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# **Meteorological Society Of New Zealand (Inc.)**



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**NEWSLETTER 145**

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**Winter 2016**



# Meteorological Society Of New Zealand (Inc.) NEWSLETTER 145 WINTER 2016

PO Box 6523, Marion Square, Wellington 6141, New Zealand

Please forward contributions to Bob McDavitt,  
[bobmcdavitt@hotmail.com](mailto:bobmcdavitt@hotmail.com)

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**A few months back the Australian Government made a cut to its funding of CSIRO (the Commonwealth (of Australia) Scientific and Industrial Research Organisation) resulting in CSIRO declaring a 'change of focus', with a reduction of Climate Change research and a cut of several related staff positions.**

**Earlier this year our President write to the Chief executive of CSIRO to note our chagrin:**

16 February 2016

Dr Larry Marshall, Chief Executive  
Commonwealth Scientific and Industrial Research Organisation  
CSIRO Head Office  
Limestone Avenue  
Campbell ACT 2612  
AUSTRALIA

Dear Dr Marshall

I am writing on behalf of the Meteorological Society of New Zealand to express our serious concerns about the substantial loss of existing positions and change of focus announced within CSIRO Oceans & Atmosphere and Land & Water groups (and others). According to colleagues in Australia, this may represent a substantial reduction of the climate research effort within CSIRO. While other institutions such as the Bureau of Meteorology and a number of Australian universities also carry out climate research, the CSIRO laboratories in Melbourne and Hobart represent a significant fraction of Australia's total effort in terms of research and monitoring. This reduction in focus climate change research would be a major blow to research communities nationally and internationally, as evidenced by the scale of the reaction from the global and Australian scientific community. It would certainly damage linkages to the climate community in New Zealand, and a number of countries in the Southern Hemisphere.

As outlined in the IPCC 5th Assessment Report, there is much we have yet to learn about climate change. Its reality has certainly been confirmed, but there remain huge uncertainties in our understanding of this phenomenon, particularly at the regional-to-national scale. CSIRO scientists are world leaders in some of these areas. The global community may face unmanageable changes in climate before the end of this century and now is not the time to reduce investment in climate change research. Quite simply, the proposed switch of CSIRO research focus to mitigation and adaptation is premature. We must have a better understanding of what these changes will be before a wholesale switch of research focus can be made from observation and modelling to mitigation and adaptation. Australia is exquisitely sensitive to climate variations emanating from the tropics and from the southern oceans and has long been recognised as a continent of climate extremes. As such, Australia is perhaps the Southern Hemisphere country most sensitive to climate change and has rightly been at the forefront of climate change research over recent decades.

As President of the Meteorological Society of New Zealand, I urge you to re-evaluate your decisions around reducing climate change research within CSIRO. We will all suffer if significant cuts are made at this critical time.

Yours sincerely

Dr Daniel Kingston

President, Meteorological Society of New Zealand



**We received a reply which we would like to record for our archives in this newsletter. *It clearly says CSIRO is willing to invest collaboratively into finding solutions to mitigate and adapt to climate change. If you are seeking funding for your solution then add the Executive Director of CSIRO to your email list.***

Reply from [Alex.Wonhas@csiro.au](mailto:Alex.Wonhas@csiro.au)

**Sent:** 22 February 2016 11:18

**To:** Daniel Kingston

**Subject:** RE: proposed CSIRO change in research focus

Dear Daniel,

Thank you for your letter expressing the concerns of you and your colleagues at the Meteorological Society of New Zealand. Dr Larry Marshall has referred your email to me as the Executive Director responsible for our environment, energy and resources work. CSIRO is proud that it has been one of the pioneers of fundamental climate science and that our participation in this critical debate is highly regarded the world over. CSIRO will continue to invest in climate related research including some fundamental climate monitoring and modelling. However, our particular focus in the future will shift more to finding solutions which will help us to mitigate and adapt to climate change. We believe that finding solutions to the challenge of climate change is the best contribution we can make to the future of our nation and the world at this point in time. Collaboration has been, and will continue to be, critical in our achievements in climate research. CSIRO is currently working through the details of our proposed changes and is committed to working with the scientific community to understand how the strategic shift may affect our collaborative programs.

Best regards,

Alex

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**Dr Alex Wonhas**

Executive Director Environment, Energy and Resources

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## **February 2017 AMOS/MSNZ Conference and ANZ Climate Forum**

*The AMOS/MSNZ Annual Conference and ANZCF 2017 organisers are very pleased with the wide range and relevance of sessions proposed for the February 2017 conference. **A call for abstracts for conference papers will be issued shortly, in early July.***

Organised jointly by Australian Meteorological and Oceanographic Society (AMOS) and Meteorological Society of New Zealand (MSNZ), the conference will be held in conjunction with the Australian/New Zealand Climate Forum (ANZCF) from Tuesday 7 to Friday 10 February 2017.

The overall theme is “*Australasian weather, climate and oceans: past, present and future*”. As well as sessions within the main conference program, interesting proposals for workshops or “boot-camps” have been received. These will be held on Monday 6 February preceding the conference. The conference will organise computer laboratories and other teaching spaces to accommodate these workshops.

### **How will this joint conference be organised?**

The conference and ANZCF will be held at the Australian National University.

The conference will run from 7–10 February, with the ANZCF incorporated within the conference on 9–10 February. Workshops and other peripheral sessions such as outreach meetings are being planned for Monday 6 February. It is envisioned that there will be two registration options, providing flexibility for participation:

- AMOS/MSNZ conference (4 days)
- ANZ Climate Forum only (2 days)

### AMOS/MSNZ conference

It is expected that this conference will consist of up to four parallel sessions per day plus poster sessions. Two parallel sessions on both the 9th and 10th of February will be dedicated to the ANZCF, covering topics orientated to the interests of those who are just wishing to attend the ANZCF.

### ANZCF

This is the first time the ANZCF has been held for seven years. The sessions of the ANZCF will be orientated towards topics of potential interest to both AMOS attendees and those who just wish to attend the ANZCF and will include sessions of interest to a wide climate and user community. It is also envisioned that some ANZCF sessions will include interactive sessions to draw climate scientists and users of climate information together to discuss issues such as what climate users want, data collection and dissemination. Other topics may include climate education, policy makers and climate, deep-time climate, climate and history/environment/ecosystems.

### Proposed timetable of events

	<i>Mon 6 Feb</i>	<i>Tue 7 Feb</i>	<i>Wed 8 Feb</i>	<i>Thu 9 Feb</i>	<i>Fri 10 Feb</i>
<i>Morning</i>	Workshops	AMOS/MSNZ Up to 4 parallel sessions	AMOS/MSNZ Up to 4 parallel sessions	AMOS/MSNZ 2 parallel sessions	AMOS/MSNZ 2 parallel sessions
<i>Afternoon</i>	Workshops	Posters	Posters	Posters ANZCF 2 parallel sessions	Posters ANZCF 2 parallel sessions
<i>Evening</i>	Informal dinner	Ice Breaker	Conference Dinner	ANZCF Reception Free Public Forum	

### Free Public Forum

It is also planned to have a free public forum on one evening during the conference, most likely on the night of 9 February.



## Meteorological Society of New Zealand Short Conference and AGM

Wednesday 16 November 2016  
MetService NZ, Kelburn, Wellington

### CALL FOR ABSTRACTS

We are pleased to announce that the Meteorological Society of New Zealand's annual conference in 2016 will be held in Wellington at the head office of the MetService. The overall theme of the conference will be:

#### ***CHALLENGES OF OBSERVING AND FORECASTING IN EARTH SYSTEM SCIENCE***

covering all aspects of meteorology and oceanography, focusing on observations and numerical predictions including research and climate projections. The Society also welcomes contributions on all wider topics associated with meteorology, ocean and climate.

Because of the joint conference with the AMOS and ANZCF early in 2017, this year's conference will be shorter than usual, occupying the afternoon of the 16<sup>th</sup> November only. We plan on two kinds of presentations:

1. Standard oral presentations of 15 minute duration, including Q/A.
2. Rapid-fire Pecha Kucha-style 5 minute oral presentations.

The number of presentations will be limited, due to the shortness of this year's conference. In addition, we will have one keynote presentation at the beginning of the conference session. The conference will be followed by the Society's AGM.

Please e-mail your **expressions of interest** including your **abstract** and your **preferred style of presentation**, to Daniel Kingston ([daniel.kingston@otago.ac.nz](mailto:daniel.kingston@otago.ac.nz)) by **12<sup>th</sup> August 2016**. A program will be released in October 2016. There will be no registration fee associated with the conference.



**METEOROLOGICAL SOCIETY  
of NEW ZEALAND**





The Hydrological society conference this year is attracting over 400 delegates in a 5 day feast of talks, posters, workshops, and site visits. Anyone wanting to know more should check out their web site at <http://www.nzhs2016.co.nz/>

## Royal Society of New Zealand

### Results of Research community survey

Supporting the professional needs of the research community is one of the Royal Society of New Zealand's many responsibilities under its [Act of Parliament](#).

In March this year (2016) we ran a short survey of researchers working in science, technology humanities areas to find out what they think of us and our services, resources and events. This was timely because in 2017 the Society will be turning 150, and so it's a good time to ensure we are providing for the needs of one of our key stakeholder groups.

We were very pleased with the response to the survey, both positive and negative information is very helpful to us. Every one of the 1003 researchers who completed the survey has provided us with useful information on how we can support them in the future. We now have a wealth of information that will support us in developing our services for members and improve the support we provide for the research community. It is also very useful in developing our communications and outreach strategy for the coming years.

### Summary of findings

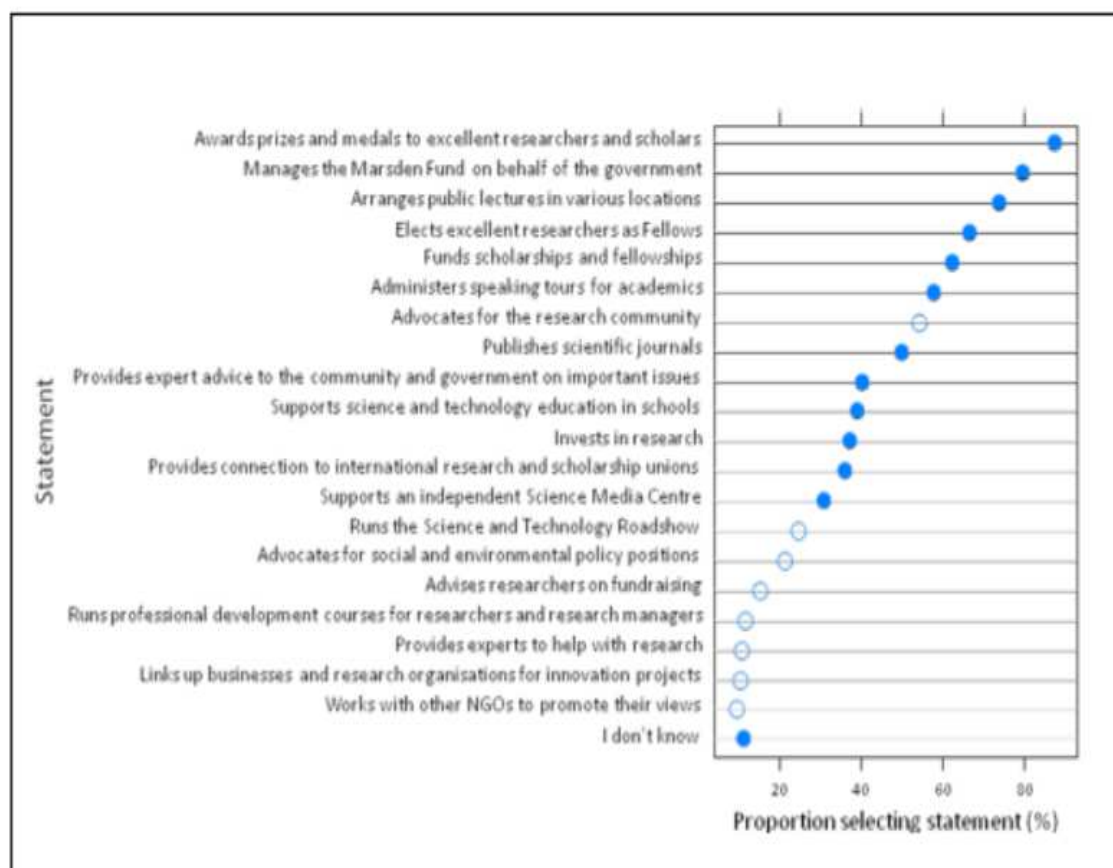
#### Most have a positive experience of the Society

For those who have interacted with the Society, most report a positive experience. Only 1% said they had a bad one.

#### Knowledge of activities is mixed

There is a widespread lack of knowledge about the breadth of our activities including major, long-running Society programmes, e.g. Education, Science Media Centre, and Journals. Figure 1 shows the results of this question. The filled in circles show which activities are currently undertaken, open circles show which are not currently undertaken

Figure 1: What statements reflect what the Royal Society of New Zealand currently does?



### More independence supported

Although most view the Society as largely independent, there is an almost universal desire for the Society to be more independent.

### Research community want advocacy

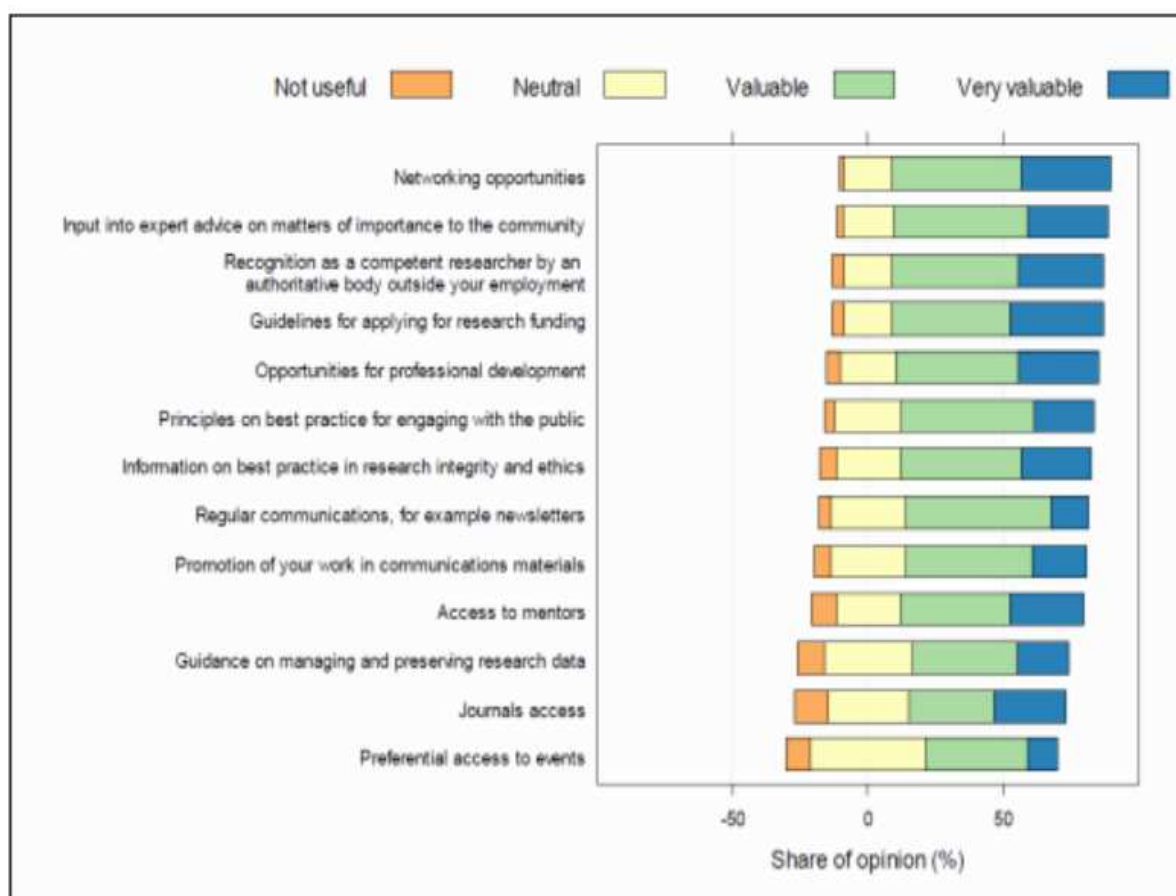
54% of respondents thought that we 'advocate for the research community' and 63% want us to increase this activity. This is not part of our functions. When we do advocate it is for the public interest.

### Most want many membership services

The membership services most strongly desired across all groups are in order: networking opportunities, input into expert advice, recognition as a competent researcher by an authoritative body outside your employment, and guidelines for applying for research funding.



Figure 2: What statements reflect what the Royal Society of New Zealand should/shouldn't do for researchers who become members?



### Early career researchers want more services

There is a large appetite for all available services with early-career researchers. The appetite dropped off for more experienced researchers, but was still strong.

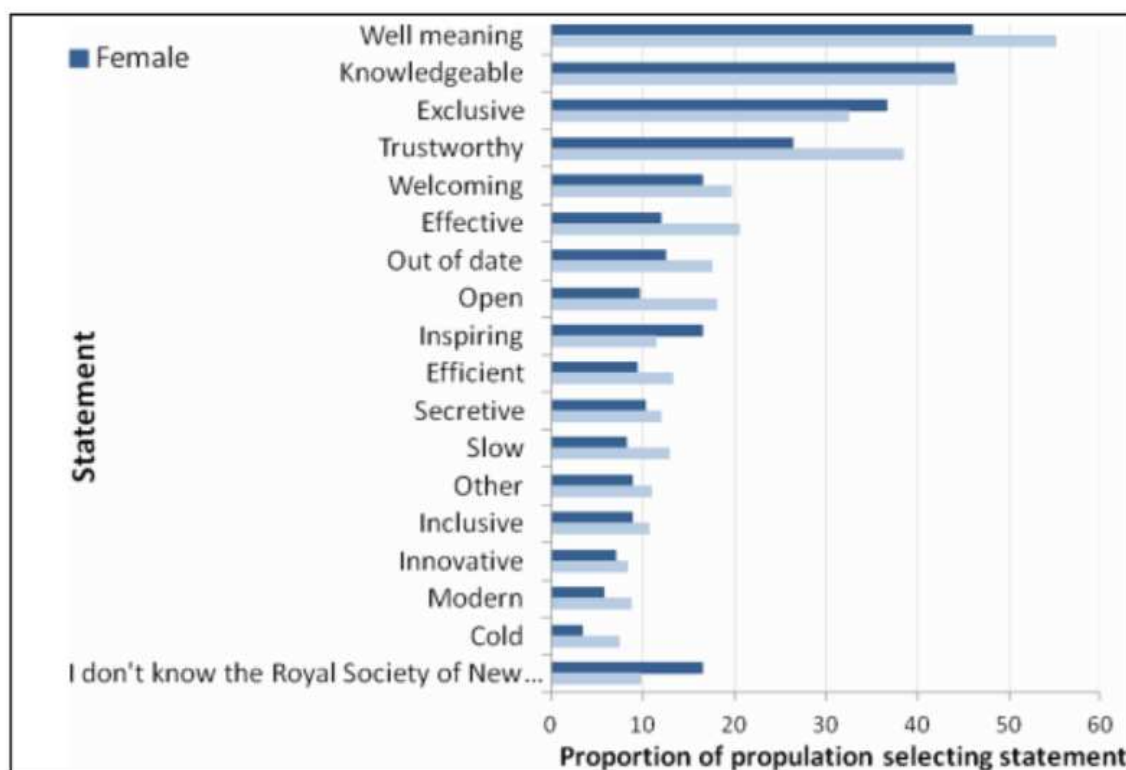
### Women want career support

Women are more likely to want mentors, guidelines for applying for research funding, and opportunities for professional development.

