

## **New Zealand weather and climate news**

Courtesy of MetService

### **MetService focus**

#### **More settled weather on the way after storms**

MetService meteorologist Mark Bowe said the low pressure system that caused the rain on Tuesday had now moved away from Hawke's Bay, making way for better weather.

[https://www.nzherald.co.nz/storms/news/article.cfm?c\\_id=328&objectid=12069989](https://www.nzherald.co.nz/storms/news/article.cfm?c_id=328&objectid=12069989)

#### **Clean-up begins after power cuts and wild weather in Hawke's Bay**

Residents and businesses in rural Hawke's Bay still without power after wild weather on Tuesday are hoping they will be up and running before long.

[https://www.nzherald.co.nz/storms/news/article.cfm?c\\_id=328&objectid=12069730](https://www.nzherald.co.nz/storms/news/article.cfm?c_id=328&objectid=12069730)

#### **Wild winds fling shipping containers into water at Napier Port**

It's not every day the wind can throw a 3.8-tonne shipping container into the water, but yesterday's severe weather event was an exception.

[https://www.nzherald.co.nz/nz/news/article.cfm?c\\_id=1&objectid=12069221](https://www.nzherald.co.nz/nz/news/article.cfm?c_id=1&objectid=12069221)

#### **Drier conditions expected to bring relief to sodden regions**

A mainly dry Thursday will come as welcome relief to parts of the country still reeling from this week's deluge.

MetService says the next rain band approaching from Tasman Sea is low moving, keeping most parts of the country dry

<https://www.stuff.co.nz/national/104701365/Drier-conditions-expected-to-bring-relief-to-sodden-regions>

#### **MetService keeps heavy rain warning in place for Tongariro, Wairarapa and Kaikōura**

MetService Meteorologist Matthew Ford said heavy rain was still affecting parts of the country at 5.20am on Wednesday - the worst of it in Marlborough and Canterbury.

<https://www.stuff.co.nz/national/104667425/metservice-keeps-heavy-rain-warning-in-place-for-tongariro-wairarapa-and-kaikura>

#### **Rain and winds cut power, close schools and roads in Hawke's Bay**

MetService meteorologist John Law said Gisborne and Hawke's Bay bore the brunt of the rainfall yesterday.

[https://www.nzherald.co.nz/hawkes-bay-today/news/article.cfm?c\\_id=1503462&objectid=12069239](https://www.nzherald.co.nz/hawkes-bay-today/news/article.cfm?c_id=1503462&objectid=12069239)

### **Highways blocked and schools closed as heavy rain, gales batter eastern North Island**

A deep low that had come down from the tropics would be moving south southwest across the North Island during Tuesday, MetService meteorologist Matt Todd said.

<https://www.stuff.co.nz/national/104634584/highways-blocked-and-schools-closed-as-heavy-rain-gales-batter-eastern-north-island>

### **Rain, wind and thunder hit North Island**

MetService meteorologist Andrew James said the rain will ease in Northland, Auckland and Coromandel later today, but remain pretty wet and windy for most other places.

<https://www.odt.co.nz/news/national/rain-wind-and-thunder-hit-north-island>

### **Tropical front brings heavy downpours over next 24 hours, strong winds**

MetService Meteorologist Tom Adams said the region would experience relatively warm temperatures over the next day, but heavy rain was a big concern.

[https://www.nzherald.co.nz/weather/news/article.cfm?c\\_id=10&objectid=12068526](https://www.nzherald.co.nz/weather/news/article.cfm?c_id=10&objectid=12068526)

### **All Blacks get capital cable car tour with MetService analyst**

After a comfortable victory over France on Saturday night three All Blacks were looking to relax with a tour of Wellington's famous cable car.

Joanne Turpie, a MetService business analyst and big All Blacks fan, won a competition to give a group of three unidentified All Blacks a tour of a capital highlight and ended up - to her delight - guiding winger Waisake Naholo and loose forwards Luke Whitelock and Jordan Taufua on their first ride on the famous funicular railway.

