

Dear MetSoc members

Well here we are in 2012 with another year under our collective belt. It's trite to say how fast 2011 flew by, and yet, it did! At NIWA, we're in the middle of preparing the annual climate summary for 2011 which will have been published by the time you read this (check it out on our website, at <http://www.niwa.co.nz/climate/summaries/annual>). We're grappling with the headline. It needs to be something snappy that nicely sums up the weather and climate scene for 2011. Our working title is "A year of extremes" because that's certainly what we had (flooding in January and again in December, heatwaves in February, extreme warmth in May and June, blanketing snowfalls and bitter temperatures in July and August). But as I scroll back over the last 10 years of annual climate summaries (they are all posted on the above webpage) I see that every year in the past decade has had its share of floods and droughts and hot and cold extreme temperatures. I can't find a single annual climate summary that says "not much happened this year". It just goes to show what dynamic weather we have in NZ, and how adaptable NZers are to dealing with a climate that varies significantly from month-to-month and from year-to-year.

I wonder what 2012 will bring?

Andrew Tait

2012 President, MetSoc



*President Andrew Tait (the tallest here) surrounded by the committee at our Nelson conference last November.*

**AGM report:** We had a very good turnout of around 30 or more.

**Annual Dinner:** President Andrew entertained us by conducting some theatre sport games - how better to present science, not just from the head but also from the heart, and from the gut and sometimes from lower down.



## **Spring 2011**

**6 December 2011 - 10:15am**

### **National Climate Summary – Spring 2011:**

#### **Extremely dry Taupo north; wet eastern South Island**

- **Rainfall:** Extremely dry north of Taupo, with about half of normal spring rainfall. Very dry in Gisborne, Hawkes Bay, and along the West Coast of the South Island. Extremely wet for Southland, Otago, and Canterbury.
- **Soil moisture levels:** Significant deficit north of Taupo, as well as Gisborne, Hawkes Bay, Marlborough, and central Otago, at the end of spring.
- **Temperatures:** Above average in the northeastern North Island. Below average for the southeastern North Island, as well as Canterbury. Near average elsewhere.
- **Sunshine:** A sunny spring in eastern regions; near normal spring sunshine elsewhere.

**Stronger than normal southwest winds affected New Zealand during spring 2011, squeezed between higher than normal pressures over the Tasman Sea and lower pressures to the southeast of the country.**

**It was an extremely dry spring north of Taupo, with about half of normal spring rainfall observed in Taupo, parts of the Waikato, Coromandel, north Auckland and Northland. It was the driest spring on record for Matamata and Leigh. Spring rainfalls were also below normal (between 50 and 79 percent of spring normal) in Gisborne, Hawkes Bay, and much of the West Coast of the South Island. In contrast, spring rainfalls were above normal in Southland, Otago and Canterbury, as well as in some locations between New Plymouth and Levin (with totals more than 120 percent of spring normal). Spring rainfall totals were generally close to seasonal normal elsewhere (between 80 and 119 percent of normal).**

**By the end of spring, significant soil moisture deficit (more than 110 mm of deficit) was observed in regions north of Taupo, also Hawkes Bay, Gisborne, Marlborough, and central Otago.**

**Mean temperatures in spring were above average (between 0.5°C and 1.2°C above spring average) in eastern Northland, Coromandel, and Bay of Plenty. Regions which experienced below average spring temperatures (between 0.5°C and 1.2°C below average) were around the Central Plateau, Hawkes Bay, Wairarapa, Wellington, and Canterbury. Elsewhere, for much of the country, temperatures were within 0.5°C of spring average. The nation-wide average temperature in spring was 11.9°C (0.2°C below the 1971–2000 spring average) using NIWA's seven-station temperature series which begins in 1909.**

**Spring 2011 was a sunny month in eastern regions of both islands, with above normal sunshine totals (between 110 and 125 percent of spring normal), consistent with the frequent southwest winds during the spring. Elsewhere, sunshine totals were generally near normal (between 90 and 110 percent of spring normal).**