### “Well-meaning” and “Knowledgeable”

Most respondents strongly associated the Society with the terms “Well meaning”, followed by “knowledgeable”.

Figure 3: Which of the following statements describe the Royal Society of New Zealand



More detailed information on the results can be found on the Royal Society website or at <http://www.royalsociety.org.nz/media/2016/05/Research-Community-Survey-2016-presentation.pdf>

## AROUND THE REGIONS

Met Society members were invited to attend the following meetings during Autumn: :

### AUCKLAND:

**21 April:** *"Ultrafine particle size as a tracer for aircraft turbine emissions"*

NIWA Seminar, Dr Erin Riley,

Ultrafine particle number (UFPN) and size distributions, black carbon, and nitrogen dioxide concentrations were measured downwind of two of the busiest airports in the world, Los Angeles International Airport (LAX) and Hartsfield-Jackson International Airport (ATL - Atlanta, GA) using a mobile monitoring platform. Transects were located between 5 km and 10 km from the ATL and LAX airports. In addition, measurements were taken at 43 additional urban neighbourhood locations in each city and on freeways. We found a 3-5 fold increase in UFPN concentrations in transects under the landing approach path to both airports relative to surrounding urban areas with similar ground traffic characteristics. The latter UFPN concentrations measured were distinct in size distributional properties from both freeways and across urban neighbourhoods, clearly indicating different sources. Elevated concentrations of Black Carbon (BC) and NO<sub>2</sub> were also observed on airport transects, and the corresponding pattern of elevated BC was consistent with the observed excess UFPN concentrations relative to other urban locations.

20-22 May: *Antarctic ecosystems in a Changing world*, Workshop at Great Barrier Lodge.



## WELLINGTON

**19 April:** Climate Change Implications for New Zealand, by **Professor Jean Palutikof**, Director of the National Climate Change Adaptation Research Facility, Griffith University, Australia, At RSNZ, Thorndon.

**Report launch: Climate Change Implications for New Zealand, 19 April, Wellington**

This is the launch of the royal Society of New Zealand's report on *Climate Change Implications for New Zealand*. The report provides a succinct summary of existing New Zealand information around the risks associated with recent and projected trends in greenhouse gas emissions, and the likely consequences for New Zealand in future decades and centuries.

**27 April:** *Solution Science: The RSNZ climate change mitigation report*

Prof Jim Skea, University of London (Imperial University)

At Soundings Theatre, Te Papa.

**17 May:** *How to Find a Storm: Maps of the Weather*

Prof James Renwick (VUW) and Erick Brenstrum (MetService). At National Library.

Maps are absolutely vital for day-to-day weather forecasting and the modern weather forecaster probably uses more maps more often than just about any other profession. The origins of the weather map can be traced back to the seventeenth century pirate Sir William Dampier and the German explorer-scientist Alexander Von Humboldt but systematic mapping of the weather began 150 years ago with the charts produced by Vice-admiral Robert FitzRoy, Master of the Beagle and one-time Governor of New Zealand.

Early weather maps were drawn by hand, making use of sparse networks of weather stations. Modern weather maps are drawn by supercomputers, based on millions of observations daily from satellites, radars, balloons and ground stations. This presentation will also include historic events such as the 1936 cyclone, possibly the worst storm to hit New Zealand, and the D-Day invasion of France in June 1944 when two New Zealand forecasters were involved.

## **And coming up.....TEN BY TEN 2016: CLIMATE CHANGE**

Tim Naish and James Renwick, Ten things you didn't know about climate change...

Appearing at 10 venues around New Zealand, July-September 2016.

## DUNEDIN

**4th May,** Jono Conway (Bodeker Scientific), *Glaciers and climate*

**5th May,** Bridie Lonie (Dunedin School of Art), *The impact of anthropogenic climate change on ecological art*

Anthropogenic climate change has changed ecological art's early focus on particular sites and habitats. This talk considered the 2007 exhibition, Weather Report, held in Boulder, Colorado where the first conference on climate change had been held. An activist curator brought fifty-one artists together to work with scientists to describe and respond to climate change. Their approaches form a survey of the state of play in 2007.

**2nd June,** Inga Smith (University of Otago Department of Physics), *What are the greenhouse gas emissions associated with the movement of goods and people into and out of New Zealand*



## **Autumn 2016 NIWA summary**

Second warmest autumn on record, wet for the West Coast.

### **Temperature**

Autumn temperatures were well above average ( $>1.20^{\circ}\text{C}$ ) for New Zealand. Pockets of above average temperatures ( $+0.51^{\circ}\text{C}$  to  $+1.20^{\circ}\text{C}$ ) were observed in Gisborne, Waikato, Marlborough, Nelson, Tasman, the West Coast and Southland. No locations observed average temperatures ( $-0.50^{\circ}\text{C}$  to  $+0.50^{\circ}\text{C}$ ) or below average temperatures.

### **Rainfall**

Rainfall was above normal (120-149%) for the western portion of the South Island. Rainfall in northern and eastern parts of the North Island as well as Marlborough and Canterbury was below normal (50-79%). Near normal rainfall (80-119%) was observed in western Waikato, Taranaki, Manawatu-Whanganui and western Wellington.

### **Sunshine**

Autumn sunshine was near normal for the majority of the country. Above normal sunshine (110-125%) was observed in Northland, parts of Auckland and eastern parts of the Gisborne, Wellington, Canterbury and Otago regions.

### **Soil Moisture**

As at 1 June 2016, soil moisture levels were below normal for the time of year for large parts of Gisborne, Hawke's Bay, and the Wairarapa as well as central and northern parts of Canterbury. Soil moisture levels for the remainder of the country were near normal for the time of year.

### **Overview**

During autumn, air pressure was lower than normal south of Australia while slightly higher than normal pressures existed to the northeast of New Zealand. The resulting pressure gradient led to a prevalence of north-westerly wind flow throughout the season. In addition to frequent north-westerlies, warmer than usual sea surface temperatures, particularly to the west of the country persisted throughout autumn. The combination of these two factors contributed to the exceptional warmth felt across New Zealand throughout all three months of autumn. Virtually every climate station in New Zealand recorded above average ( $+0.51^{\circ}\text{C}$  to  $+1.20^{\circ}\text{C}$ ) temperatures or higher during autumn, with numerous locations experiencing record or near-record warmth (particularly in the North Island). The nationwide average temperature in autumn 2016 was  $14.7^{\circ}\text{C}$  [\[1\]](#) ( $1.4^{\circ}\text{C}$  above the 1981-2010 autumn average from NIWA's seven station temperature series which began in 1909), making autumn 2016 the 2<sup>nd</sup> warmest autumn on record using this series. The warmest autumn on record was autumn 1938.

### **Rainfall**

Rainfall throughout the months of autumn was variable. It was particularly wet in Tasman, West Coast and western Southland during May (in excess of 200% of normal May rainfall was recorded there) and as a result rainfall for the season as a whole was above (120-149%) to well above ( $>149\%$ ) normal. Conversely, rainfall in northern and eastern parts of the North Island as well as Marlborough and Canterbury was below normal (50-79%). Pockets of well below normal rainfall ( $<50\%$ ) were recorded in Northland, Gisborne, Hawke's Bay, eastern Wellington and Canterbury.

### **Soil moisture**

Soil moisture levels at the beginning of autumn were below normal for the time of year for the lower North Island and Canterbury. April was a particularly dry month in the North Island and eastern South Island. As a result, soil moisture levels in these regions gradually decreased as autumn progressed. The arrival of steady rain during the second half of May led to soil moisture levels gradually rising to near normal in southern Canterbury, Otago, Southland, the West Coast and western parts of the North Island. As at 1 June 2016, soil moisture levels remain below normal for the time of year for large parts of Gisborne, Hawke's Bay, the Wairarapa as well as central and northern parts of Canterbury.

### **Sunshine**

Autumn sunshine was near normal for the majority of the country. Above normal sunshine (110-125%) was observed in Northland, parts of Auckland and eastern parts of Gisborne, Wellington, Canterbury and Otago.



### Further Highlights:

The highest temperature was 33.1°C, observed at Hastings, Napier and Gisborne on 8 March

The lowest temperature was -5.6°C, observed at Ranfurly on 25 May.

The highest 1-day rainfall was 304 mm, recorded at Takaka on 23 March.

The highest wind gust was 196 km/hr, observed at Cape Turnagain on 10 March.

Of the six main centres in autumn 2016, Auckland was the warmest and sunniest, Dunedin was the coldest, Christchurch was the driest, Tauranga was the wettest and cloudiest

Of the available, regularly reporting sunshine observation sites, the sunniest four locations in 2016 so far (1 January – 31 May) were Richmond (1289 hours), Blenheim (1167 hours), New Plymouth (1164 hours) and Takaka (1123 hours).

### Contact

For further information, please contact: Mr Chris Brandolino  
Principal Scientist Forecasting, NIWA National Climate Centre  
Tel. 09 375 6335, Mobile 027 886 0014

## NOTABLE WEATHER IN NZ: AUTUMN 2016

This season was notable for its warmth, especially the first half of May. Unsettled weather mainly affected northern and western areas. However, the second half of May saw changeable and often colder and stormy conditions affecting many areas of both islands.

### MARCH

5th-8<sup>th</sup> – Very warm spell, especially in eastern areas, under sunshine and a west to northwest flow. Several new record March maximums recorded, e.g. 33C in Napier and Hastings (8<sup>th</sup>), and 30C in Motueka. (6<sup>th</sup>) and some unusually high minimums are also recorded, e.g. 20C in Nelson (7<sup>th</sup>), and 17C at Tekapo. (8<sup>th</sup>) Kaikoura, however, quickly drops from 25C to 13C on 8<sup>th</sup>, as warm northwesterly is replaced by a cool southerly.

9th/10th - Heavy rain in Fiordland. SH94 from Hollyford to Milford Sound closed by rock falls on the 10<sup>th</sup>.

10<sup>th</sup> - Very warm in east of South Island, e.g. Le Bons Bay recording a new March record high of 28C. Northwesterly gales accompany the warmth, fanning some fires and making roads hazardous. These gales later extend to southeast of North Island, with gusts reaching 196 km/hr at Cape Turnagain and 152 km/hr at Castlepoint. However, a cool southerly change arrives later in afternoon, with temperatures dropping quickly. Further south, severe south to southwest gales lash Otago and Southland, with downed trees blocking many roads and cutting power to some areas. Both Dunedin and Invercargill airports had to close for a time due to the conditions. Manapouri records 106 km/hr, a new March record, while Dunedin reaches 100 km/hr.

12<sup>th</sup> - Unusually cold start to the day as high covers most of NZ. (after departure of southerly flow the day before) Early frosts in many inland areas, e.g. -3C minimum in Hanmer.

16<sup>th</sup> – Line of thunderstorms in afternoon from Kaimai ranges to central North Island Plateau. Many South Island Mountains receive a dusting of snow in a cold southerly flow. Canterbury has a particularly cold day under the damp and overcast southerly, with new record low March maximums recorded at Le Bons Bay (9C) and Cheviot. (10C)

17<sup>th</sup> – Heavy rain on Coromandel Peninsula. Unusually cold start to the day in inland and southern South Island areas in wake of previous day's southerly. -1C minimum at Dunedin Airport, and 0C at Waiau and Balclutha.

23rd/24th - Heavy rain and flooding in northern and western South Island. (see details below)

### APRIL

1st - Heavy rain in some western areas of North Island, e.g. 142mm at North Egmont, and 80mm in Te Kuiti.

2nd - Unusually warm in northern areas, with new April records broken in Kaikohe (27C), Whanga-





rei, and Mangere, Auckland. (26C) Overnight minimums are also very warm, with many northern places not falling below 18C.

3rd - Unseasonably warm in many areas, e.g. 28C maximum in Christchurch. (Riccarton) New record April maximum of 26C in Takaka. Thunderstorm near Rotorua sets a hay barn alight.

4th - Afternoon and evening thunderstorms in eastern Bay of Plenty as small trough affects area, followed by a cool southerly change.

5th - A few heavy showers in north of North Island due to upper air instability in southeasterly flow. Funnel cloud observed in Hamilton.

7th - Unusually warm 27C maximum at Appleby, as west to northwest flow affects Nelson region.

11th/12th - Evening/overnight thunderstorms in Waikato and South Auckland. Unofficial record of 50mm recorded in Pukekohe over 1.5 hours.

17th - Heavy rain in northeast of North Island, with flooding on Coromandel Peninsula. (see details below)

21st - Waterspout seen offshore from Pauanau, Coromandel Peninsula.

24th - Morning thunderstorm in North Auckland.

28th - Cold morning with frosts in some inland South Island areas, eg -4C minimum at Pukaki.

29th - Severe northwesterly gales in far southwest for a time - 146 km/hr recorded at Southwest Cape, Stewart Island.

## **MAY**

2nd - Unusually high overnight minimum temperatures in the lower South Island, with new May records of 13C recorded in Wanaka, Manapouri, Southwest Cape (Stewart island), and Tiwai Point, and 12C at Mt Cook Village.

3rd - Early morning fog in Auckland, affecting Waitemata Harbour visibility and consequently delaying ferry crossings. Exceptionally warm for May in eastern areas and the north of the North Island, with maximums well into the 20s in many places. Record May high overnight minimums of 17C in Culverden, and 16C in Kaikoura.

4th/5th - More unseasonably warm nights, with new May records broken, e.g. 18C in New Plymouth (5th), 17C at Farewell Spit (5th), 17C at Paraparaumu (4th), and 16C in Westport. (5th)

4th - Widespread fog in Auckland and Waikato, disrupting airport operations and again affecting harbour ferry schedules.

5th - Brief, but very heavy rain causes locally severe flooding in Wellington region, mostly in Porirua where some houses are flooded and schools closed. Further north, a downpour also causes surface flooding in Palmerston North, where 47mm is recorded in three hours from noon to 3pm.

6th - Heavy fog causes disruption at New Plymouth Airport.

8th/9th - Record high overnight minimums of 15C at Secretary Island (8th), and 13C at Milford Sound. (9th)

10th/11th - A period of heavy rain on the South Island West Coast, with flooding closing the highway north of Westport for a time.

12th/13th - Very strong northwesterly flow over southern and central NZ, with severe gales in many eastern and southern areas, and about Cook Strait. These winds make roads hazardous, and several flights are cancelled at Wellington and Dunedin airports. Some windows are broken in Wellington, and power is cut to homes in the Wairarapa. High gusts recorded (all on 12th) include 152 km/hr at Puysegur Point, 122 km/hr at Milford Sound, 100 km/hr at Hanmer, and 91 km/hr in Oamaru. Squally thunderstorms affect South Island West Coast, with small tornadoes reported - one knocking over a water tank.

16th/17th - Thunderstorms in many areas as cold front crosses the country. Strong southerly sweeps over South Island, with gales causing some damage and power cuts in mid Canterbury, Christchurch, and Banks Peninsula. The cold change brings first snow to ski-fields of both islands.

18th - Thunderstorms in west from Taranaki to Northland. Downpour causes some surface flooding in Wellington. Brief evening thunderstorm with hail over Banks Peninsula.

20th-31st - Prolonged spell of unsettled and stormy weather over NZ. (see details below)



## MAJOR EVENTS

### 23rd/24th March - Heavy rain and flooding in northern and western South Island

Heavy rain, along with northerly gales, affected many northern and western areas during this period. The South Island was hardest hit, with severe flooding in northwest Nelson/Golden Bay and Franz Josef.

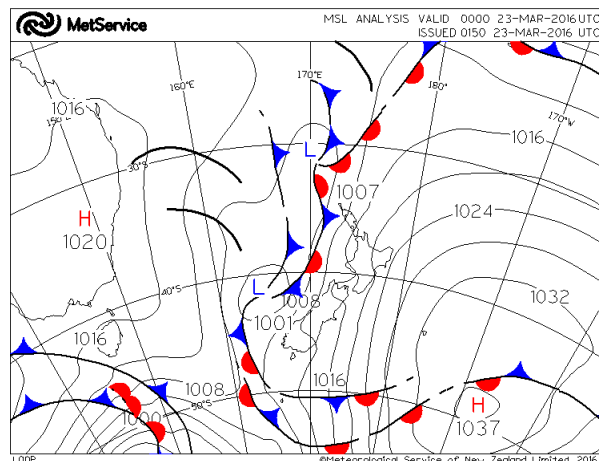
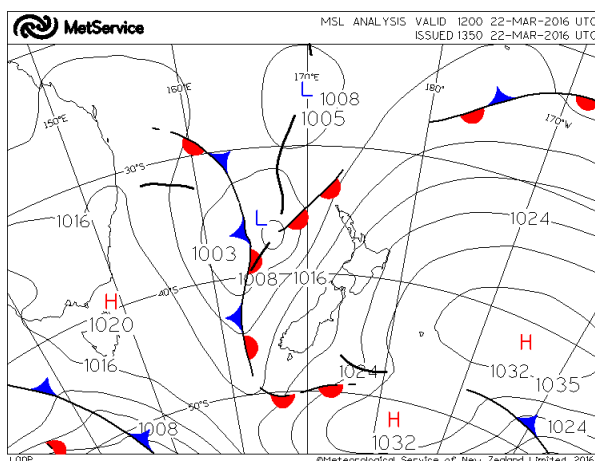
On the 23rd, an intense anticyclone lay slow moving well to the southeast of the South Island. This impeded the eastward movement of a complex trough in the eastern Tasman Sea, with a strong, moist northerly flow over NZ. This flow persisted into the next morning, before the system crossed the country.

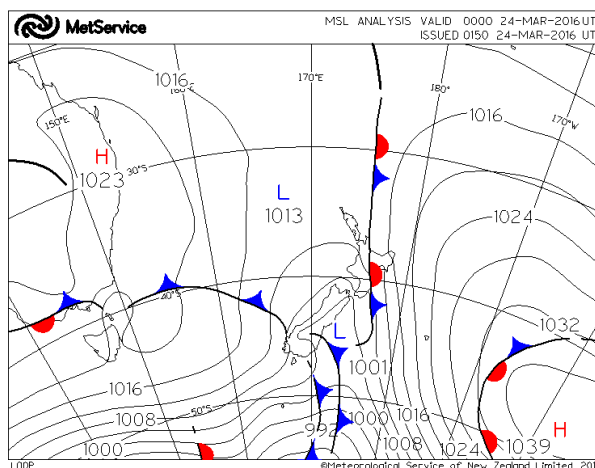
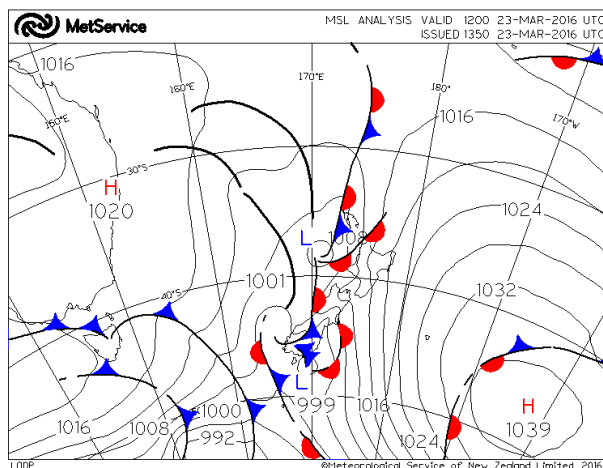
Heavy rain drenched northern and western parts of the South Island, the highest official 24 hour total being a whopping 204mm at Takaka on the 23rd, a new March record there. Other new March records on the same day included 193mm at Motueka, 145mm in Nelson, and 82mm in Reefton. Even Blenheim, normally sheltered by ranges to the north in a northerly flow, recorded 55mm.

