th. This ridge pushed against the low, resulting in a very strong southeasterly flow over central NZ. The Gisborne and northern Hawkes Bay areas were next in the firing line for torrential rain. Slips and flooding blocked many roads, including main highways, virtually isolating Gisborne for a while. The city was drenched by 153mm on the 19th.

Gales developed in the southwest of the North Island on the 19th, and became severe in many parts of the island on the 20th, including areas that were battered by the storm at the beginning of the month. Taranaki was worst affected, but the whole province suffered damaging winds this time. As in the earlier storm, much damage was done due to fallen trees and damage to buildings. Some 2500 homes lost power, the majority in Taranaki. Interislander and Wellington Harbour ferries had to be stopped due to the winds and heavy seas. Gusts reached 100 km/hr in Kaitaia and 76 km/hr in Kaikohe on the 19th, and 107 km/ph in Taupo (new March record), 113 km/hr in Hawera, and 89 km/hr in Mahia.

The low weakened on the 21st, with both the wind and rain easing.

Mean sea-level analyses for midday NZDT 17th March to midnight NZDT 21st March in 12 hour steps are shown here.





1st-5th April - Heavy rain for east of North Island

A strong, moist east to southeast flow resulted in more very heavy rain in parts of Gisborne and Hawkes Bay during this period, while southeasterly gales lashed

many northern and western areas of the North Island, but with unseasonably high temperatures.

This weather was caused by a complex low pressure system which started moving towards NZ from sub-tropical latitudes on the 1st, positioning itself to the northeast of the North Island by the 4th, before moving north again on the 5th. At the same time, anticyclonic conditions were maintained over the South Island, resulting in a moist easterly flow over the North Island, which tended more southeasterly from the 3rd.

Rain set in over northeastern North Island areas on the 1st, and became heavier in the Gisborne/northern Hawkes Bay areas by the 2nd. While no records were broken (the highest recorded total was 102mm in Gisborne on the 3rd), the prolonged nature of the wet weather caused flooding and more slips. Plus, the ground was already damp from several days of lighter precipitation, so it didn't need much more to cause problems. Around Gisborne, the heavy rain closed a number of roads and three schools, while a slip disrupted traffic at the Devil's Elbow section of SH2 between Wairoa and Napier on the 2nd, while another slip in the same area caused problems on the 5th.

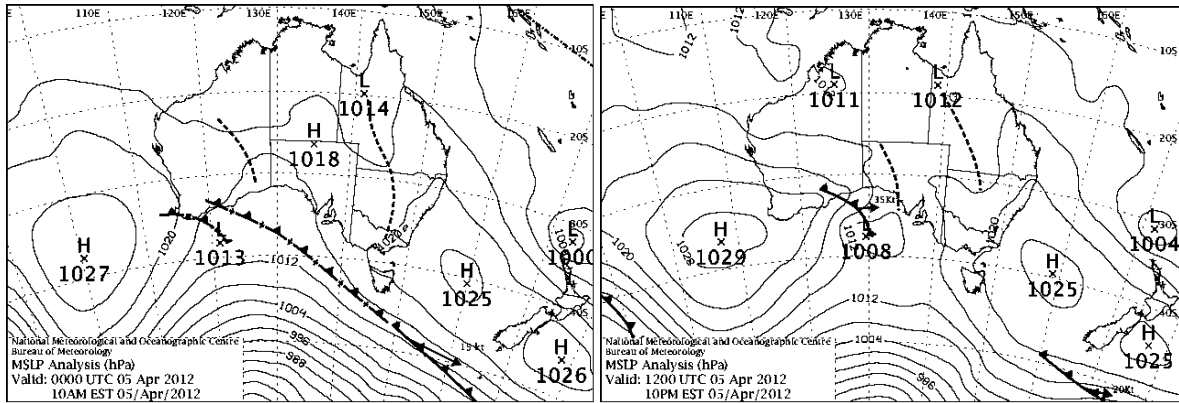
Further west, the combination of the airmass originating from the subtropical latitudes and foehn heating from it crossing the North Island ranges resulted in unseasonably warm temperatures during this period. Initially, the warmth was most intense in the southwest of North Island, as the flow there was east to northeast. For example there was a 26C maximum in Whanganui and 25C in New Plymouth on the 1st. Later, as the flow tended more southeasterly, summer-like temperatures were recorded in the north of the island. A station near the Firth of Thames recorded a 27C maximum on the 4th, while Port Taharoa broke a new April record with 26C on the same day. 24-26C maximums were common in many other places. Nights were warm as well, with overnight minimums of 17C-19C in many northern places on the 4th and 5th.

While these temperatures may have been enjoyable for many, they were spoilt by southeasterly gales on the 3rd and 4th. Gusts reached 80 km/hr in Whangarei and 76 km/hr in Motu (a new April record, though records only began in 1991 there) on the 3rd. There weren't any reports of significant damage, however. Heavy seas in the Bay of Plenty did more damage to the stranded Rena wreck, with debris being pushed onto Coromandel beaches.

The low pressure retreated back again northwards, while the high extended over more of NZ during the 5th, with conditions easing over the North Island.

Mean sea-level analyses for midday NZST 1st April to midnight NZST 5th April in 12 hour steps are shown here.

MONTHLY WEATHER NOTES FOR CHRISTCHURCH - AUTUMN 2012



CHRISTCHURCH WEATHER PATTERS: **MARCH**

The weather pattern that deprived Christchurch of proper summer weather during February, continued through March with onshore airflows maintaining well below normal temperatures. Most of the notable weather occurred at the beginning of the month, with brief heavy rain in the early hours of the 1st and cold, showery weather on the 3rd/4th. Strong, gusty southerlies occurred on both occasions, with snow coating the Alps. A period of strong, gusty southwesterlies lashed the city late on the 25th, with thunder and hail clipping the southern edge of Banks Peninsula.

APRIL

Conditions were more anticyclonic this month, so that while onshore airflows still predominated, it was much sunnier than March. The only really wet day was on 11th, as a cool, moist southerly flow covered the area. A few nights later in the month were cold enough for light frosts.

MAY

More southerly winds than normal resulted in a cooler than normal month, but there were several settled periods. The coldest southerlies were on the 1st, 15th/16th, and 29th. Snow fell on the higher Banks Peninsula hills on the 16th. Brief northwesterly gales lashed the city on the 17th.

By Ben Tichborne