#### **Further Highlights:**

- The highest temperature was 29.5°C, observed at Middlemarch on 27 November.
- The lowest temperature was -6.4°C, at Mt Cook on 5 November.
- The highest 1-day rainfall experienced was 166 mm at North Egmont on 3 October.
- The highest gust recorded was 183 km/hr at Southwest Cape, Stewart Island, on 24 October.
- Of the six main centres in spring 2011, Tauranga was the warmest and sunniest, Wellington the wettest, Christchurch the driest, Hamilton the cloudiest, and Dunedin the coolest.

Full report

[Full details of the Spring 2011 Climate Summary](#)

For further information, please contact:

Ms Georgina Griffiths - Climate Scientist- NIWA National Climate Centre, Auckland,

Tel (09) 375 4506 (office DDI), Mobile (027) 2936545

Dr James Renwick, NIWA Principal Scientist, Climate Variability & Change

Mobile (021) 178 5550, Tel (04) 386 0343 (office DDI)

#### NOTABLE WEATHER IN NZ: SPRING 2011

This spring was a typically unsettled period, with a more frequent southwesterly winds. While some areas were significantly drier than usual, other places received heavy rain, snow, and wind events.

#### SEPTEMBER

- 1st - Cold front crosses NZ, preceded by northwesterly gales in southeast of North Island. (126 kph gust recorded at Castlepoint) Cold southerlies spread over South Island with snow showers in the south, and some thunder and hail in inland Canterbury. Only 6C maximum in Gore
- 2nd - Overnight snow to low levels in inland Canterbury (settling as low as Ashburton), plus a dusting on Port Hills. Snow showers also on North Island high country.
- 5th - 21C maximum in Hanmer, thanks to sunshine in a westerly flow.
- 6th - 20C maximum in Gisborne in a light northwesterly flow.
- 10th - Heavy rain in Fiordland, eg 98mm recorded at Milford Sound. Northwesterly gales in east of North Island, eg 96 kph gust recorded in Napier.
- 11th - Thunderstorms result in heavy downpours in northern and western areas, with gale west or northwesterly gusts. (September record 98 kph gust in Hawera) Tornado causes damage in Avondale, Auckland.
- 12th - More thunderstorms in northern and central North Island.
- 13th - Cold, disturbed southwesterly flow over NZ, with some hail in places and snow on the high country. Squally southerly dumps heavy hail in central Wellington, whitening the ground in early afternoon. Snow briefly falls as low as Masterton in the Wairarapa soon after. Heavy hail also about Gisborne and northern Hawkes Bay.
- 14th/15th - Cold, showery west to southwest flow over NZ, with snow showers on high country. Lindis Pass closed for a time on 14th, and Dansey's Pass on 15th.

(when snow causes disruption on roads in Central Otago) Tornado reported to have damaged a property inland from Gisborne.

- 17th - Only 5C maximum at Milford Sound, under cloud and rain from a trough crossing over.
- 19th - Cold southerly over South Island, spreading onto lower North Island in evening. Snow on high country, reaching fairly low levels in North Canterbury (Hanmer blanketed) and Kaikoura Coast. Localised heavy hail in Renwick, near Blenheim, with accompanying thunderstorm disrupting phone and TV services.
- 20th - Fresh snow on North Island high country, as cold southerly covers island. Desert Road briefly closed. Gales in some exposed parts of the island at first. (89 kph gust in Kaikohe)
- 25th - Cold, disturbed south to southwest flow spreading over NZ. Snow showers lowering to near sea-level in parts of Otago and Southland (including Dunedin), and above about 200-300m in Canterbury. Some hail in inland Canterbury in afternoon; also in Dunedin. (settling and causing traffic disruption there)
- 26th - Overnight snow showers on central North Island high country as low as Waiouru.
- 28th - Warm 21C maximums in Wanganui and Kawerau.
- 30th - Unseasonably warm in southeast of South Island, eg 23C maximum in Alexandra; 21C in Manapouri.