Not surprisingly, the very heavy rain caused widespread flooding and slips, with the western Nelson and Golden Bay areas particularly hard hit. SH60 was closed by flooding from Riwaka to Collingwood in the early morning of the 24th, as were many other roads. Many orchards were flooded, unfortunately this being the harvesting season. Further south, the Waiho River broke its banks and flooded Franz Josef Township, forcing some 200 people to be evacuated from tourist accommodation in the town. The Muller Hotel was flooded up to 1.5 metres deep!

Northerly gales also lashed many northern and western areas of both islands during this period. These winds caused some damage in Northland and Auckland. High gusts included 148 km/hr at Mt Kaukau, Wellington (24th), 146 km/hr at Cape Reinga (23rd), 96 km/hr in Hawera (24th), 93 km/hr in Kaitia (23rd), 87 km/hr in Paeroa (24th), 83 km/hr at Whenuapai, Auckland, and 78 km/hr in Whakatane. (24th)

As the trough finally moved over the country on the 24th, conditions eased. A southerly change brought some thunderstorms to Canterbury (including Christchurch) in the afternoon.





Mean sea-level analyses for midday NZDT 23 March to midday NZDT 24 March in 12 hour steps are shown here.

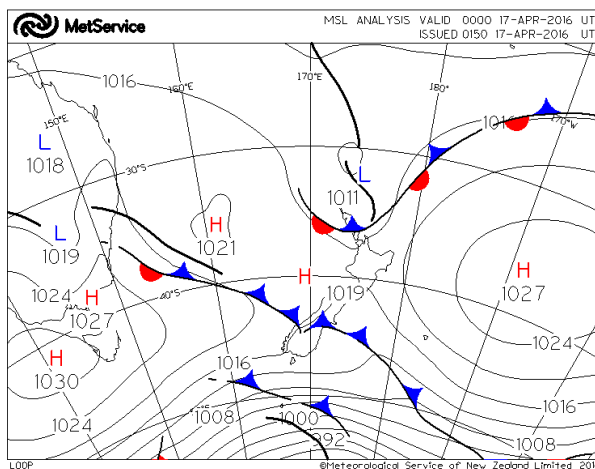
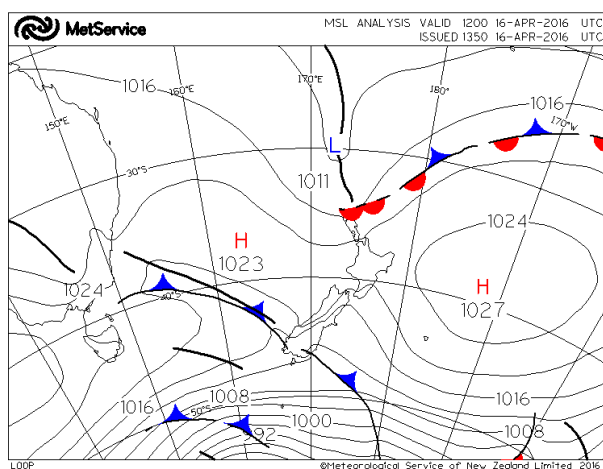
### 17th April - Heavy rain in northeast of North Island, with flooding on Coromandel Peninsula

Heavy rain affected many northeastern parts of the North Island this day, but the rain was torrential on the Coromandel Peninsula with severe flooding and slips.

On the 17th, a high lay to the east of the North Island, while another one over Tasmania pushed a ridge into the South Tasman Sea and a weakening trough onto the South Island. Meanwhile, a shallow low extended from the north onto Northland. To the south of the low, a slow-moving front in a moist northeasterly flow brought the heavy rain to northeastern areas, especially the Coromandel Peninsula.

Flooding and slips were widespread on the peninsula, closing many roads, including SH25 east of Coromandel. Consequently, the northern parts were isolated for a time, and a DOC campsite had to be evacuated at Waikawau Bay. The highest rain total recorded was 121mm in Whitianga.

By the end of the day, the front had weakened, with the rain easing.



Mean sea-level analyses for midday NZST 17 April are shown here.

### 20th-31st - Prolonged spell of unsettled and stormy weather over NZ



In contrast to the unusually warm and (in eastern areas at least) settled weather earlier in the month, the last part of May was very unsettled and often much colder. Stormy conditions affected many areas, with thunderstorms, heavy falls of rain and snow, and gales.

During the 20th, a complex and deep low in the South Tasman Sea moved eastwards, allowing a trough to spread onto the South Island with a strong unstable northwesterly flow over northern and central NZ. This brought unsettled weather to many western areas. A thundery squall crossed the Waikato, with a tornado reportedly causing some damage near Te Awamutu, while waterspouts were seen offshore from Pukerua Bay as another squall lashed northern parts of the Wellington region. Heavy rain caused flooding in Buller and Westland, with slips closing SH6 north of Greymouth. Flooding was reported in both Hokitika and Greymouth.

By the 21st, this deep low pressure system had developed two centres - one to the northwest of the South Island and another to the east of Canterbury. This allowed a colder southerly flow to cover southern and central parts of the island, with snow on the mountains. Further north, a west to northwest flow strengthened over the North Island, with gales in exposed places later, especially in Northland. Gusts reached 159 km/hr at Cape Reinga, 96 km/hr in Kaitia, and 82 km/hr in Kaikohe.

These two lows combined into one centre to the southeast of the South Island. Cold air from high latitudes pushed a strong southerly flow over the lower South Island, with west to southwesterlies further north. Heavy rain fell in parts of Otago and Southland (50mm recorded in Dunedin) with snow on the hill and high country down as low as about 300m in afternoon. Several motorists were trapped on the Crown Range Road, while a group of 4-wheel drive enthusiasts were stuck in deep snow high up in the mountains near Roxburgh (and rescued the next day, though their vehicles couldn't be retrieved until a few weeks later) Snow also dusted other South Island passes, and later the Desert Road and Mt Ruapehu. More surprisingly, a disturbance affected the lower North Island in the evening with the snow level falling much lower than expected - a light dusting at the Rimutaka Hill Road summit and even lower levels in southern Hawkes Bay/Tararua and hills east of Palmerston North.

Normally, low pressure systems move away to the east from NZ, but (due to high pressure well to the east) this low system remained over the South Island during the 23rd/24th, with another low joining it from west on the 24th. This maintained unsettled weather over the country, though temperatures and snow levels rose. A southeasterly flow over the lower South Island continued the heavy rain in eastern parts of Otago on the 23rd, with flooding around Dunedin. Further north, thunderstorms affected northern and central areas, with over 1000 strikes reported overnight 23rd/24th. northwesterly winds reached gale in places, with Motu recording a new record high May gust of 93 km/hr.

Low pressure moved to the south of the South Island on the 25th and further east the next day, with airflow tending westerly over NZ, though more southwesterly over the South Island on the 26th. Conditions remained unsettled in western areas, with thunderstorms and hail in places (including Auckland) on the 25th.

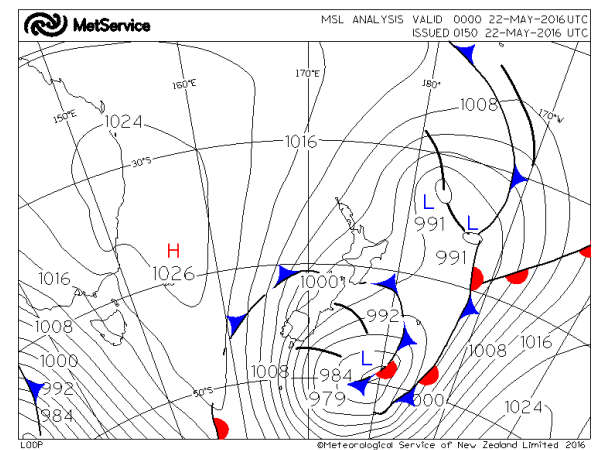
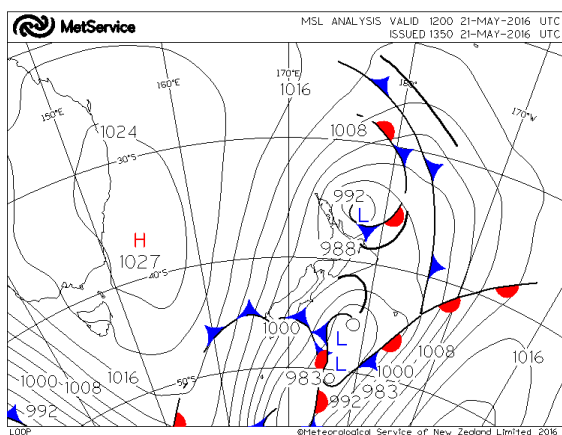
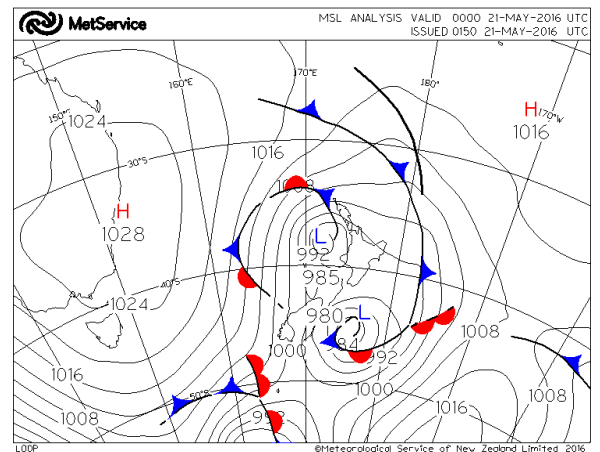
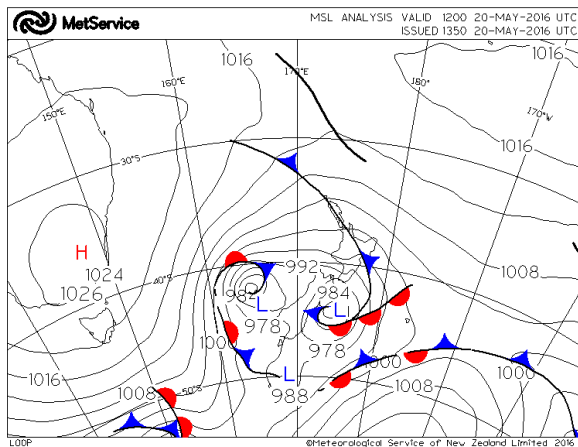
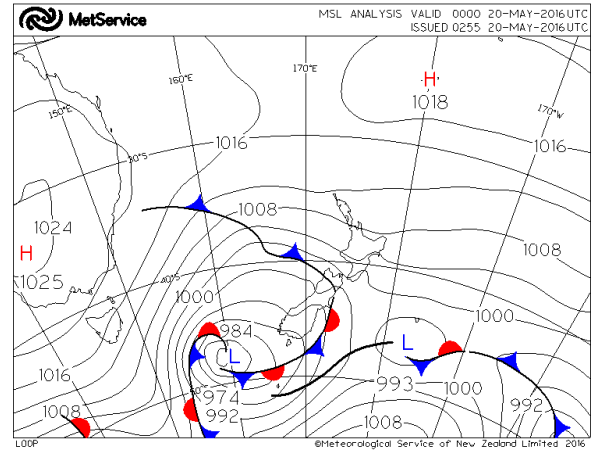
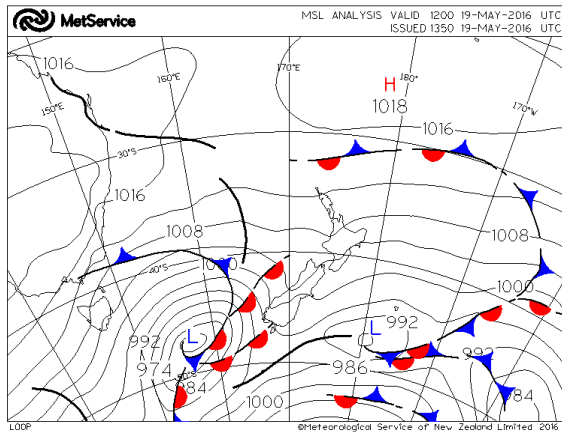
The weather pattern changed on the 27th, as a new deep low moved into the Tasman Sea, with the flow tending northwesterly over the North Island and northeasterly over the South Island.

Overnight 27th and into the 28th, as the low moved closer, several fronts crossed the country. Thunderstorms affected many northern and western parts of the North Island and northwest of the South Island, with northerly winds reaching gale in some areas.

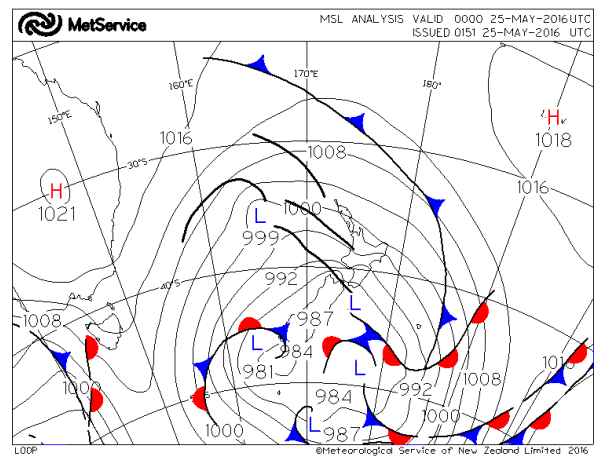
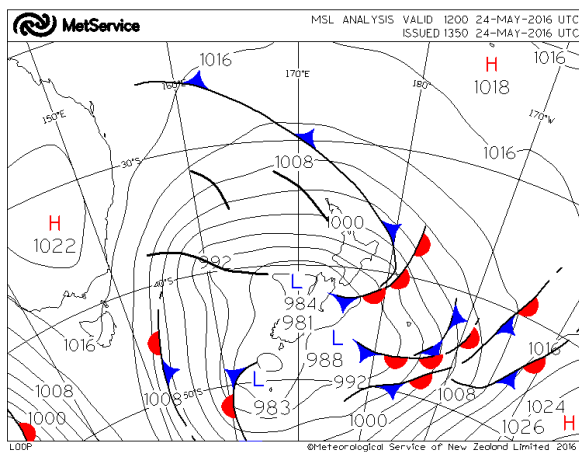
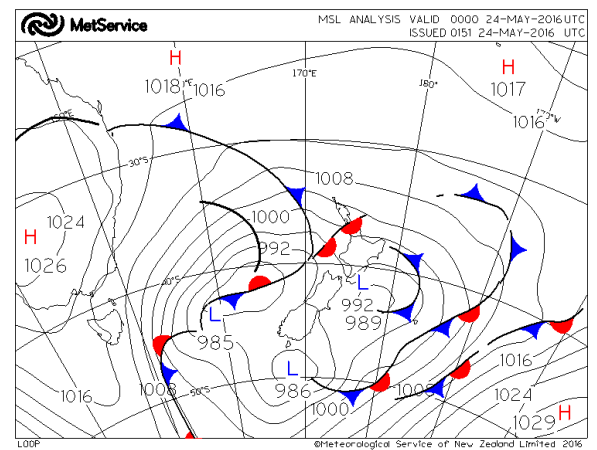
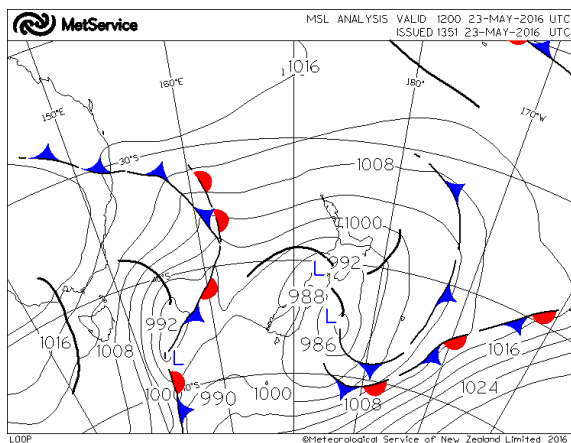
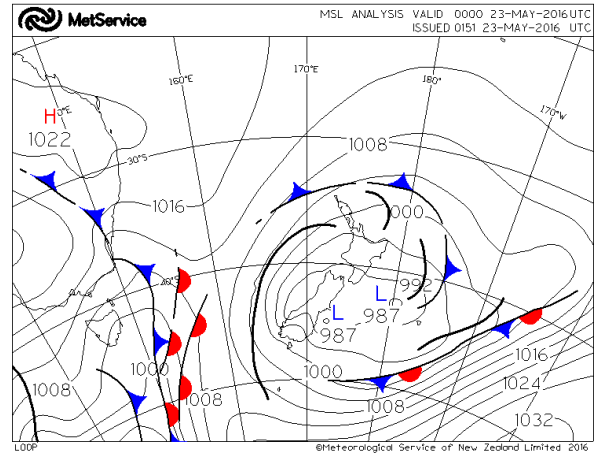
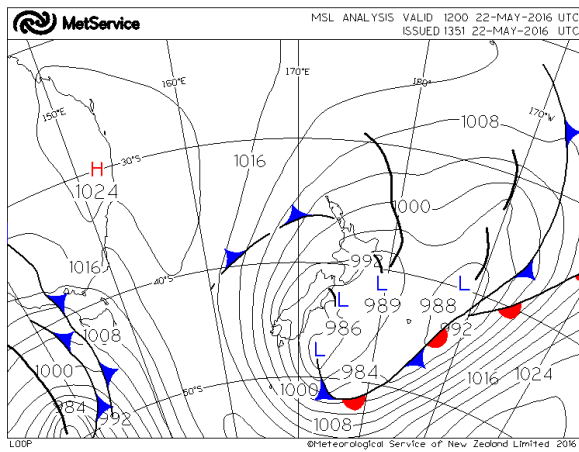
From the 29th-31st - the deep low only slowly eastwards to the southeast of the South Island, maintaining a cyclonic flow over NZ - west to southwest over the North Island, and southerly over the