## OCTOBER

- 3rd - Thunderstorms in north and west of North Island. Particularly heavy downpours in Taranaki. 166mm recorded at North Egmont, while October 24 hour records broken in New Plymouth (102mm) and Stratford. (137mm) Heavy rain (85mm in Nelson) also causes flooding in Nelson region (forcing cancellation of outdoor performances at Nelson Arts Festival)
- 4th - Cold, wet southerly southerly over Canterbury, with snow on high country. Chilly 6C maximums in Darfield and at Le Bons Bay; 7C in Ashburton, Cheviot and Waipara.
- 5th - Continuing cold in east of South Island, under an onshore flow, eg only 9C maximums in Kaikoura and Ashburton. Light snow above about 700m in North Canterbury.
- 8th - Cold southerly spreads over South Island, with snow above about 400-500m.
- 9th - Light overnight snow showers on central and eastern North Island high country.
- 14th - Afternoon thunderstorms in inland North Canterbury and about Cook Strait, including hailstorm in Picton about 6pm. Only 8C maximum in Queenstown as a rather cold southerly flow affects the lower and central South Island.
- 17th-20th - Low pressure system crosses NZ with unsettled weather, including heavy rain in east of South Island. (see details below)
- 21st - Warm day in north of North Island and in Nelson area. Southwesterly flow, but warm air originating from Australia. Record October maximums in Whakatane (25C), Kerikeri (24C), and Kaikohe. (22C)
- 24th - Warm 24C maximum in Dunedin.
- 24th/25th - Heavy rain on South Island West Coast. Flooding affects SH6 between Harihari and Franz Josef. Severe northwesterly gales cause disruption in many

lower parts of the South Island on 24th, with roofing iron lifted, trees felled, and power cut. Highest gust recorded is 183 km/hr at Southwest Cape, Stewart Island. Gusts up to 180 km/hr cause considerable damage at Mt Cook, including a backpackers. (where occupants had to be evacuated) Some thunderstorms in Central Otago (25th), with lightning cutting power to some places for a time.

- 29th - Some thunderstorms and hail about the central North Island and Hawkes Bay.

#### **NOVEMBER**

- 4th-5th - Cold snap with unseasonable snow in parts of South Island. (see details below)
- 11th - Only 14C maximum in Gisborne, under a cloudy, moist southeasterly flow.
- 14th - Afternoon thunderstorms in central North Island, Waikato and Bay of Plenty. Some of the storms are severe, including a heavy hailstorm which leaves a snow-like blanketing in Rotorua. (flooding and power-cuts occur) Reports of 2cm hailstones in Taupo.
- 16th - Brief heavy rain and gales in lower North Island in morning, the winds causing some damage in Whanganui and rain resulting in surface flooding in Levin. Some afternoon thunderstorms in Hawkes Bay and Gisborne.
- Westerly gales in southeast of North Island, eg 74 knot gust recorded at Cape Turnagain. Southwesterly gales lash
- 20th-22nd - Storm brings heavy rain and flooding to South Island West Coast and damaging gales about Wellington. (see details below)
- 22nd - Northwesterly gales develop later in the day in parts of Otago and Southland, closing Lowburn Road, near Cromwell.
- 23rd/24th - Period of heavy rain about ranges of central NZ, eg 170mm at Angle Knob.
- 25th - West to southwest gales in many areas, severe in some places. Worst of them lash Otago and Southland, with tree and power-lines downed. The Burt Munro Challenge motorcycle race on Oreti Beach, Invercargill has to be cancelled. (62 knot gust recorded in Invercargill) 26C-27C maximums in many eastern places.
- 26th - Southwesterly gales in many parts of North Island, eg 100 km/hr gust recorded in Napier. Lake Taupo Cycling Challenge stopped after two hours due to winds making cycling hazardous. Marquees blown over at Stratford A & P show.
- 27th - Very warm in inland Canterbury, under a northwesterly flow. 31C maximum in Hanmer, 29C in Culverden, and 28C in Ashburton.
- 28th - Maximums up to high 20s in Canterbury in Canterbury (29C in Timaru), before cool southerly change in afternoon quickly drops them by about 15C. Northwesterly gales about Cook Strait (Aratere Ferry swings away from berth in Picton, causing some damage) and some exposed eastern areas.
- 29th Cool southerly flow over NZ, eg only 12C maximum at Takapau and 13C in Kaikoura. A few afternoon thunderstorms in eastern Waikato.

#### **MAJOR EVENTS**

**17th-20th October - Low pressure system crosses NZ with unsettled weather, including heavy rain in east of South Island**

**An active low pressure system crossed NZ during this period with wet, unsettled weather in most areas. The east of the South Island was worst affected, with heavy rain bringing severe flooding to many areas.**

**A low in the Tasman Sea moved onto the central South Island late on the 17th. A moist southeasterly flow on its southern side brought heavy rain to Otago and Southland from later in the day, extending into Mid and South Canterbury during the 18th. Flooding and slips caused problems in many places, especially around Dunedin where several roads were blocked. October one-day rainfall records were broken on the 18th in Dunedin (55mm), Lumsden (53mm), Oamaru (70mm), Timaru (66mm), and Winchmore. (59mm)**

**By the morning of the 19th, low pressure had moved to the east of the island. The heavy rain eased in the south, but now extended further north into Canterbury. Worst affected were parts of Christchurch and Banks Peninsula with significant flooding. The settlement of Little River was especially hard hit, with water flowing through SH 75 as it passed through the township.**

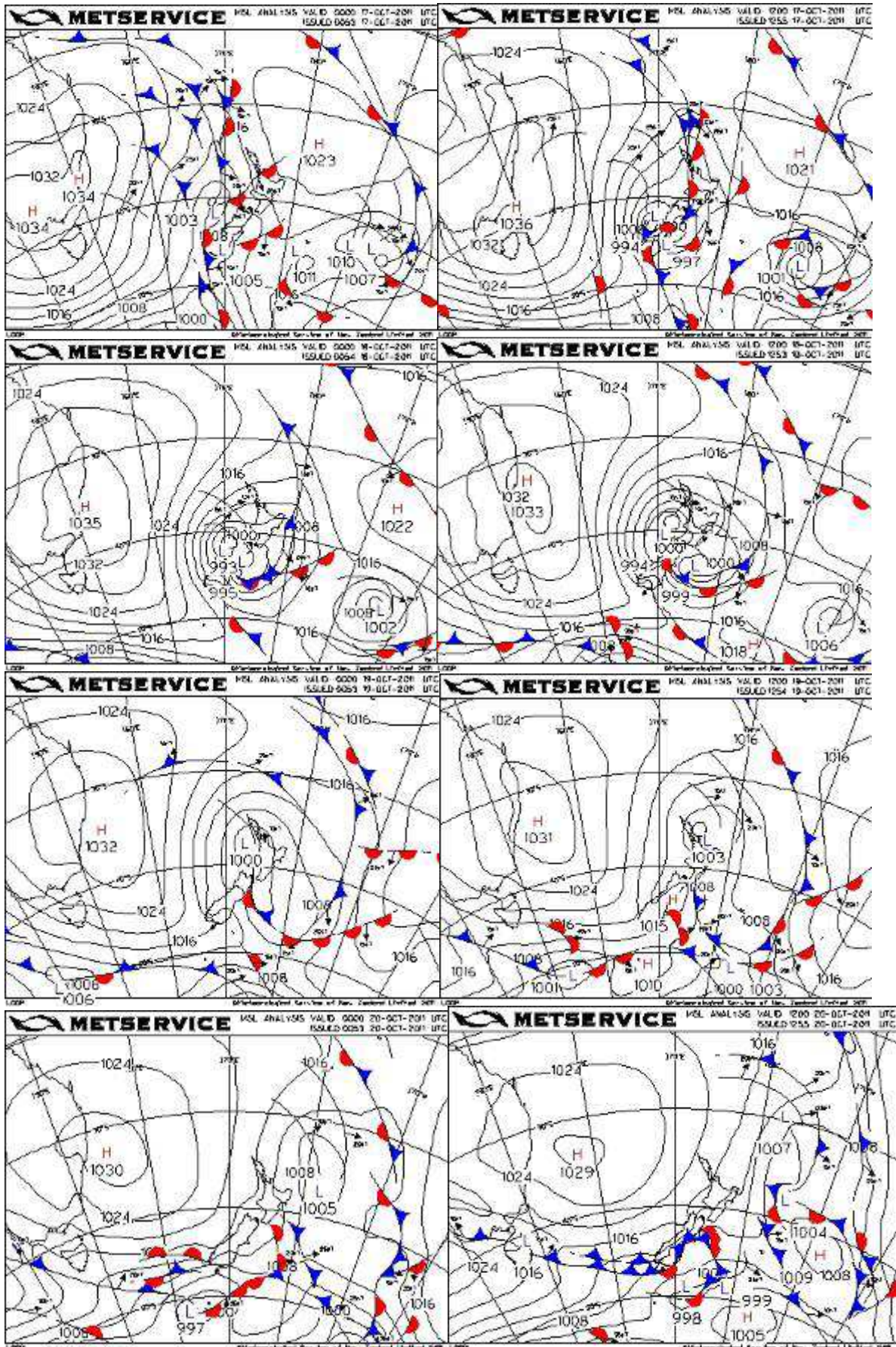
**While heavy rain drenched many low-lying eastern areas of the South Island, the cold airflow dumped snow on the inland high country. Particularly heavy falls of snow blanketed higher parts of the Mackenzie Country, with both the Lindis and Burkes Pass closed by the 19th. (several cyclists had to be rescued on the latter route) Some 30cm of snow (totalling 55mm precipitation in rain gauge) settled at Tekapo, with up to 80cm reported on nearby mountain areas. The township only reached a 3C maximum on the 18th.**

**Meanwhile, on the northern side of the low pressure system, several fronts crossed the North Island on the 18th, followed a secondary low on the 19th. Both days were unsettled over the island. Heavy rain caused another major slip on the already blocked Manawatu Gorge on the 18th. On both days, thunderstorms affected Hawkes Bay, causing some disruption.**

**As the low pressure moved away to the east, the rain cleared from Canterbury during the afternoon of the 19th, and conditions eased over the North Island early on the 20th.**

**Mean sea-level analyses for 1pm NZDT 17th October to 1am NZDT 20th October in 12 hour steps are shown here.**





4th-5th November - Cold snap with unseasonable snow in parts of South Island

A disturbed southwesterly flow brought very cold air onto the South Island, with unseasonably late low-level snow, especially in the far south.