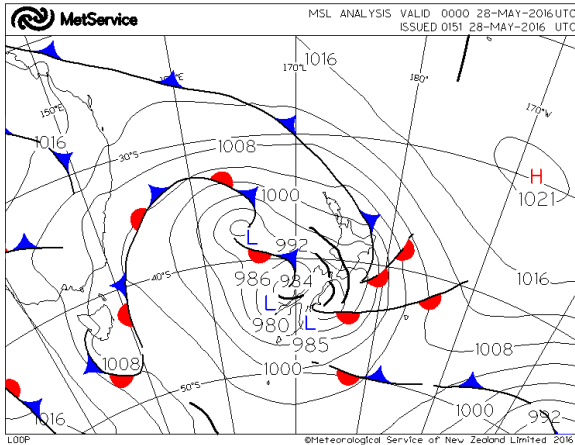
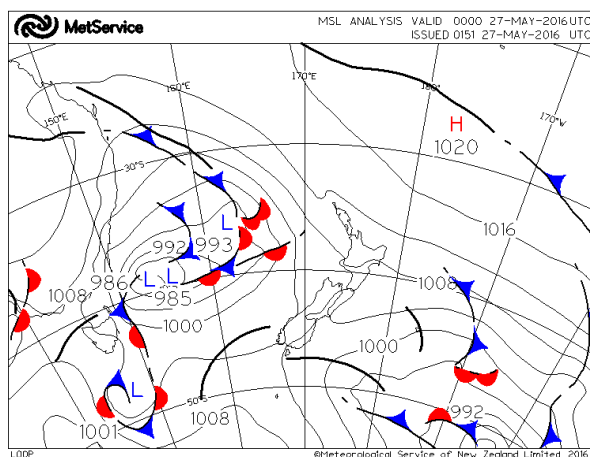
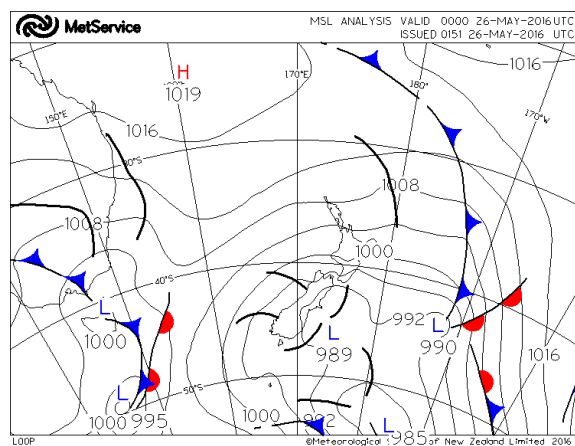


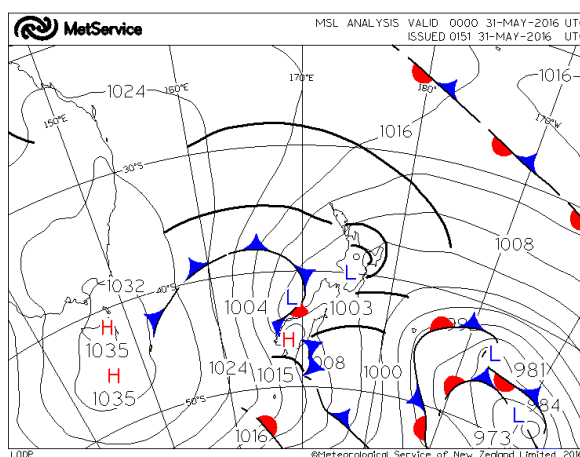
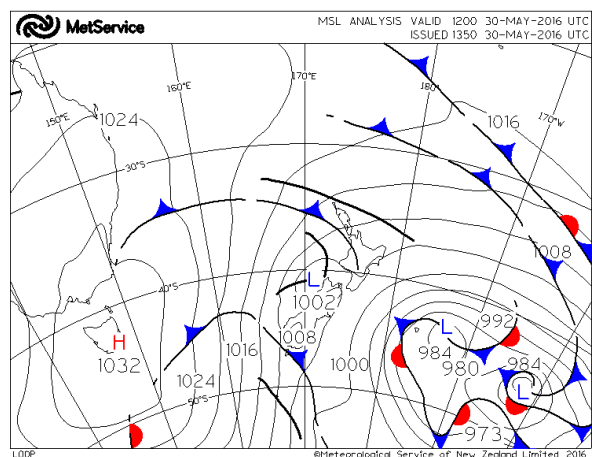
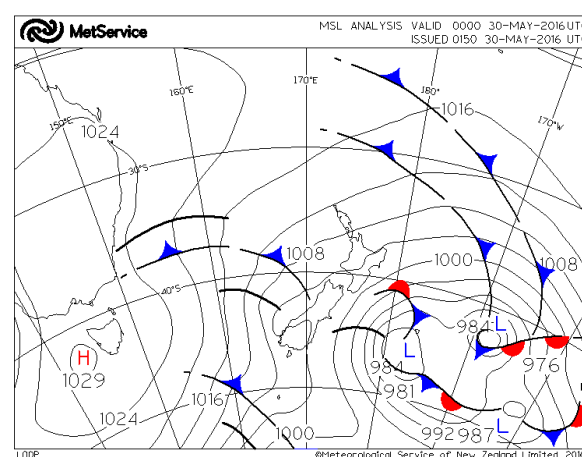
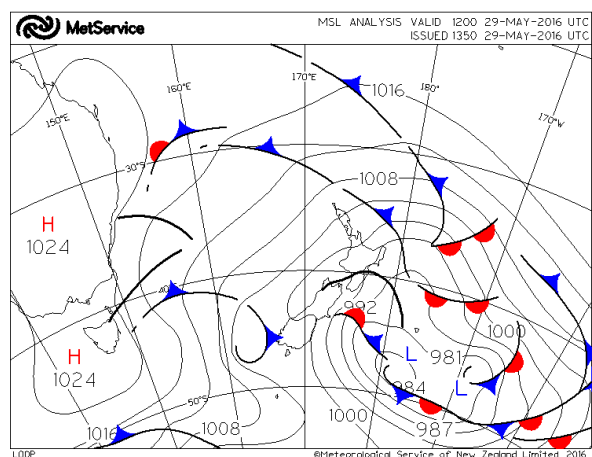
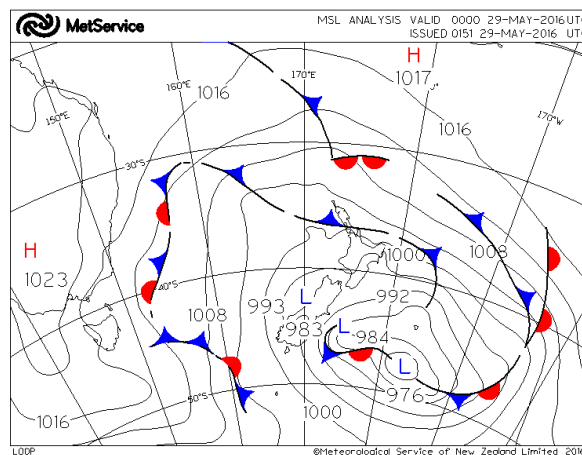
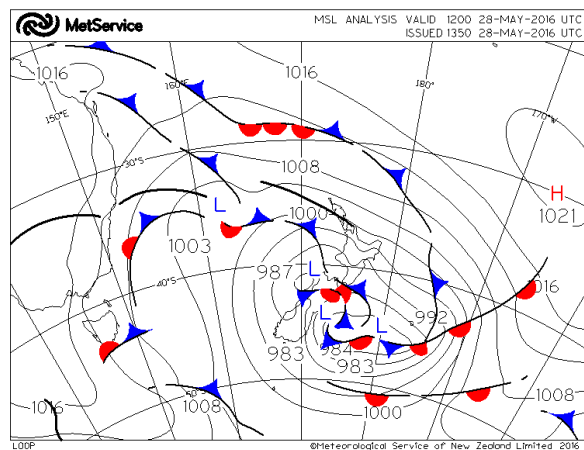
South Island. The weather remained unsettled over most of the country as fronts crossed over, with showers including some thunder and hail. Gales lashed the Waikato and Auckland regions on the 29th, with some trees reportedly damaged in Auckland (gusts reached 82 km/hr in Hamilton and 76 km/hr on Auckland's North Shore) Undercutting southerly air brought heavy rain and some flooding to the Wellington region during the early hours of the 30th. More snow fell on the mountains due to increasingly colder air in the airflow; snow lowering to the South Island alpine passes (chains advised on SH73) on the 31st.











Mean sea-level analyses for midday NZST 20 May to midday NZST 31 May in 12 hour steps are shown here.



## **MONTHLY WEATHER NOTES FOR CHRISTCHURCH – AUTUMN 2016**

### **MARCH**

It was a warm month with slightly less than normal rainfall. Precipitation fell during only three spells: 8th, 15th/16th, and 23rd/24th - the wettest day being the 16th. This was also an unusually cold day with fresh snow on the Alps. The 12th also began with a cold start, and slight frosts were recorded in sheltered parts of the city. Aside from these and some other brief cool spells, there was a predominance of warmer than usual temperatures. A thunderstorm hit the city on the afternoon of the 24th.

### **APRIL**

The remarkable feature of this month was its dryness, with very little rain falling. Warm days made the month feel summery at times, though nights were often cooler than average. (there was even a light frost in some parts of the city on the 13th)

### **MAY**

This was a much warmer than normal month, thanks to the exceptionally unseasonable warmth of the first half, even though the second half brought colder, more unsettled weather. Persistent northwesterly and northerly flows during the first half were responsible for the balmy temperatures. No measurable precipitation fell during this period. Daytime maximums were at least in the high teens on most days, with several days above 20C.

The second half was very different, being much more unsettled and colder. Overnight 16th/17th, the city was lashed by southerly gales and rain, while heavy showers continued through the next morning. The previously bare Alps received a dusting of snow. A brief southwest change brought some thunder and hail to Banks Peninsula during the evening of the 18th. From the 20th to the end of the month, it was unsettled, with rain or showers on each day. Snow fell on the inland high country and higher Banks Peninsula Hills overnight 22nd/23rd, and again on the former areas on the 28th and 31st.

## Record heat across the country in February

1 March, Stuff

<http://www.stuff.co.nz/national/77444481/Record-heat-across-the-country-in-February-but-change-is-on-the-way>



*ALDEN WILLIAMS/  
FAIRFAX NZ. Life's a beach  
and the temperature  
helped in many ways.*

Last month was "exceptionally hot" with many regions two to three degrees Celsius above normal, MetService said on Tuesday.

"Temperatures in the lower North Island and upper South Island surpassed even the brutal heat of February 1998."

It was the warmest month ever recorded in Taupo, New Plymouth, Palmerston North, Paraparaumu, Wellington and Nelson, MetService said.

Dunedin had its warmest February and Tauranga its equal warmest.

Many other places, such as Hamilton, Masterton, Napier, Blenheim, Christchurch and Invercargill had their second warmest February.

Even more than the heat, it was the sunshine that had the people of Marlborough feeling a warm glow. After a duller than usual January, Blenheim had its third sunniest February, with 289.3 hours of sunshine.

With a monster El Nino weather system in play, upending normal patterns across much of the Pacific, summer temperatures in this country were expected to be pretty average, with the north and east of the country expected to be drier than normal. Obviously it didn't really pan out that way. During February a blocking high lay to the east of the country, with frequent northeasterly winds prevailing over the North Island and northwesterlies over the lower South Island.

"The month was characterised by hot, dry spells interspersed by bursts of sub-tropical rain for those regions in the north and west of both Islands. In contrast, the lower North Island and eastern regions of both Islands received below normal rainfall," MetService said. "A pattern like this is not standard El Nino, with the blocking high pressure east of the country dominating."

MetService meteorologist Georgina Griffiths said she had lived in Auckland most of her life and had not experienced a pulse of humidity like the one in the city so far in 2016.

In the last few days of February the humidity had been "outrageous". "It kind of felt like Fiji," she said.

Despite luxuriating through their balmiest month in living memory, Wellingtonians have been warmer during the whole three months of summer before. "When you look at summer as a whole, the "golden" summer of 1935 (in Wellington) still trumps more recent weather," Griffiths said. The average temperature in the summer of 1934/35 was 19C, compared to 17.4C over December 2015 to February 2016. Summer 2016 was the fifth-equal warmest at the Kelburn weather station in Wellington.

High pressures to the east of central New Zealand brought the particularly settled weather that Wellington enjoyed during February, Griffiths said. "Wellington is superb under northeasterly winds – nice and sheltered and typically very sunny".

Auckland had its second-equal warmest summer, Tauranga its second warmest and Hamilton its third warmest. (Abridged)





## App shows UV danger

3 Mar 2016 jono.edwards@odt.co.nz

<http://www.odt.co.nz/regions/central-otago/375125/app-shows-uv-danger>



*Slip, slop, slap, app . . . Emeritus atmospheric research scientist Richard McKenzie, of Alexandra, exhibits his new app which predicts ultraviolet levels throughout the day. PHOTO: JONO EDWARDS*

A Central Otago man has co-developed apps which could steer New Zealanders into making smart decisions in the sun during periods of high melanoma risk.

Richard McKenzie, of Alexandra, is an emeritus scientist who studied ultraviolet radiation in his work at the National Institute of Water and Atmospheric Research (Niwa) station at Lauder.

Dr McKenzie consulted his computer-programming friend Jeremy Burke, who is based in Christchurch and Sydney, to develop two free smartphone apps which predict the ultraviolet intensity throughout the day.

Other Niwa staff helped with the consultation process.

The Android app Global UV, which will be released in the next few weeks, can measure the ultraviolet intensity anywhere in the world based on satellite information from the United States.

This comes a week after the pair created an iPhone version of their android app uv2Day, which is a similar, New Zealand-specific tool. Dr McKenzie said they created the apps because direct and detailed information about ultraviolet radiation "wasn't out there".

"We just did this in our own time. It's a service."

The pair developed uv2Day for Android last year, and then received a small contribution from the New Zealand Cancer Society to develop an iPhone version.

The app shows users a graph which determines how quickly they may burn throughout the day, depending on where they are in the country. Niwa has similar information on its website. "It helps people to plan their day. Many New Zealanders have complexions based on their Anglo-Saxon ancestry, but New Zealand's UV rates are twice as high as Britain."

Cancer Society Otago and Southland health promotion manager Penelope Scott said she hoped the new tool would help reduce the incidence of melanoma and other skin cancers, as Australia and New Zealand had the highest rates in the world. (ABRIDGED)

## Nick Leggett pushing for weather station in Porirua

8 March 2016 KRIS DANDO Kapi Mana News

<http://www.stuff.co.nz/dominion-post/news/77533684/Nick-Leggett-pushing-for-weather-station-in-Porirua>



*Luke Appleby Porirua's weather station is on Mana Island.*

Nick Leggett recently wrote to the Met-Service, asking that better representation be given for the city's weather. As it stands, Porirua's weather station, which feeds information on forecasting and conditions to the MetService website, is on Mana Island. It is primarily used for maritime safety forecasting, but Leggett said New Zealand's 10th largest city deserved a fair and accu-



rate weather service.

"A lot of people visit Porirua and more than half work of Porirua residents outside the city, so shouldn't they deserve to have an accurate forecast?" he said. "Development in Porirua is on the rise and part of that story we have to tell as a place to live is its weather. It needs to be presented right."

Jacqui Bridges, the MetService general manager of corporate affairs, said she hoped to meet Leggett as early as this week to show him what a weather station might look like for Porirua. She conceded the Mana Island station was likely to give Porirua a "slightly cooler" outlook than was really occurring. The cost of establishing a station would need to be met by the city, she said, with the price likely to be up to \$20,000, depending what scale of information was wanted. "If the purpose of a station is for the promotion of the city, such as observed temperatures used on TV weather reports, and not required by MetService, it is quite normal that a council would pay for a station and its installation," she said. "[The cost] depends on the size, how many sensors it has, information recorded and whether it's fenced out in the open or on a building." (Abridged)

## Winds tip truck-trailer, whip up fires in South Canterbury

<http://www.stuff.co.nz/timaru-herald/news/77760848/Winds-tip-truck-trailer-whip-up-fires-in-South-Canterbury>

10 March 2016 CHRIS HYDE Timaru Herald



MYTCHALL BRANSGROVE/FAIRFAX NZ

*A fire smoulders on Sutherlands Rd, Pleasant Valley, in high winds on Thursday.*

South Canterbury firefighters saved two houses and a shed near Mt Somers on Thursday night after they were threatened by a large fire.

Firefighters were also dealing with a large fire near Darfield which de-

stroyed a house and was threatening other properties. Burn offs are believed to have caused both fires.

The fires capped a hectic day for emergency services in South Canterbury.

A trailer of a truck was blown onto its side as gale-force winds gusting as strong as 115kmh stretched emergency workers.

MetService meteorologist Derek Holland said northwesterly gusts of 115kmh had hit Pukaki at 10am. In Fairlie and Mt Cook gusts topped 96kmh at 3pm, while at Timaru Airport a gust of 94kmh was recorded at 3pm. Timaru at 5pm had reached a high of 31.0 degrees Celsius, forecast to drop significantly when a strong southerly change came through in the evening, Holland said. Gusts could still reach gale-force after the northwesters had been replaced, particularly in coastal areas of the Canterbury Plains, he said. New Zealand Transport Agency put out a warning for high-sided vehicles and motorcyclists as winds and dust affected driving safety across much of the South Island.

(Abridged)

## Study: Increased methane levels from agriculture, not fossil fuel production

11 March 11, 2016

<http://www.examiner.com/article/study-increased-methane-levels-from-agriculture-not-fossil-fuel-production>

A new study published today in the journal Science shows that fossil fuels are not the cause of increasing levels of methane in the atmosphere, but rather from agriculture. The study, conducted by National Institute of Water and Atmospheric Research (NIWA) and led by Hinrich Schaefer, concludes that since 2007, the most likely cause of increased atmospheric methane comes from agricul-



tural practices, and not from fracking or fossil fuel production.

Methane, considered a potent greenhouse gas, is estimated to have increased by 150 percent since 1750. Since the NIWA team only had information for the Southern Hemisphere, they worked with the University of Colorado and Heidelberg University in Germany and used the information they have been collecting on methane. They then proceeded to "reconstruct the global history of methane and its stable carbon isotopes from ice cores, archived air and a global network of monitoring stations."

The first thing they noticed was that methane levels had plateaued between 1999 and 2006, after rising steadily since pre-industrial times. After 2006, methane in the atmosphere began increasing and has continued unabated. The EPA has blamed the recent advancements in fracking, even though they have no specific data showing that the methane increase was due to this technique of drilling for natural gas and oil.



*Rice paddy field and cultivation in India*

According to Schaefer, the NIWA team found they could distinguish three types of methane emissions. "One is the burning of organic material, such as forest fires," he said. "Another is fossil fuel production – the same processes that form natu-

ral oil and gas - and the third is formed by microbes which come from a variety of sources such as wetlands, rice paddies and livestock."

The team found that the "source of the increase was methane produced by bacteria, of which the most likely sources are natural, such as wetlands or agricultural, for example from rice paddies or livestock." They were surprised to discover that fossil fuel production was not the source of the increased methane and ruled it out. They call the post-2006 rise in methane primarily microorganisms (biogenic), were coming from outside the Arctic, and were "more consistent with agriculture than wetlands."

Previous studies had shown that the bulk of methane released into the atmosphere was coming from "South East Asia, China, and India – regions that are dominated by rice production and agriculture." Based on that analysis, they fingered agriculture as the most likely culprit. They also said that reducing methane emissions "must be balanced with the need for food production."