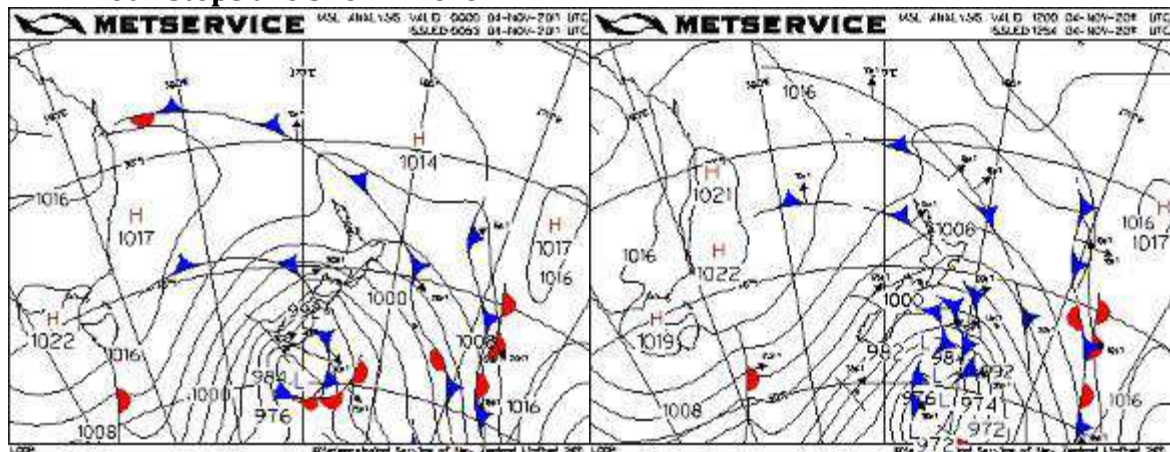
With a low lying well to the southeast, a cold front crossed the South Island during the 4th, followed by a disturbed southwesterly flow and increasingly cold air with hail and snow showers reaching low levels in the far south by evening and falling on high country further north. Daytime maximums were well below normal about and west of the Southern Alps, with only 6C at St Arnaud, 4C at Arthurs Pass, and 6C at Milford Sound.

Overnight 4th/5th, snow settled to sea-level in Southland and South Otago and also reached low levels in parts of Otago. (including Dunedin's hill suburbs, plus light flurries in the city) Roads were disrupted by the snow, which was up to 10cm deep in low inland areas and 25cm on Milford Road, while power was cut to several places (eg Tapanui) for a time. Hail accompanied the snow, with a 20 minute hailstorm lashing cyclists on the Tour of Southland in Otautau. Even more unusually, snow also fell to low levels on the West Coast, while the last disturbance brought a brief blast of hail and low-level snow on Banks Peninsula. Record low (for November) 0C minimums were recorded in Haast and Milford Sound

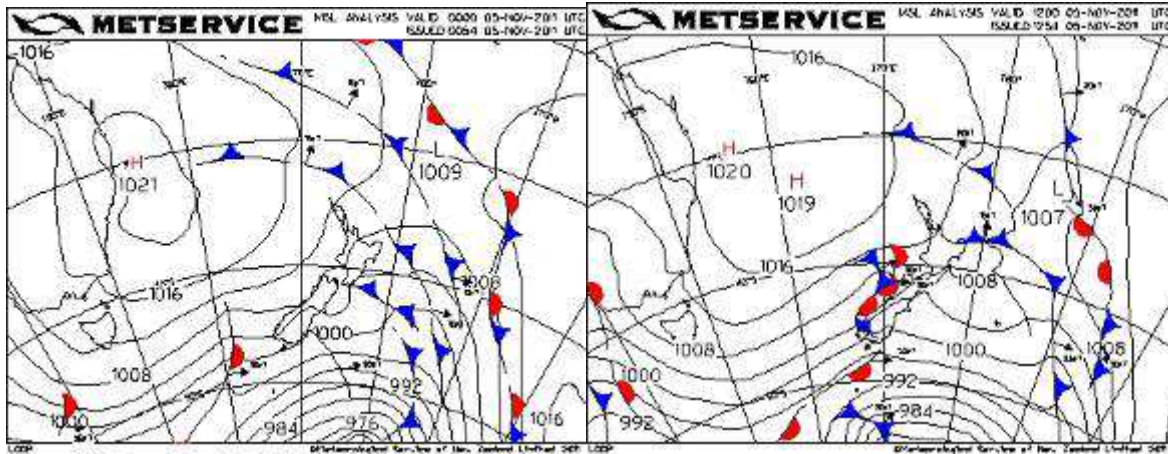
The southwesterly aspect of the airflow spared remaining parts of the South Island, which were cold (Mt Cook Village shivered as low as -6C), but still sunny. The very cold air didn't affect the North Island, with the colder change only bringing snow showers above about 1100m on the central mountains. The southwesterlies eased during the 5th, with snow levels rising. However it remained colder than normal in the south, with chilly maximums of 7C in Invercargill and 8C at Milford Sound.

While such a cold outbreak is unusual in November, a very cold spell also brought snow to low levels in many parts of the South Island only three years ealier in November 2008.

Mean sea-level analyses for 1pm NZDT 4th November to 1pm NZDT 5th November in 12 hour steps are shown here.







## **20th-22nd November - Storm brings heavy rain and flooding to South Island West Coast and damaging gales about Wellington**

**This storm, resulting from a series of fronts preceded by a northwesterly flow, brought heavy rain and flooding to the South island West Coast and damaging gales to the Wellington region.**

**A trough moved into the South Tasman Sea during the 20th, with a disturbed and increasingly moist northwesterly flow over southern and central NZ. Heavy rain consequently developed about and west of the Southern Alps and continued through to the next morning. 24 hour rainfall totals for the 20th included 161mm at Arthurs Pass, 120mm in Hokitika, and 82mm in Greymouth.**

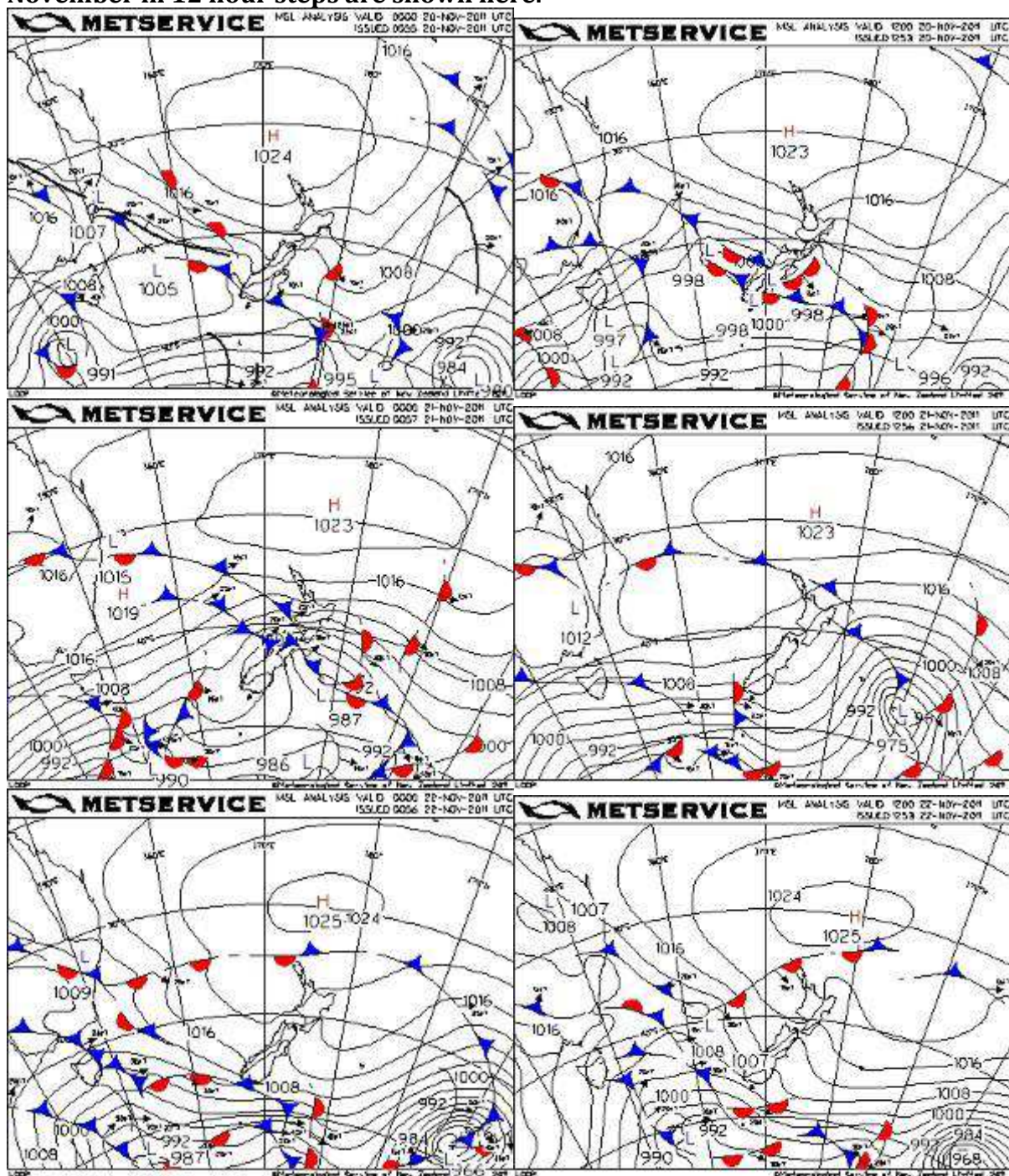
**Not suprisingly, the rain caused much disruption. Slips and flooding closed many roads, including SH6 in lower Buller Gorge and SH7 through the Lewis Pass. The Grey River broke its banks, flooding farmland (with stock losses ensuing), before inundating some low-lying parts of Greymouth. (though the town centre's floodbank held up) A 24 hour total of 289mm rain was recorded at Cropp.**