Schaefer says that if you want to avert global warming, you have to begin with agricultural processes. He said that even if the methane increase was from wetlands, "we couldn't do anything about it." But since the culprit is methane production from agriculture, you can utilize ways to reduce it. (Abridged)

## **Tourists banned from hiking on stunning New Zealand glaciers**

16 March 2016 By Associated Press and Martha Azzi For Daily Mail Australia

<http://www.dailymail.co.uk/news/article-3494892/Tourists-banned-hiking-New-Zealand-s-glaciers-Fox-Franz-Josef-ice-melting-quickly-global-warming.html>

**New Zealand's** renowned glaciers which are among the country's top tourist attraction saw hundred of hikers trek to the top of the mountains before it was deemed too dangerous and closed due to the rapidly melting ice. The Fox and Franz Josef glaciers in the South Island have been melting so quickly over the past few years making it practically impossible for people to walk up the mountains towards the glaciers. The only way to set foot on them now is to get flown onto them by helicopter.





*Two glaciers in New Zealand have been melting so quickly that they are now too dangerous for hikers to walk across ending a tradition that dates back a century (pictured in 2016)*



*Fox and Franz Josef glacier in New Zealand's South Island used to snake down from the mountains to a temperate rainforest below. The glaciers were easily accessible from the trek which began at the bottom of the mountains (pictured 2007)*

The glaciers are formed by prevailing westerly winds dumping snow in a high-altitude basin. It compacts into ice and is pushed down the valleys much like toothpaste being squeezed from a tube. The glaciers slide and roll down the mountain at a rate of 4 meters (13 feet) each day, picking up rocks and debris along the way. (Abridged)

### **Power outages as stormy weather hits Auckland, Northland**

<http://www.stuff.co.nz/national/78204789/severe-thunderstorms-possible-as-north-braces-for-stormy-weather>

24 March 2016 SIMON MAUDE, LAURA MCQUILLAN

Thousands of Auckland households face an hours-long wait for their power to be reconnected, after strong winds battered the city overnight.

Power Company Vector has reported 14,000 power outages while Top Energy had 6,000 customers affected by the weather. Winds hammered the city overnight, and Aucklanders were warned to secure outdoor items and drive with caution through the blustery winds and heavy rain, which were building shortly after 7pm on Wednesday.



*A large tree blocking McEntee Rd in Waitakere was not expected to be cleared until early Thursday evening. @FirecommNZ*

Aaron Davis, Auckland Civil Defence Head of Emergency Operations says it's expected the region could be "lashed with heavy rain and winds in the lead-up to Easter weekend."

Severe weather warnings are still in place in various parts of New Zealand including Marlborough, Nelson, Taranaki and

Northland with thunderstorms, heavy rain and strong winds expected.

### **More rough weather as Easter holiday begins**

25 Mar 2016

<http://www.odt.co.nz/news/national/377450/more-rough-weather-holiday-begins>



*A river of raging water devastated the Scenic Hotel at Franz Josef Glacier, smashing windows, tossing cars around and forcing a late-night evacuation. Photo: Greymouth Star*

Residents on the West Coast are continuing the clean-up today after severe flooding. More rough weather is predicted for parts of the country as the Easter holidays begin.

High winds and heavy rain overnight yesterday and throughout the day caused widespread flooding, hundreds of evacuations, thousands left without power, and chaos on the roads.

Buller and Westland will have cloudy periods and isolated showers, with some

heavy rain north of Harihari this afternoon, the MetService says.

Fiordland will be fine apart from morning cloud and it will be mainly fine in Canterbury, Otago and Southland, with areas of evening cloud.

Surface flooding continued to hamper mop-up operations in the south today.

The Westland District Council early yesterday declared a state of emergency in the Franz Josef and Waiau region.

More than 180 people, mostly tourists, were evacuated in Franz Josef after the Waiho River burst its banks about 700m north of the main township.

Flooding swept through several hotels including the Scenic Hotel where staff accommodation was under water. The Top 10 Holiday Park campsite on the banks of the Waiho River was swamped by the floodwaters.

Emergency rock work was under way to stem the Waiho riverbank's breach. Welfare centres were





set up in the Franz Josef township and the Red Cross has delivered supplies from Christchurch. Flooding also disrupted the town's water supply.

Thousands of people were without power in the South Island overnight and MainPower was still working to restore electricity to parts of North Canterbury this morning. However, by about noon it had been fixed. (Abridged)

### **Kiwi's 'once in a lifetime' meteor shot**

6 Apr 6, 2016 NZ Herald

[http://www.nzherald.co.nz/hawkes-bay-today/news/article.cfm?c\\_id=1503462&objectid=11617439](http://www.nzherald.co.nz/hawkes-bay-today/news/article.cfm?c_id=1503462&objectid=11617439)



*The stunning meteor seen over Waikanae last night. Photo / Jono Matla*

A Wellington photographer who captured a meteor flashing across the night sky believes the fluke picture might well prove the shot of his life.

An astronomer says the object that Jono Matla photographed at about 9pm last night was a fireball - a brighter-than-normal me-

eteor - and was likely the size of a tennis ball and travelling at between 10km to 30km per second.

Mr Matla, who posted the shot on his Facebook page, happened to be out taking a six-shot panorama in Paraparaumu with a mate when he pressed the shutter button on his sky-facing Canon D and then saw the neon spectacle overhead.

"I was taking a photo for 30 seconds and it was on a timer - I wasn't sure I'd captured it but I was hoping like heck I had while I was waiting."

As it turned out, he'd snapped the fireball beautifully - framing it against a black night sky in the instant before it vanished.

Mr Matla, who has only just got back into photography, said the prized shot was the perfect inspiration to get out and about more with his camera.

"It was a highlight, for sure. I'm definitely going to get it framed and put it on the wall."

As for what the chances of him getting the picture was, he said: "I imagine it would be quite miniscule."

Dr Grant Christie of Stardome Observatory said fireballs as bright as last night's were reported about once or twice a year - but were seen in the early night sky only as often as around once a decade.

Most meteors were typically just the size of a grain of sand and flashed for just a second, but this fireball - an object that appears brighter in the sky than Venus - might have been as big as a tennis ball, he said.

"They're fairly random, these ones ... sometimes they'll also come in showers."

Dr Christie said the fireball would have burned up at a height more than 70km above the Earth - larger objects that were big enough to create sonic booms when they disintegrated could come as close as 25km.

According to Nasa, small chunks of rock and debris in space are called meteoroids.

They become meteors, or shooting stars, when they fall through a planet's atmosphere, leaving a bright trail as they are heated into incandescence by the friction of the atmosphere.

Pieces that survive the journey and hit the ground are called meteorites.

WeatherWatch forecaster Philip Duncan said his website, WeatherWatch.co.nz, received a number of reports about the meteor through the day from around the globe.



But since 9pm there had been "dozens" of reports from around the country. Eyewitnesses described the meteor as being all sorts of colours, Mr Duncan said. One person posted that they had seen a "very bright shooting star" about 9pm in Hastings. "It looked like a fireball that got bigger as it was falling and then just burned out." A person in Mt Roskill described seeing what they initially thought was fireworks. "But this thing was no fireworks, the green light was the size of a basketball, heading horizontally on a downward slope across the sky." Others reported seeing the light over the King Country, Manawatu, Taranaki, the top of the South Island and Canterbury.

### **Fiji floods: One reported dead, one missing**

6 April 2016 Sally Round, in Tavua for Radio NZ

<http://www.radionz.co.nz/international/pacific-news/300746/fiji-floods-one-reported-dead-one-missing>

One person is reported dead and another missing in the widespread flooding which has hit Fiji over the past two days.



Flooding in Rakiraki, Fiji  
Photo: RNZI Sally Round

The body of a 70-year-old man was found floating in the Sabeto River this morning, *FBC News* reported.

The broadcaster said the man was believed to have gone for an early morning swim.

A 19-year-old girl, meanwhile, has been reported missing after she was washed away by strong

river currents last night.

More than 3500 people have moved to 79 evacuation centres in the north and west of the main island Viti Levu, as two tropical depressions to the west of Fiji continue to affect the country.



Authorities are warning people not to travel because of the risk of more heavy rain and flooding.

*Residents of Korociri cross the flooded Nadi Back Road Photo: Fiji Government*

The town of Nadi has been under metres of floodwaters, and people throughout Fiji are bracing for more heavy rain and floods over the next 24 hours.



Parts of the country were already in a state of natural disaster after the country received a direct hit from Cyclone Winston six weeks ago.

Forecasters at the Fiji Met Office said Tropical Depression 16F, currently northwest of Vanuatu, could develop into a tropical cyclone overnight and move in an easterly direction towards Fiji.

Fiji has already been experiencing heavy rainfall from another tropical disturbance, 14F, which is currently over the country. Forecasters said the new weather system could bring further heavy rainfall and strong winds overnight.

### **Fiji on alert as Cyclone Zena intensifies**

6 April 2016 Radio NZ

<http://www.radionz.co.nz/international/pacific-news/300797/fiji-on-alert-as-cyclone-zena-intensifies>

Schools are closed, many roads are impassable, and the government has told people to stay indoors as Cyclone Zena intensifies and moves closer to Fiji.

*Businesses prepare for Cyclone Zena. Photo: Fiji Government*



Zena comes after several days of intense rain in the west of Fiji that has already left several thousand in shelters and claimed at least one life.

The storm has been upgraded over the day from a category 1 storm to a category 3 storm, with winds gusting up to 170km/h at its centre.

The cyclone is moving east-southeast at 40 kilometres an

hour and is expected to pose a significant threat for the southern islands of Fiji overnight.

Zena has been tracking towards the south of the main island Viti Levu, and the Fiji Met Office said the storm was intensifying as it headed towards the country from the north west.

The Met Office is warning people to expect heavy rain and flooding, including sea flooding as it moves down the west coast.

It is just six weeks since Cyclone Winston claimed 44 lives, left tens of thousands homeless and caused widespread destruction and many fear for their safety.

All schools are closed, rivers are swollen and the major town of Nadi has been under metres of water after the river broke its banks.

Weather authorities say Zena is fast moving but winds are not expected to be as destructive as Winston, which affected more than a third of the population.

RNZ International's Sally Round is in the Fijian city of Lautoka.

She said the cyclone shutters were going up again around Lautoka, six weeks after Winston.

Many people still in devastated homes after the category 5 storm are not so lucky - they have been told to head to higher ground or evacuation centres.

Disaster authorities in the west of Viti Levu said they needed many more tents and tarpaulins.

Sitiveni Tavaga of the National Disaster Management Office said the region was one of the worst hit by Cyclone Winston six weeks ago and people are still in shock from that.

He said more shelters were urgently needed.





"Thousands, we need thousands. I can tell you that there's still people who are coming to this office asking for tarpaulins and tents. We do have some and we hope that will keep them for now but as I said we need more."

Mr Tavaga said nearly 8000 people had moved to evacuation centres from Rakiraki to Sigatoka.

A curfew is in force for the whole of Fiji from 6pm this evening as the country braces for Zena.

The government has told people to remain indoors and secure their properties until further notice.

Only emergency and essential vehicles are allowed to move about.

Media have been advised to obtain vehicle passes from the police.

Meanwhile, all international flights scheduled for this afternoon and evening have been cancelled by the various airlines due to adverse weather conditions.

Many domestic flights have also been cancelled.

## **Cyclone Zena heading for Tonga as Red Cross races to assess flood-ravaged Fiji residents' needs**

07 Apr TVNZ

<https://www.tvnz.co.nz/one-news/world/cyclone-zena-heading-tonga-red-cross-races-assess-flood-ravaged-fiji-residents-needs>

The tropical cyclone bearing down on flood-ravaged Fiji has been downgraded to a category two cyclone this morning, but it's heading the way of Tonga.

MetService meteorologist Georgina Griffiths told TVNZ's Breakfast "the worst is over for Fiji, but Zena is now tracking towards Tonga".

"It may well have weakened slightly by the time it gets to Tonga, but it's an active system, they're not trivial," she said.

Ms Griffith advises Tonga residents to keep abreast of what Fiji's MetService is saying about where Cyclone Zena is headed and what its intensity is likely to be.

### **Red Cross aid effort continues**

Speaking to TVNZ's Breakfast from Fiji, Corinne Ambler from the Red Cross says "there are a lot of relieved people in Fiji this morning".

After being battered by three days of continuous rain the Red Cross is hoping to get to low lying villages to assess damage and distribute aid like tarpaulins and solar lamps, Ms Ambler said.



Corinne Ambler says it's been a tough six weeks for Fijians who are still cleaning up from Cyclone Winston.

The Red Cross continues to work on helping Fijians rebuild after Cyclone Winston, and that work will continue after Cyclone Zena, she says.

The aid organisation's priorities are getting emergency shelters, tents and household goods affected residents and assessing sanitation

needs.

Georgina Griffiths of MetService has the latest on how Zena is tracking.  
Source: Breakfast

"People are quite resilient but there are a lot of people with inadequate shelter," Ms Ambler said.

## Girl washed away by strong currents

Overnight the body of Cyclone Zena's second victim was found, ending a search of more than 48 hours.

The 19-year-old girl was washed away by strong currents in the Sabeto River near Nadi on Monday, where a 70-year-old man was also found dead.

Flooding remains the country's key concern with nearly 6,500 residents evacuating their homes.

All schools will be closed today while international flights remain cancelled from last night.

A country-wide Restriction of Order remains in places meaning residents have to stay indoors until advised otherwise, Fiji Broadcasting Corporation reports.

The category two cyclone is currently hitting Ono-i-Lau Island with strong winds and rain.

## 'Massive' icebergs threaten NIWA equipment

11 April, Otago Daily Times

<http://www.odt.co.nz/news/national/379298/massive-icebergs-threaten-research-equipment>



*The Nansen Ice Shelf before the icebergs broke away. Photo: Craig Stevens*

Two "massive" icebergs have broken off the Antarctic coastline, endangering valuable NIWA equipment used for research at a mooring deployed by New Zealand and Korea.

The icebergs, which broke off yesterday, are between 5km and 15km long, 5km wide and up to 100m thick. They were originally part of the Nansen Ice Shelf at Terra Nova Bay, about 285km from Scott Base.

NIWA scientists had been monitoring the area via satellite and first noticed a small crack in the shelf in December 2013. Earlier this year NASA scientists noted the crack had grown rapidly, spreading across almost the entire width of the shelf.

A NIWA mooring was deployed deep into the bay in December from the Korean ice breaker *Aaron*, as part of a collaborative programme between New Zealand and Korea. The mooring was into its second year of operation and contains valuable equipment that measures current, temperature and salinity.

That information is used to understand the effects of climate change on ice shelves and sea ice. There were plans to recover it early next year.

NIWA oceanographer Dr Mike Williams said the icebergs are so deep they could catch the top of the mooring and drag or break them.

"We won't know until we go back next summer whether it is still there. We could lose a whole year of data. If that happens it will leave a gap in our research and that's unfortunate.

"However, it is a risk we have to take - we could see the crack from satellite images but predicting when an ice shelf will calve is difficult. I could have happened any time in the next five years."

The mooring is part of New Zealand's contribution to the Southern Ocean Observing System, an international alliance to better observe changes in the Southern Ocean.

A mooring installed by the US is at risk too. Another NIWA mooring stationed to the south should be safe, however. Korea has a weather station, now on one of the icebergs.



'The water came inside my car up to my ankles'

17 April 2016 NZ Herald, Lynley Bilby

[http://m.nzherald.co.nz/nz/news/article.cfm?c\\_id=1&objectid=11624095](http://m.nzherald.co.nz/nz/news/article.cfm?c_id=1&objectid=11624095)



*Heavy rain and flooding on the Coromandel peninsula. Photo / Supplied*

Heavy downpours are keeping North Island emergency services busy tonight, with residents climbing to higher ground to escape floodwaters in the Coromandel, and many roads in the Thames-Coromandel region

blocked because of flooding, slips and fallen trees.

Fire Service spokesman Jaron Phillips said residents in Albert St in Coromandel township scrambled to higher ground this evening after they became concerned about the rising waters.

He said there was also a report of flooding on Wharf Rd in the township, where occupants were forced to move their equipment and belongings.

Mr Phillips said other calls for help were still coming in, and a fire crew had gone to a property on Colville Rd, where a woman said she was trapped inside by floodwaters.

Civil Defence urged people to stay home and not go out in their cars.

Marta Wacowska got stuck in floodwaters while out driving.

"I was driving through Coromandel town at 7.30pm and my car got stuck opposite Anchor Lodge today," Wacowska wrote on Facebook tonight.

"[It] just died in the middle of the road in the flood. Bins and barrels were flooding around me. The water came inside my car up to my ankles."

Tourists from the nearby backpackers ran to rescue "my 6 year old and me", Wacowska said.

"They pushed us out of the water. Luckily someone took us home. My car didn't go anymore, and it's still raining I hear! It was pretty scary. I was shocked when I opened the car windows and saw our car in the flood."

MetService said a trough of low pressure was moving slowly across the Coromandel Peninsula and western Bay of Plenty and would continue eastwards towards the eastern Bay of Plenty and northern Gisborne overnight and into tomorrow morning.

It said a short period of heavy rain, with possible localised downpours, was expected on the Coromandel Peninsula and western Bay of Plenty - from Tauranga westwards - until midnight tonight.

A further 30mm-50mm of rain could accumulate between 9pm and 12am tonight in those areas.

The rest of the Bay of Plenty, east of Rotorua, will see a burst of heavy rain overnight and early tomorrow morning and a total of 65mm-90mm of rain could accumulate in the 10 hours from 9pm-7am, MetService said.

"People are advised that this amount of rain could cause rivers and streams to rise rapidly, with possible slips and surface flooding."

The Thames-Coromandel District Council has provided updates throughout the evening, and warned residents to stay off the roads because of slips and flooding.

"If you were planning a Sunday drive up the coast past Coromandel town, don't," it said on its Facebook page. "The roads have disappeared under water. Stay safe, everyone."

Police also warned the public in the Thames-Coromandel district about flooding and slips.



## Floodwaters recede and roads reopen following torrential rain

They said there was surface flooding and debris on Whangapoua Rd in Te Rerenga, and Port Charles Rd in Waikawau was blocked by large slips.

There was deep surface water on Thames Coast Rd in Tapu and large slips on the Thames-Hikuaui Rd, which was blocked.

Thames Coast Rd in Ruamahunga also had flooding and deep surface water and Manaia Rd was blocked by severe flooding.

The council said tonight that, according to the New Zealand Transport Agency (NZTA), there is no way to get through from Manaia to Tairua, and there are no detours.

"Some people are still driving as if there hasn't been an issue and are getting a fright when they hit surface water."

Police said traffic would not be able to travel on the roads blocked by flooding and slips.

Kennedy Bay Rd was closed because of slips and trees on the road and the bridge near the intersection of State Highway 25 at Whitianga and the 309 road were also flooded and not passable.

Colville, Port Charles and Waikawau Bay had been left isolated by floodwaters.

Sandra Morris wrote on Facebook that there was a rockfall on the Kopu-Hikuaui Rd.

"Rocks still falling," she said. "One guy has just shredded his tyres."

The council said: "Emergency Services have evacuated one lady from her home but say they believe the situation will be okay overnight.

"Some property has been damaged and emergency services will deal with those matters in the morning."

It said there were reports of people trying to get through the floodwaters.