**During the 21st, the rain cleared from the West Coast, as a colder south to southwest flow spread over the South Island. Some undercutting southerly rain had already affected the far south on the 20th (28mm falling in Lumsden), but during the 21st, the airflow brought rain to the east of the island, with light snow on the ranges. Timaru and Oamaru recorded chilly maximums of only 9C.**

**The northwesterly flow became very strong over the North Island during the day, with severe gales over lower parts of the island. Kelburn recorded a gust of 146 km/hr, and the wind gusted to 112 km/hr at Cape Turnagain. Flights were delayed at Wellington Airport, while several harbour ferries had to be cancelled. A number of trees were blown over throughout the lower North Island, and a truck and trailer unit was blown off the road near New Plymouth.**

**During the early hours of the 22nd, the high winds caused some damage in Hawkes Bay, but the airflow tended southwesterly over the North Island and winds quickly eased.**

Mean sea-level analyses for 1am NZDT 20th November to 1am NZDT 22nd November in 12 hour steps are shown here.



## MONTHLY WEATHER NOTES FOR CHRISTCHURCH: SPRING 2011

### SEPTEMBER

Colder than normal temperatures were a feature of this month, thanks to four cold southerly outbreaks. These occurred on 1st/2nd, 12th-14th, 19th/20th, and 24th/25th. Virtually all of the month's below normal rainfall fell during these spells. Overnight 1st/2nd, snow dusted the Port Hills as low as about 200m with some sleet in the city. During the following southerly spells, snow dusted higher hills on Banks Peninsula and well as the foothills.

## **OCTOBER**

**Although the month began and ended with a few warm days under a northerly flow, much of the remainder of October was cloudier, wetter, and colder than normal, with a predominance of onshore (including more southerly than usual) airflows. A significant proportion of the rain fell on the 19th, as a deep low pressure system moved to east, allowing a strong moist southerly flow over the region. The winds rose to gale for a time with the heavy rain causing flooding in some parts of the city and Banks Peninsula. Heavy snow fell on the inland ranges and high country on this day, while light snow dusted higher Banks Peninsula peaks on the 8th..**

## **NOVEMBER**

**The cooler than normal spring continued into this month, with frequent southerly or southwesterly airflows. More rain fell than normal, thanks to several wet days. A brief but unseasonably cold southwesterly blast brought a period of hail and snow to very low levels on Banks Peninsula early morning on the 5th, though Christchurch remained fine.**