"Colville is flooded and there is a crack in the road approximately 2.5km south of the village. Please take care on the roads and make good choices."

Meanwhile, heavy rain also flooded houses in West Auckland this afternoon and a severe weather watch was put in place for Great Barrier Island and Westland.

But MetService said the low pressure system that is moving southeast over the upper North Island - bringing the severe weather watch and heavy rain in Auckland, Coromandel, Bay of Plenty and Gisborne - would be replaced by a ridge of high pressure moving on to the country tomorrow.

Meanwhile, a front moving north over the South Island, bringing heavy rain to southern Westland today, is expected to weaken as well, as the ridge of high pressure begins to take over tomorrow.

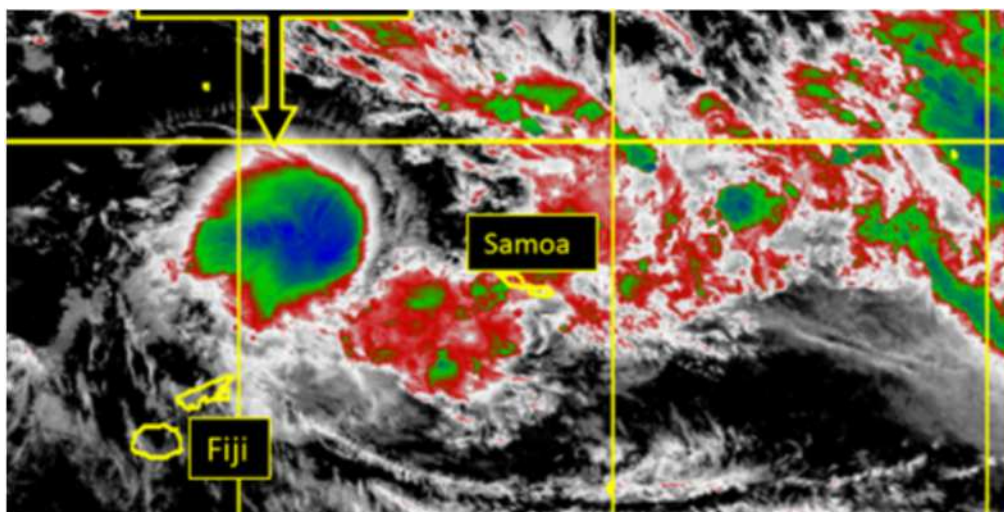
MetService meteorologist Stephen Glassey forecast that the ridge would remain over New Zealand until late in the week.

"Most places will see plenty of sunshine this week after the rain bands clear the country. There could still be a few showers in some places, but predominantly it's looking fine."

## Tropical storm brewing in the South Pacific

20 Apr, 2016 - NZ Herald

[http://www.nzherald.co.nz/world/news/article.cfm?c\\_id=2&objectid=11625731](http://www.nzherald.co.nz/world/news/article.cfm?c_id=2&objectid=11625731)



MetService meteorologist Bill Singh said a tropical depression was sitting north of Fiji. Photo: MetService

A tropical storm is brewing in the South Pacific and could become a cyclone within 24 hours.

MetService meteorologist Bill Singh said a tropical depression was sitting north of Fiji.



It was expected to deepen overnight and there was a good chance it would be named the region's latest Tropical Cyclone later today.

He said the storm system was slow moving and regarded to be ripe for intensifying in coming hours. "It's getting everything that should be able to help it to develop," said Mr Singh.

"It should deepen further tonight and Fiji MetService is saying in the next 48 hours a system of tropical intensity should be formed."

He said computer models showed the cyclone would alter its northwest course and track in a south-easterly direction towards the weekend, passing between Tonga and Samoa next week.

At this stage cyclone-battered Fiji would be spared the worst, save strong winds affecting the northern group of islands.

Mr Singh said it was too early to predict the level of intensity the forming cyclone would reach.

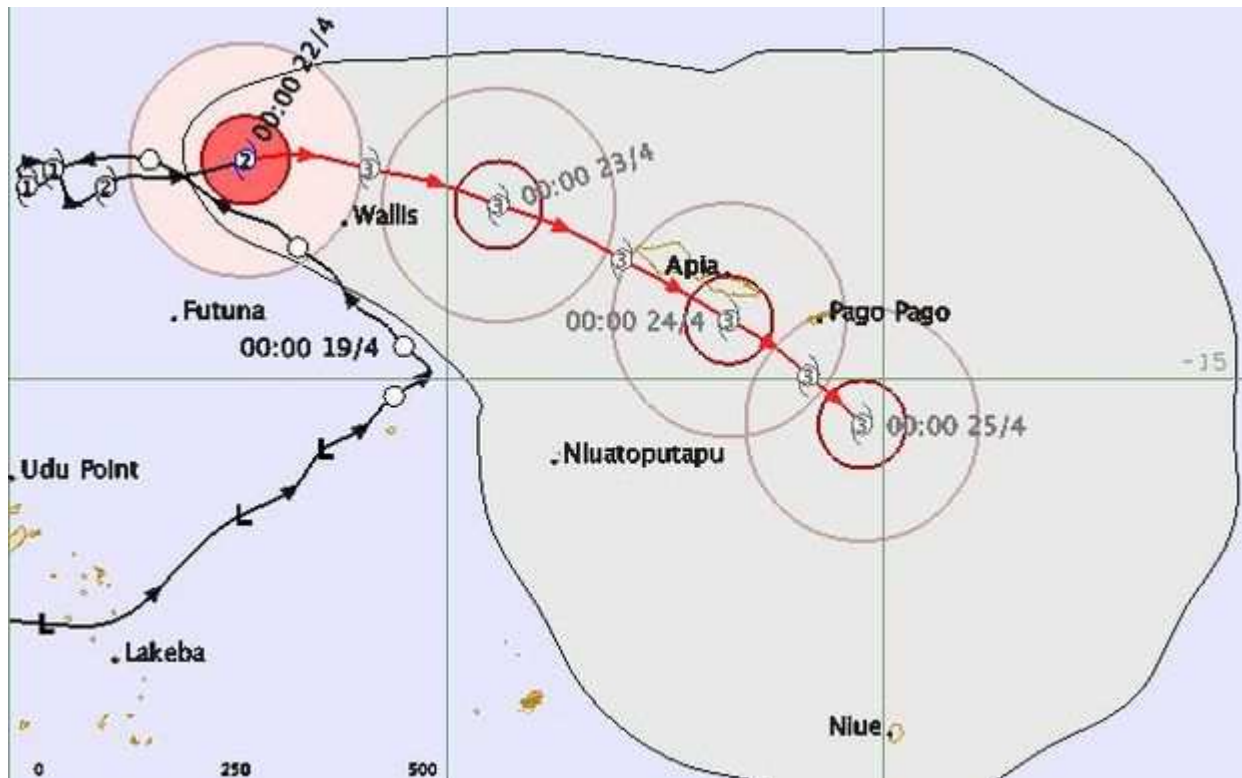
Cyclone Winston, the most powerful storm ever recorded in the Southern Hemisphere, moved through the Pacific in February causing death and destruction across Fiji.

### Samoa and Wallis brace for an intensifying Cyclone Amos

22 April 2016

<http://www.radionz.co.nz/news/pacific/302138/samoas-and-wallis-brace-for-an-intensifying-cyclone-amos>

Tropical Cyclone Amos was upgraded to a category three on Friday night, and was forecast to pass close to Samoa's southern coast this weekend.



*The current forecast for Cyclone Amos, passing close to Samoa's southern coast as a category three. Photo: Fiji Meteorological Service*

The cyclone is still more than 600km west of the capital, Apia, slowly moving east at 16km/h.

On Friday night, Samoa's Meteorological Service upgraded the system to a category three storm, with sustained winds as high as 140 km/h at its centre.

It said the system was intensifying, and was expected to pass close to the country's southern coast late on Saturday and early on Sunday morning.

It had already issued heavy rain, strong wind, and flood warnings for the country, and small boats were advised not to go out into very rough seas.

The system was already bringing heavy rain and strong winds as it passed close to Wallis Island. The public there were advised to prepare, with schools closed on Friday and a 'yellow alert' declared by authorities in the French territory.





To the east, authorities in American Samoa placed the territory under 'hurricane watch', with Amos expected to enter its waters on Sunday.

Our correspondent in Pago Pago said people had gone home early on Thursday (Friday Samoa, New Zealand time) and stores had reported increased sales of plywood, torches, batteries, water and canned food.

A meteorologist at the National Weather Service in Pago Pago, Mase Akapo Akapo, said Amos was expected to pass to the territory's south, and there was the potential for severe damage.

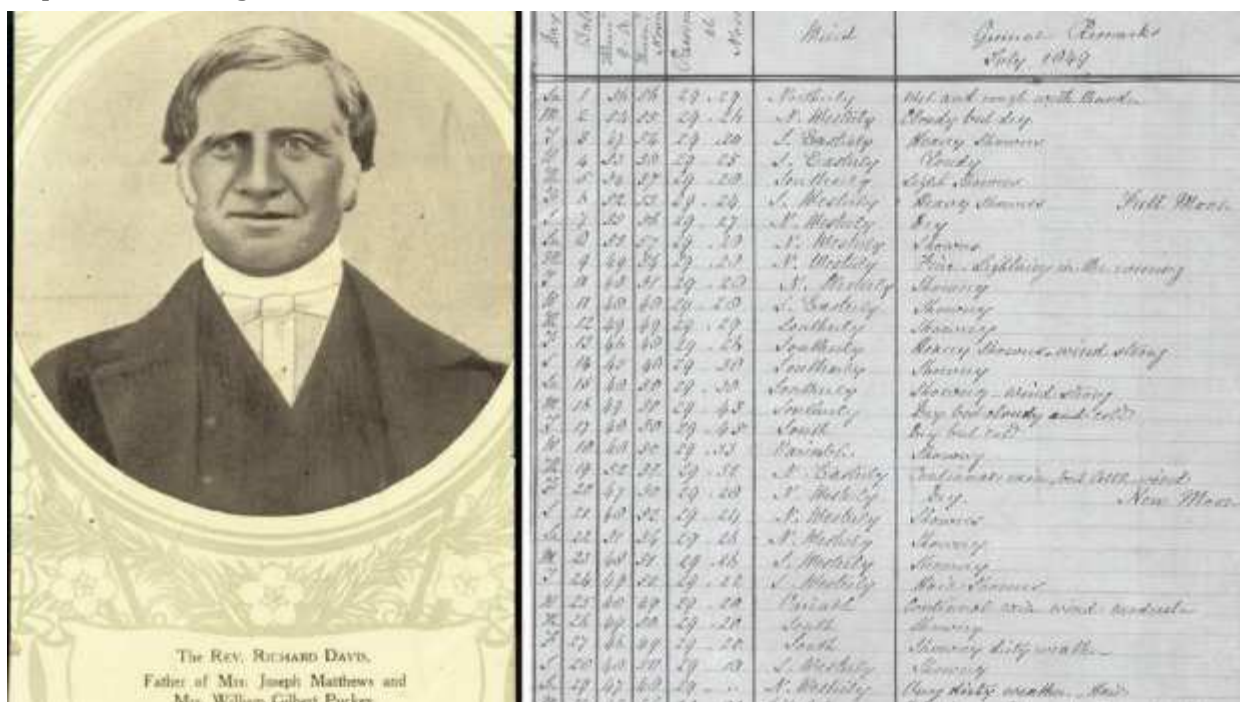
Mase said residents should not take chances and prepare for strong winds, heavy rain and flooding.

"The system is coming from the west side, and if it passes to the south of us the strongest winds of the system will be right over us," he said.

## Information in New Zealand's first weather diaries may help climate-change studies

April 25 2016. Stuff

<http://www.stuff.co.nz/science/79024541/information-in-new-zealands-first-weather-diaries-may-help-climatechange-studies>



NIWA

Rev Richard Davis's weather diaries from Northland in the mid-19th century are helping researchers understand climate change and have seen him labelled "New Zealand's first weatherman".

The "Dirty Weather" Diaries of an English missionary living in Northland in the 1800s are helping scientists understand climate change. SUSAN PEPPERELL reports.

It took Dr Drew Lorrey a matter of seconds to realise what he'd found.

The National Institute of Weather and Atmospheric Research (NIWA) climate scientist was online searching the National Register of Archives when the name Richard Davis appeared, along with reference to his diaries and two volumes of meticulous meteorological records, recorded in fine, looping handwritten script.

New Zealand's "first meteorologist", the Rev Richard Davis, died in 1863 and is buried in the cemetery of Te Waimate Mission House, Northland

Realising they were of national significance, Lorrey said they were "hiding in plain sight".

Lorrey and his colleague Petra Pearce are part of an international scientific collaboration that recovers and digitises historical weather observations. It is information that, when combined and analysed, can help scientists understand more about past weather patterns and how that relates to climate change.

Rev Richard Davis' inadvertent contribution to this project started more than 175 years ago.



He was an English colonial-era missionary, sent from Dorset to Northland by the Church Mission Society, arriving in 1824 aged 34, with his wife Mary and their six children.

A farmer by profession, he set about establishing a farm at Waimate North. It was arduous work, suitable land was scarce, crops failed, conditions were tough and relationships often fraught.

Fortunately, for the history's sake, Davis was a prolific correspondent, sending thousands of letters back to England – many to his friend the Rev John Coleman, who would later compile a memoir of Davis' 39 years in New Zealand.

In his letters, Davis detailed the busy comings and goings around the Bay of Islands, his interactions with local Maori and his efforts to grow plants, fruit trees and vegetables from seeds sent from England. A vital part of this endeavour required an understanding of the local climate.

Davis recorded the temperature each day at 9am and again at midday, along with a midday pressure measurement. He also commented on wind flow, wind strength and cloud cover, and made notes about extreme weather events.

The records that survive cover nine years of weather observations in two parts, from 1839 to 1844 and from 1848 to 1851. The intervening gap corresponds to the time he was ordained as a deacon and left Waimate to establish the Kaikohe Mission Station.

The diaries, which were donated to Auckland Library in the mid-1900s, had never been previously examined for scientific purposes.

Two entries recording snow astounded Lorrey – adding to a total of six historic accounts of snow falling in Auckland and Northland, the latest in 2011.

On July 30, 1849, Davis wrote: "Hail storms. This morning the southern hills and Poutahi covered with snow."

And the next day: "This morning the hills were again covered with snow."

However, Lorrey said the diaries revealed on average that winters were colder and summers warmer during Davis' time, although that could have been a consequence of the poor placement of Davis' thermometer.

"But this evidence enriches our understanding that early settlers may have faced significant climate anomalies that New Zealanders continue to grapple with today."

Lorrey and Pearce also corroborated his barometric pressure observation with logs from ships anchored in the Bay of Islands – something they believe Davis might also have done.

The pair have now had a paper published on the diaries in the international scientific journal *Climate of the Past*. They called it "The Dirty Weather Diaries" as a homage to a phrase Davis often used to describe a gloomy, blustery day.

Lorrey and Pearce believe Davis's could be the earliest continuous land-based meteorological measurements made in New Zealand. Regular land-based observations were generally regarded as having begun in the early to mid-1850s by the Royal Engineers in Auckland, who took measurements three times a day.

Lorrey said he believed it was possible there could be more historic weather records in private or museum collections around New Zealand. These were kept by earlier missionaries, military personnel or people involved in agriculture or viticulture, such as Scottish viticulturist James Busby, mentioned by Davis as having given him 50 grape plants in December 1835.

"We've given Richard Davis the title of New Zealand's first meteorologist because of the length and detail of the data he took, which to date is the earliest reported quantitative meteorological account for New Zealand that was kept over multiple years."

The Davis diaries would make a significant contribution to the historical weather observations project. The data would be fed into the 20th Century Reanalysis Project, which aims to reconstruct six-hourly snapshots of the weather conditions across the globe, filling a gap in Southern Hemisphere information and providing historical context and comparisons for today's climate.

Davis died in 1863 and is buried in the cemetery of Te Waimate Mission House.

To read the paper see: <http://www.clim-past.net/12/553/2016/>





## Govt endorses MetService issuing rain warning AFTER town cut off from flooding

29 April, National News

<http://www.weatherwatch.co.nz/content/govt-endorses-metservice-issuing-rain-warning-after-town-cut-flooding>

Minister Peter Dunne has asked state-owned and tax funded forecaster MetService why they issued a heavy rain warning back in March after the Coromandel town of Whitianga was cut off from flooding. In a long worded several page piece of puffery out of MetService that justifies why they got it wrong, the end result is that the Government Minister, Craig Foss, says, "I am satisfied the MetService handled these particular events appropriately".

MetService also failed to adequately warn of the Franz Josef flood event this year, the Whanganui floods last year, and numerous other severe weather events in previous years. The state forecaster has also aggressively publicly said "only MetService meteorologists have the skills to interpret weather data" and have actively limited publicly owned data to boost their own power - despite failing repeatedly to live up to accurate warnings.

Ministers across all parties are now actively interested in this issue - especially after recently MetService CEO Peter Lennox rubbished the other state forecaster, NIWA, by calling them "amateurs" at a Select Committee meeting where their Cyclone Winston forecasts were discussed. Both NIWA and MetService got their Cyclone Winston forecasts wrong for New Zealand - but MetService's CEO failed to try and blame the private sector for their failure.

New Zealand tax payers fund NIWA and MetService to the tune of \$140 million dollars a year - and the Govt currently does not measure, or care, about their accuracy - which is remarkable given the investment into two separate agencies (who aggressively compete against each other, using your funding).

WeatherWatch.co.nz is an entirely independent and **free** weather service for New Zealanders. We were the only forecaster live updating when Whitianga was cut off from flood waters - before MetService even issued a warning.

## Fog causes travel delays in Auckland

4 May 2016 - NZ Herald

[http://www.nzherald.co.nz/nz/news/article.cfm?c\\_id=1&objectid=11633146](http://www.nzherald.co.nz/nz/news/article.cfm?c_id=1&objectid=11633146)



*Flights and ferries have been delayed due to fog. Photo / Michael Craig*

Twelve domestic flights were delayed and 17 domestic flights were cancelled, due to the fog. It caused traffic disruptions and delays to ferry services.

April's warmer trends are expected to stick around and

keep winter at bay this month.

MetService Meteorologist Georgina Griffiths said autumn had been "remarkably warm".

Last month was sunny, warm and dry around many parts of the country; Nelson recorded its sunniest April ever with a total of 248 hours of sunshine.

According to MetService, it was the fourth month running above average temperatures - typically 1 to 1.5C above normal - were felt throughout New Zealand. (Abridged)

## Metservice warns of strong swells

4 May 2016 - [Wanganui Chronicle](http://www.nzherald.co.nz/wanganui-chronicle/news/article.cfm?c_id=1503426&objectid=11633474)

[http://www.nzherald.co.nz/wanganui-chronicle/news/article.cfm?c\\_id=1503426&objectid=11633474](http://www.nzherald.co.nz/wanganui-chronicle/news/article.cfm?c_id=1503426&objectid=11633474)



*Castlecliff Beach Beachgoers are being urged to take care with strong swells expected to hit Whanganui beaches tomorrow morning.*

Storm force winds south of Australia in the last week have generated exceptionally powerful waves which are heading to New Zealand.

These large long period waves will arrive on the southwest of the South Island Wednesday evening and then will sweep up the to the west coast of the North Island on Thursday.

While the swell is only expected to be four metres the swell period will be unusually long at 20 to 22 seconds, producing very large breaking waves inshore.

"Sweeping onshore waves could be a danger to swimmers all along the west coast due to strong in-shore currents, undertows and rips associated with this long period swell," MetService Meteorologist Lisa Murray said. A wave period in excess of 20 seconds happens about once a year and could put boat moorings under stress or make harbour bars hazardous. (Abridged)

## Flash flooding moves to Palmerston North after weather-bomb leaves windy city

5 May TVNZ

<https://www.tvnz.co.nz/one-news/new-zealand/three-dead-after-four-wheel-drive-vehicle-crashes-into-tree-in-northland>



*Audrey McDonald, in her 70s, faces a daunting task after her Whitehouse Road (Titahi Bay) home was inundated with floodwater. Source: ONE News*

The wet weather has eased in Porirua after the region received up to 30mm of rain an hour this morning, with people now moving into the recovery and clean-up phase as the rain moved up north to Palmerston North.



*These guys braved the water in Warspite Ave after the Wellington area was hit by heavy rain and flooding today. Source: ONE News*



*Car trapped in flash flooding in Palmerston North Source: Facebook: Dan Watson*  
Palmerston North experienced a brief bout of flash flooding, trapping cars and drenching the streets.

### **Flooding hits Wellington region hard, after long period of settled weather**

5 May 2016 TOM HUNT, LAURA WALTERS, AMY JACKMAN AND RACHEL THOMAS

<http://www.stuff.co.nz/dominion-post/news/79636915/flooding-hits-wellington>

Porirua bared the brunt of a torrential downpour in the region, with at least five schools closed and many streets drenched in surface flooding.

Wellington City Council responded to about 24 flooding related jobs before 10am.

Kilbirnie, Tawa, Lyall Bay and near the Basin Reserve were the hot spots, council spokesman Clayton Anderson said. He said that because Wellington had been dry the autumn leaves had been falling, and were now being washed into drains causing the problems.

MetService issued [a severe rain warning](#) for northwest Nelson, Wellington, Horowhenua and Kapiti as a complex trough crosses central New Zealand on Thursday morning.

A warning was issued that streams and rivers were likely to rise rapidly and slips were possible. "For Wellington, after such a prolonged period of dry weather, surface flooding is possible as drains may struggle to cope with the short duration heavy rain and an influx of autumn leaves," MetService's warning said.

Tawa had 20.4mm of rainfall between 8am and 9am this morning, meteorologist Claire Flynn said. The rain was unusually heavy, Flynn said. "Usually we say 6mm of rain in one hour is heavy and they have gone well beyond that." Flynn said the weather arrived due to a front that was sitting over the region.

Surface flooding was made more likely as the ground in the Wellington region had become hard after a long period of warm, dry weather, Flynn said.





The rain was easing and moving north by midday, heading for Horowhenua and the Kapiti Coast, MetService communications meteorologist Lisa Murray said. (Abridged)

*Vehicles drive through flood waters in Porirua. VIRGINIA FALLON/FAIRFAX NZ*

### Heatwave hits Christchurch

11 May 2016 NZ Herald

[http://m.nzherald.co.nz/nz/news/article.cfm?c\\_id=1&objectid=11637529](http://m.nzherald.co.nz/nz/news/article.cfm?c_id=1&objectid=11637529)

The Canterbury region experienced a heat wave today, sweating through its third hottest day in May on record. MetService recorded temperatures in Canterbury of 26.1C. Meteorologist Ciaran Doolin said it was unexpected at this time of year.

"This is unusual and they have a strong foehn effect forced over the mountains, warming and drying as it comes down the other side, that's where you get warm temperatures," he said.

He said while Canterbury had warm temperatures, it was an overcast day with mid to high cloud with strong gusty northerlies. Dunedin has also had an unusually warm day today with currently temperature at 24C. But it didn't break any records, Mr Doolin said.

"There's been quite a high pressure system that's all contributed to warm weather," he said.

### Power restored to the hundreds of Wellington homes affected by overnight gales

13 May, DAVID WHITE FAIRFAX MEDIA

<http://www.stuff.co.nz/national/79940254/Hundreds-of-Wellington-homes-still-without-power-on-Friday-after-severe-overnight-gales>

Sleep was a rare commodity around the lower North Island last night as winds of up to 150kmh lashed the region, pulling down trees, power lines, disrupting flights and closing roads. The Rimutaka

Hill summit recorded 145kmh, Karori Rock hit 130kmh, and MetService said the south coast would be experiencing gusts of similar power.

### YACHT STRIKES ROCKS

*KEVIN STENT/FAIRFAX NZ*  
*Yacht damaged after crashing into rocks at Evans Bay, Wellington.*

Habourmaster Mike Pryce said the 14-metre catamaran broke loose from its





moorings during the storm-force winds early Friday morning and went aground on the rocks at the eastern end of Cobham Dr at about 1am.



*SUPPLIED A campervan overturned near Springfield, west of Christchurch.*

In the South Island there was surface flooding in Southland and Otago, wind gusts of more than 100kmh led to the cancellation of flights at Dunedin Airport and State Highway 6 at the Haast Pass was closed by debris from trees. (Abridged)

## Wild weather brings tornado and disrupts flights, sailings

13 May

<http://www.stuff.co.nz/national/79892021/Warning-of-small-tornados-as-high-winds-and-flooding-hit>

Wild weather sweeping the country brought at least one tornado to the West Coast, disrupted flights and ferry sailings, closed roads, and knocked out power to 800 Wellington homes.

A tornado was photographed near Ross on the West Coast at about 4pm on Thursday.



Sam Wanrooy, of Kumara, had just stopped working a bulldozer because of a breakdown when the tornado headed his way.

*A tornado seen near Ross, in Westland. SAM WANROOY/ THE COASTERS CLUB/ FACEBOOK*

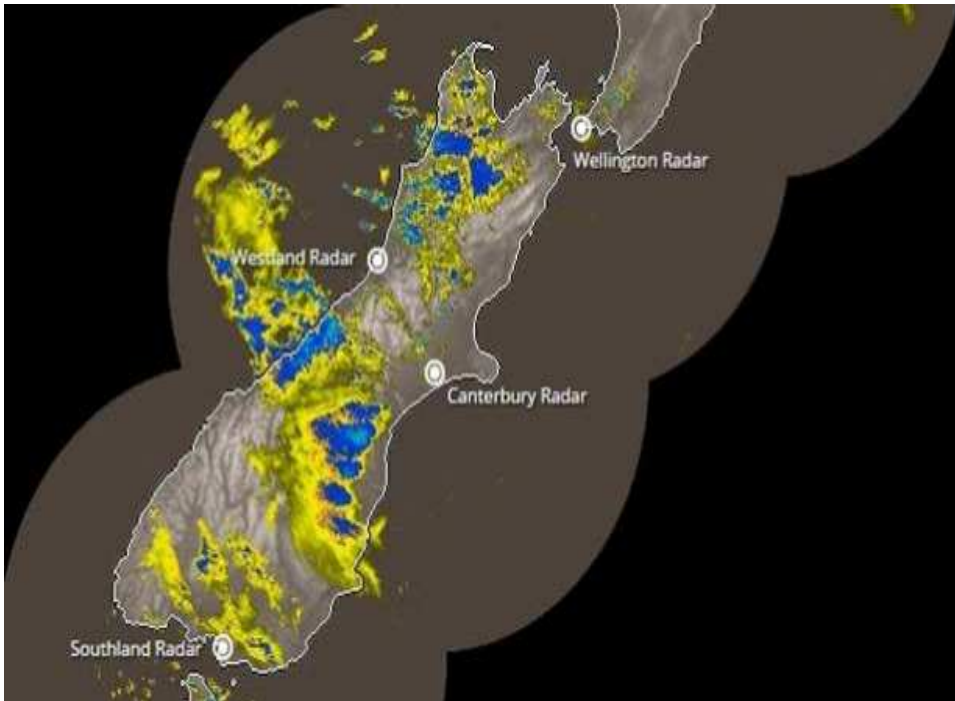
"It took out more trees about 30 metres from us and broke a few windows in the work utes. It also blew a 2000-litre

water tank off its stand, which was full and anchored down. Wind and rain was coming from all directions. As soon as it passed, it was dead quiet, with just trees still breaking in the background."

MetService forecaster Hordur Thordarson said the tornado was the result of an unstable air mass affecting the area. The thunderstorms were "quite intense". "These storms were moving quite quickly, around 70km an hour and with that circular motion. In addition to that, you could get winds stronger than 100km an hour."

It was likely the tornado would only have lasted for a few minutes, while the storm itself lasted for a few hours.





*METSERVICE Heavy rain moves up the South Island in this Met-Service rain radar image from 5.43pm.*



*SUPPLIED A truck and trailer overturned in the high winds near Springfield, west of Christchurch.*



*DONNA-MARIE LEVER Wind whips across the Canterbury plains.*

Severe northwest gales were forecast to gust to 120kmh in exposed places, and 140kmh in inland Canterbury and Banks Peninsula.

There were a "lot of strong winds" across the South Island, MetService forecaster

Arno Dyason said, with wind gusts peaking at 117kmh at Mt Cook at 7pm and 102kmh at Lyttelton at 3pm. (Abridged)



## Philip Duncan Announced As Provider of Rainfall Reports

17 May 2016,

<http://www.scoop.co.nz/stories/SC1605/S00039/philip-duncan-announced-as-provider-of-rainfall-reports.htm>

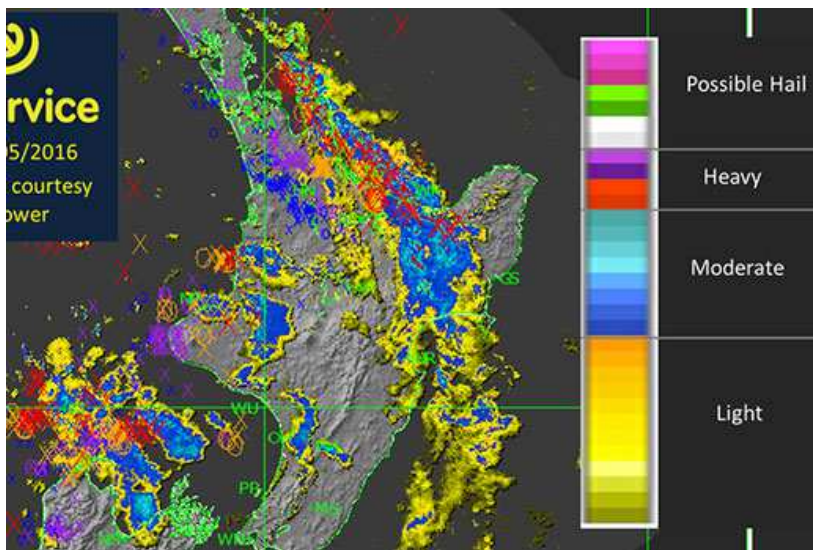
Country TV is excited to announce that WeatherWatch.co.nz has been asked for the third time to provide specific rainfall & soil forecasting services across the driest areas of New Zealand, for the Ministry of Primary Industries. The Ministry of Primary industries says WeatherWatch.co.nz provides a unique forecasting & reporting service in New Zealand and Weather Watch's clear communication skills make them a reliable and accurate source. (Abridged)

## Thunderstorm lashes the Bay

17 May, 2016

<http://www.sunlive.co.nz/news/126398-thunderstorm-lashes-bay.html>

**More than 30,000 lightning strikes were recorded over New Zealand the surrounding seas as thunderstorms lashed the country.**



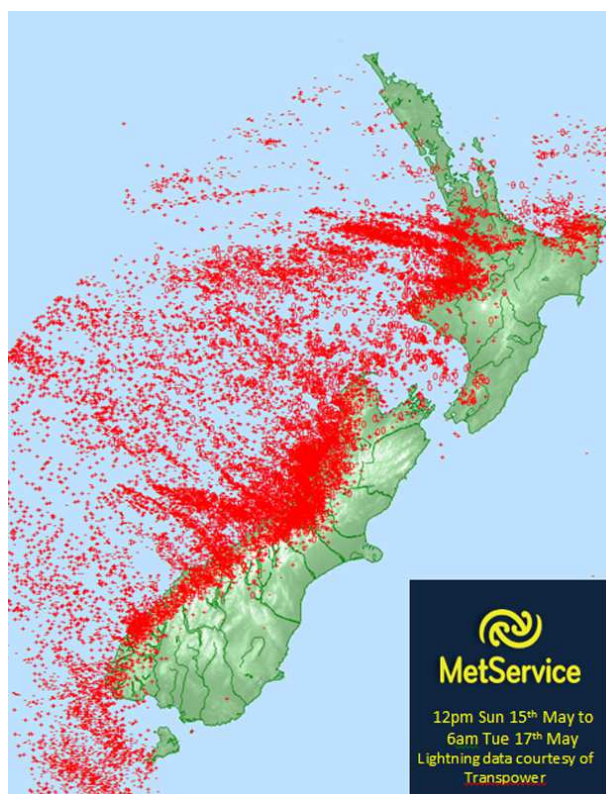
*Thunderstorms moving across the North Island last night. Image: MetService.*

"A lightning strike every 11 seconds as the front passed Auckland last night. Quieter night tonight," tweeted the MetService this morning. (Abridged)

## Wild Weather Continues

17 May

<http://www.stuff.co.nz/national/80061470/severe-weather-warnings-in-place-as-wild-weather-looks-set-to-continue>



Instability in the atmosphere rocked the skies overnight, with 31,238 lightning strikes recorded over New Zealand and surrounding seas in the 30 hours to 6am Tuesday.

MetService meteorologist Tom Adams said the map showed large numbers of lightning strikes over the West Coast, a big cluster in Waikato and Waitomo down to New Plymouth, and many over Rotorua and the East Coast.

The show that boomed overhead was a result of two bursts of activity. One hit from 6-8pm on Monday and the other front followed from midnight to 2am on Tuesday.

At its peak 4000-5000 lightning strikes an hour hit over land and sea on Monday. It was a sign summer is over and autumn was here in full force, MetService meteorologist Tom Adams said.

"This rapidly changing weather is very autumnal.

Hundreds struck over the Waikato alone. "Another front behind that brought thunder and lightning overnight from midnight until 2am. Although not as much as





the first one, it was enough to keep some people up and brought a fair amount of rain with it." Adams said the lightning storm was a result of a strong temperature change combined with a sharp trough of unstable air. "The reason there was a lot of lightning is the way the temperature was stacked in the atmosphere - it was very unstable." When the air shoots rapidly up an air column, hitting ice and water particles in the cloud, it creates a charge separation, he said. Negative and positive charges bump around in the cloud. When they get big enough, they react, causing a giant spark - lightning. (Abridged)

## More bad weather to come after region hit by storms and lightning

17 May

<http://www.stuff.co.nz/taranaki-daily-news/news/80070452/more-bad-weather-to-come-after-region-hit-by-storms-and-lightning>



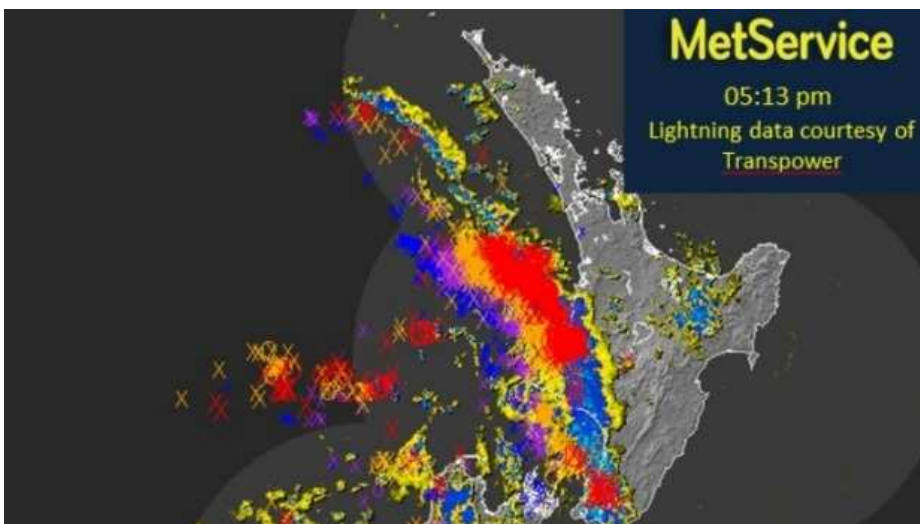
*First for the season. A light dusting of white powder for the local Mt Taranaki. Picture posted by the New Plymouth TOP 10 Holiday Park.*

Mount Taranaki looks peaceful after its first dusting of snow for 2016 - but it was a different weather story for the rest of the region after a big storm blew through.

And the rough weather which struck on Monday night and

continued into Tuesday looks set to be repeated later this week as winter finally arrives.

MetService said Taranaki received about 1,200 lightning strikes between 4pm and 5:30pm - 230 of which occurred within the space of just eight minutes.



*MetService provided a map of the Taranaki region which received thousands of lightning strikes on May 16.*

Meteorologist Tom Adams said the storm came in two waves and the second half may have sounded louder because the strikes were spread out. "The second band came in around 8:30 and didn't let up until about one in the morning," he said. (Abridged)

## Pollution: How does your town compare?

18 May 2016

[http://m.nzherald.co.nz/nz/news/article.cfm?c\\_id=1&objectid=11640427](http://m.nzherald.co.nz/nz/news/article.cfm?c_id=1&objectid=11640427)

New Zealand scientists are trialling new technology in Canterbury that could revolutionise how centres can better monitor and control air pollution.

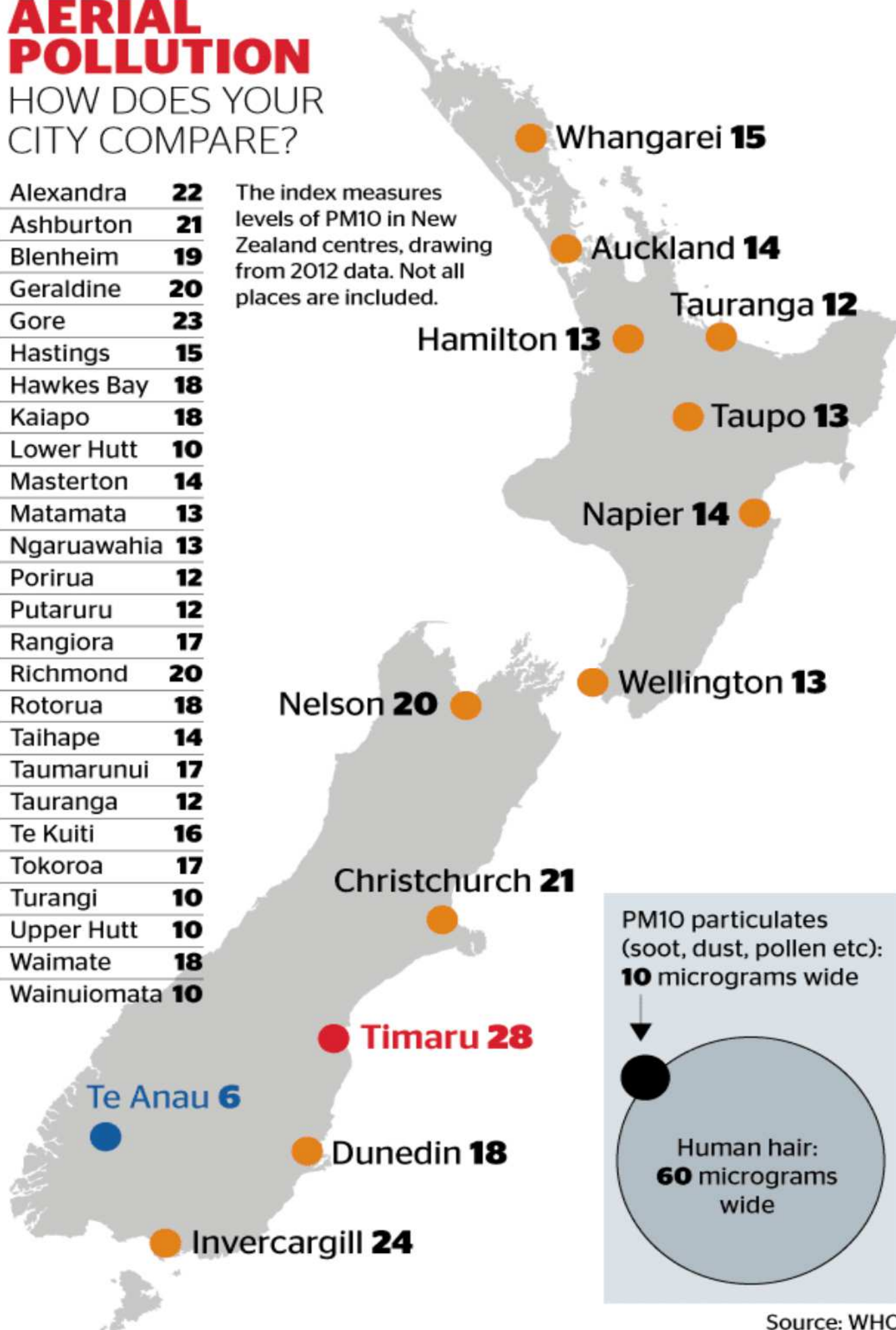
A new stage of a Niwa air quality project is about to get underway in Rangiora, as a World Health Organisation (WHO) index again highlights how some South Island towns have rated poorly for air pollution.

# AERIAL POLLUTION

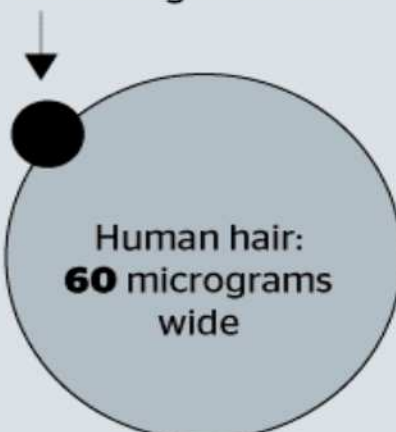
## HOW DOES YOUR CITY COMPARE?

Alexandra	<b>22</b>
Ashburton	<b>21</b>
Blenheim	<b>19</b>
Geraldine	<b>20</b>
Gore	<b>23</b>
Hastings	<b>15</b>
Hawkes Bay	<b>18</b>
Kaiapo	<b>18</b>
Lower Hutt	<b>10</b>
Masterton	<b>14</b>
Matamata	<b>13</b>
Ngaruawahia	<b>13</b>
Porirua	<b>12</b>
Putaruru	<b>12</b>
Rangiora	<b>17</b>
Richmond	<b>20</b>
Rotorua	<b>18</b>
Taihape	<b>14</b>
Taumarunui	<b>17</b>
Tauranga	<b>12</b>
Te Kuiti	<b>16</b>
Tokoroa	<b>17</b>
Turangi	<b>10</b>
Upper Hutt	<b>10</b>
Waimate	<b>18</b>
Wainuiomata	<b>10</b>

The index measures levels of PM10 in New Zealand centres, drawing from 2012 data. Not all places are included.



PM10 particulates (soot, dust, pollen etc):  
**10** micrograms wide



Source: WHO





Niwa has also developed the indoor state-of-the-art monitoring technology contained in small and low cost units, which contain sensors for particles (dust, smoke or soot) and carbon dioxide and can detect sudden increases in the levels of particles in the air.

The indoor data was combined with data from temporary weather stations set up around Rangiora, and from six of Niwa's experimental outdoor air quality sensors placed around the town to determine whether different parts of the town had different air quality and how that varies from day to day and place to place.

Dr Longley said the units could make a huge difference to our understanding of what causes air quality problems.

"We suspect this could be a game changer in being able to identify problems and their causes and enable communities to work more constructively with councils on devising solutions."

Meanwhile, WHO has released an updated index that measures air pollution in hundreds of cities around the world.

New Zealand's figures, from 2012, remain largely unchanged from previously-released WHO indexes, but show Timaru as having the highest level of PM10 -- tiny particulate matter small enough to be inhaled into the deepest part of the lung -- at 28.

On average in New Zealand, PM10 levels were 11.7 micrograms per cu m, much lower than the OECD average of 20.9 micrograms per cu m and much lower than the annual guideline limit of 20 micrograms per cu m set by the World Health Organisation.

Other centres meeting or exceeding that level, according to 2012 figures, included Invercargill (24) Gore (23) Alexandra (22) Ashburton (21) Christchurch (21) Geraldine (20) and Richmond (20). Christchurch was the worst of New Zealand's major cities, while Wellington (13) and Auckland's air (14) was found to be much cleaner. (Abridged)

### **Swell to reach six to nine metres in Taranaki**

20 May

<http://www.stuff.co.nz/taranaki-daily-news/news/80174517/swell-to-reach-six-to-nine-metres-in-taranaki-this-weekend>

*MetService's surf and beach report for Saturday predicts some seriously heavy swell for the weekend.*



Swells between six and nine metres are expected between Mokau and Opunake this weekend amid a severe weather warning for Taranaki and much of the country.

MetService has issued a heavy swell alert for the region, with a westerly swell rising to four metres overnight on Friday followed by a five metre southwesterly moving through Saturday, rising to six metres in the after-

noon.(Abridged)

### **Port Taranaki closed as stormy weather brings big swell to the region**

22 May

<http://www.stuff.co.nz/taranaki-daily-news/news/80253726/port-taranaki-closed-as-stormy-weather-brings-big-swell-to-the-region>

*Robert Charles/FAIRFAX NZ*

Ben, 7, and Melissa, 9, Jackson dodged the rocks, sand and driftwood that was washed up on the coastal walkway after the storm over the weekend.



Rocks and stones were left strewn across New Plymouth's coastal walkway after the region was battered by heavy rain and strong swells that also temporarily closed Port Taranaki. Two ships taken were off their moorings as a precaution after strong swells were detected in the port on the weekend. The weather was part of a large storm that moved up the country,



*Robert Charles/FAIRFAX NZ*  
Harbourmaster Neil Armitage said they decided to unmoor two supply vessels in port on Saturday afternoon due to a "long period swell". While the swell wasn't visible, it had the potential to move the ships and break the ropes holding them to the dock. "We really had no option but to remove the ships to sea," he said.



*Robert Charles/FAIRFAX NZ*  
A number of surfers braved the stormy conditions for a chance of catching a good wave.

The high waves also closed the lee breakwater due to safety concerns and according to MetService, the heavy swell is set to continue until Monday and ease on Tuesday.

About 20 surfers, off shore from the Belt Rd Seaside Holiday Park, took advantage of the big swell. (Abridged)

### **BIG WAVES**

MetService meteorologist Lisa Murray said a deep low that

had been sitting off the western part of the country was moving up the country and should be over Auckland tonight. "As it's moved up the country it's brought some big swells with it."

Not only were the swells big and pushed by strong winds, but the period - or gap - between the waves was long. "A long period gives waves extra strength, they can push further inland. They have extra strength in the pull back out as well," Murray said.

In Northland the big swell was combining with particularly strong west to southwest winds - coming from the same direction as the swell - and the low pressure of the system.





At high tide that could mean inundation and coastal damage. "The strength of these waves can put more water up rivers and inlets and onto roads," she said.

### Tornado leaves residents in a mess

22 May CHRISTEL YARDLEY/stuff.co.nz

<http://www.stuff.co.nz/national/80240384/wild-weather-to-continue-overnight>



A tornado which ripped through Ron Richardson's property on Friday night has left him with a mess to clean up.

A wild start to the weekend with stormy weather, huge swells and a rogue tornado wrecked havoc and weather experts say it's anything but over.

CHRISTEL YARDLEY/  
FAIRFAX NZ Kihikihi resident Geoff Stewart and some of the damage caused by the overnight tornado.

### Winter arrives, as southerlies blow away mild autumn

23 May 2016

[http://m.nzherald.co.nz/nz/news/article.cfm?c\\_id=1&objectid=11643440](http://m.nzherald.co.nz/nz/news/article.cfm?c_id=1&objectid=11643440)

MetService says the country was now on the cold, southerly side of a trough, with low pressure systems pummeling the country.

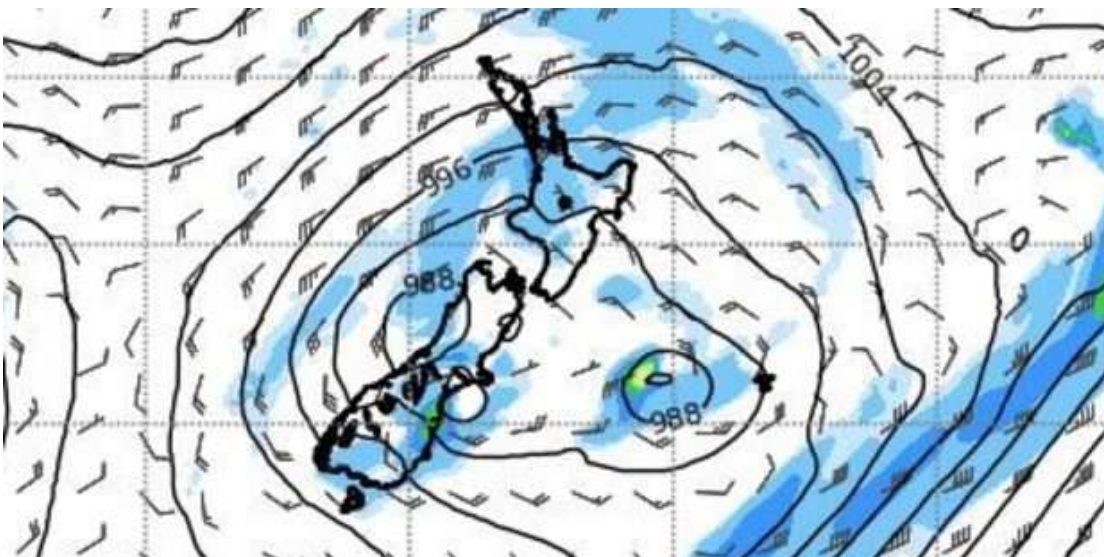
That's the message being bluntly delivered to Kiwis by a huge, multi-centred low pressure system which has swept in from the Tasman Sea, kicking out the warmth that made for a dream autumn and ushering in the cold season.

The slow-moving system, which has dragged up cold air from the south of New Zealand, has already brought heavy rain to Southland and eastern Otago and is now moving north-eastwards.

Although the heavy rain that fell on those southern areas had now ceased, a severe weather watch for heavy rain for North Otago, issued by MetService, is in force tonight.

Along with the possibility of 40mm or more of rainfall in that area, a warning for significant snow for Otago was also in place until tonight.

In the north of the region, a further 20cm of snow was expected to fall in areas 800m above sea level and lesser amounts to 600m.



A cold southerly flow affects the country today. Photo / MetService

Elsewhere in Otago, less than 10cm of snow is expected.

MetService meteorologist Georgina Griffiths said the multi-centred, dart-



board-like low pressure system that had hit the country would have proven a shock for people who had grown used to the warmth of an unusually balmy autumn.

"I guess this is really us paying for that autumn -- and we always do pay for warmth and dryness in New Zealand," she said. "The reason for that is if you are going to stick with northerlies for a long time, like we have with the first five months of the year, at some point we are going to get on to the other side of the trough."

The country was now on the cold, southerly side of that trough, with low pressure systems "pummelling" the country, she said. (Abridged)

### **Cars stranded, power cut as winter arrives**

23 May 2016 By [Shawn McAvinue](#) on Mon, 23 May 2016

<http://www.odt.co.nz/regions/otago/384187/cars-stranded-and-power-cut-winter-arrives>



Blake Korteweg near the Crown Range summit yesterday

Winter finally showed up in Otago yesterday after an unusually extended and balmy autumn. The Crown Range was closed by heavy snow for the first time this year as temperatures in parts of the province fell below freezing.

Police closed the Crown Range road about 4.30pm yesterday.

About 12 vehicles had "slid off" the alpine road and another 20 had been stranded.

Police spokesman Nic Barkley said five vehicles remained on the range overnight but every motorist had been rescued.

MetService meteorologist Claire Flynn said snow began falling on the Crown Range about 3pm. At the same time, the temperature at Lindis

Pass was -0.3degC.

On MetService social media, people posted about snow settling to 600m on Queenstown hills, and sleet in Dunedin.

### **Otago snow rescue - Stranded 38 saved**

23 May 23, 2016 NZ Herald

[http://www.nzherald.co.nz/nz/news/article.cfm?c\\_id=1&objectid=11643043](http://www.nzherald.co.nz/nz/news/article.cfm?c_id=1&objectid=11643043)

One of those rescued after spending nearly 20 hours trapped in a Central Otago snow storm says the group were relieved to see their rescuers this afternoon.

"It was an eventful one, in the worst way possible," Daniel told reporters in Roxburgh.

He and 37 others were ferried out on snow cats to waiting four wheel drives and a bus around sun-down before being whisked back to Roxburgh for medical checks, food and hot drinks.

The four wheel drive expedition had endured an exhausting ordeal trapped in their cars on a Central Otago high country road after becoming snowed in on Sunday afternoon by blizzard conditions. It took snow cats to get them down to the safety of the Roxburgh Golf Club, where they arrived about 6.30pm.

One of the rescuers, Chris Coory from Dunedin Land Search and Rescue, said it was cold and windy where the vehicles were stuck in about a metre and a half of deep snow.

Several attempts by the Otago Rescue Helicopter this morning have failed, leading to a call to bring in the New Zealand Defence Force.

### **Winter is arriving**

24 May Stuff

<http://www.stuff.co.nz/national/80264149/Rain-cold-winds-snow-reminder-winter-is-coming-some-warming-on-horizon>

Flooding is hampering travel on highways in Otago and Southland.

Heavy downpours hammered Canterbury overnight and temperatures dropped to near-freezing as Wellington shivered through winter's first attack of the year.





Close to 1m of fresh snowfall on the road to The Remarkables ski area this morning. Significant surface flooding caused problems in parts of Christchurch, while MetService was forecasting snow down to 600 metres in the Canterbury High Country on Monday night.



*Surface flooding remains on roads around Dunedin*

Winter driving conditions existed over the South Island, NZTA said. "Watch for ice and grit particularly in shaded areas and on bridge decks. Carry chains when travelling the alpine passes."

Wintry conditions are due to continue on Monday for most of the country, and the rest of the week is ex-

pected to be unsettled although some warming is on the way.



*Matt Davison/Queenstown Lakes Di*

MetService said snow showers were expected on the Porters Pass road through Monday and on the Lindis Pass road during the morning. Overnight, light snow was reported on State Highway 2 over the Rimutaka Range north of Wellington but there is no snow warning for the road on Monday.

### **Cold snap brings end of Indian summer in Blenheim**

A snowy cold snap has brought an abrupt end to Marlborough's Indian summer.

Heavy rain was recorded in the region last Wednesday, Friday and Sunday, and temperatures dipped over the weekend and on Monday morning.

A coating of snow was seen on the hills above the Waihopai Valley on Monday morning.

Plant and food scientist Rob Agnew described the weather as "a bit of a sudden shock". Marlborough was still on track for the warmest May on record, but with a huge contrast between the first part of May and the last 10 days, Agnew said.

## Near-freezing night for Wellington



On a night the Rimutaka Hill between Wellington and Wairarapa got a dusting of snow, the temperature in Wainuiomata dropped to 2 degrees Celsius early on Sunday, while Lower Hutt dropped to 3C and Wellington to 5C, Met-Service forecaster Karl Loots said.

*Chrystal Cochran. Snow on the hills around Palmerston North on Monday morning.*

## Group of 38 reach safety after being trapped by snow in Central Otago 4WD trip

MYLES HUME, SAM SHERWOOD, JO MCKENZIE-MCLEAN AND NICK TRUEBRIDGE

24 May 2016

<http://www.stuff.co.nz/national/80264691/weather-hampers-rescue-of-36-trapped-in-fourwheeldrive-trip-in-southland>

People rescued after getting stuck while on a 4WD excursion in sub-alpine terrain are making their way home after spending the night in their vehicles in freezing conditions.

What started off as an adventurous trip for a couple of 4WD enthusiasts sparked off a rescue mission as the group found themselves stranded in a remote Central Otago location in blizzard conditions.

Thankfully the group of 38 have been rescued and one of the members of the rescued party, who would only give his name as Daniel said it's been "eventful".

"Just in the worst way possible.....very relieved to get out. What we came across was just one of those- wrong place, wrong time. All the trucks seemed to have all the right gear. We went up equipped, but obviously got caught out by the weather. There was not much we could do about that," Daniel said. It was a relief to see the search and rescue teams arrive, he said. "They did a great job."



**WHAT'S ON INVERS/SUPPLIED** A large scale rescue operation was launched after a group of people were stranded in 13 vehicles in Central Otago.

Otago Lakes-Central area commander Inspector Olaf Jensen said the terrain was mountainous and "difficult at the best of times".

People needed to be aware of where they were going, what they were getting into and then make a decision from there, he said.

"People undertaking these sorts of adventures should be looking at the weather forecast, they should be equipping themselves, they should be advising people where they're going and taking equipment with them that if they do get caught out overnight that they have the ability to stay," Jensen said. Police said the group, including two children, were moved via snow cats to a point below the snowline before being transferred to four-wheel-drives for the journey to Roxburgh.



## Severe weather watch for parts of the North Island as wet weekend continues

HENRY COOKE, RACHEL THOMAS AND NANCY EL-GAMEL

28 May 2016

<http://www.stuff.co.nz/national/80492909/wild-storms-bring-flooding-downed-trees-and-some-snow>



*METSERVICE* Wet weather is expected to continue through the night.

The MetService has issued a severe weather watch for several parts of the North Island after a cold, damp start to the weekend that resulted in flooding, sections of road being closed, trees being downed and some southern snow earlier.

On Saturday evening, a slip caused one lane to be closed on State Highway 1 at Pukerua Bay, on the Kapiti coast north of Wellington. Diversions were in place and the lane was reopened shortly before 6pm.



*CLINT OGILVIE/SUPPLIED* A swollen Motueka River.

Earlier in the day Johnsonville Mall, north of Wellington, was partially flooded and drivers are being warned to look out for surface water on roads around the wider region.



*ROSS GIBLIN/FAIRFAX NZ* Flooding in the Johnsonville Mall Countdown saw a small area fenced off and sand spread on the floor.