<https://www.stuff.co.nz/sport/rugby/all-blacks/104629577/all-blacks-get-capital-cable-car-tour-with-metservice-analyst>

### **Extreme weather (and other news) – Antarctica and offshore islands**

#### **Antarctica had lost three trillion tonnes of ice in less than three decades**

What happens in only the next decade could determine the fate of Antarctica - and the melting continent's future impact on our coastal cities and communities.

[https://www.nzherald.co.nz/nz/news/article.cfm?c\\_id=1&objectid=12069988](https://www.nzherald.co.nz/nz/news/article.cfm?c_id=1&objectid=12069988)

## **Extreme weather (and other news) – Asia and the Middle East, Africa**

### **China facing flood, landslide risks amid heavy rain - weather bureau**

Large parts of China are expected to face torrential rain and thunderstorms until Thursday, with some regions at risk of flooding and landslides, the country's weather bureau said on Tuesday

<http://www.macaubusiness.com/china-facing-flood-landslide-risks-amid-heavy-rain-weather-bureau/>

### **Africa needs to invest in weather forecasting technologies**

Africa needs to invest more in the installation of automated weather stations and radars across the entire continent to help improve the continent's seasonal and longer-term climatic predictions, a top Indian environmental expert has said.

<https://southerntimesafrica.com/site/news/africa-needs-to-invest-in-weather-forecasting-technologies>

### **Indian weather forecasters to focus on dust storms**

Indian weather forecasting agencies will focus their energies on predicting dust storms, which have claimed more than 100 lives across north India this summer, a senior official said on Monday.

[https://www.business-standard.com/article/news-ians/indian-weather-forecasters-to-focus-on-dust-storms-118061100762\\_1.html](https://www.business-standard.com/article/news-ians/indian-weather-forecasters-to-focus-on-dust-storms-118061100762_1.html)

## **International news and research**

### **'Fog harp' increases collection capacity for clean water**

The study demonstrates how a vertical array of parallel wires may change the forecast for fog harvesters. In a design the researchers have dubbed the 'fog harp,' these vertical wires shed tiny water droplets faster and more efficiently than the traditional mesh netting used in fog nets today.

<https://www.sciencedaily.com/releases/2018/03/180328083428.htm>

### **How to couple the ocean, sea ice and the atmosphere in forecasts**

Since 5 June 2018, rapid interactions between the ocean, sea ice and the atmosphere have been included in ECMWF's highest-resolution weather forecasts. ECMWF scientist Kristian Mogensen has helped to make this latest move towards seamless Earth system modelling.

<https://www.ecmwf.int/en/about/media-centre/news/2018/how-couple-ocean-sea-ice-and-atmosphere-forecasts>

### **OU meteorologists studying Arctic atmospheric barriers**

A University of Oklahoma meteorology team, led by Steven Cavallo, is studying the role of tropopause polar vortices as a barrier in limiting predictability over the Arctic with three, five-year grants totaling \$2.9 million from the U.S. Department of Defense, Office of Naval Research. TPVs occur in the upper troposphere of the Arctic, but the data doesn't exist from this barren region to improve prediction.

[https://www.eurekalert.org/pub\\_releases/2018-06/uoo-oms061218.php](https://www.eurekalert.org/pub_releases/2018-06/uoo-oms061218.php)

### **Reading University provides free rein to its meteorologists via hyper-convergence**

Academics at any university usually play a two-handed game. They spend time teaching students of course, but they also spend a fair amount of time undertaking research work, sometimes under contract to major international research bodies, and some on behalf of commercial concerns of all colours.

<https://diginomica.com/2018/06/12/reading-university-provides-free-rein-to-its-meteorologists-via-hyper-convergence/>

### **The Eric Factor: Heat waves more dangerous thanks to 'Urban Heat Island'**

Get ready for a heat wave! While we hit 99 degrees on May 28th, that heat came with relatively low levels of humidity. So, while hot, it wasn't oppressively humid. This weekend's air mass will be different.

<http://wqad.com/2018/06/12/the-eric-factor-heat-waves-more-dangerous-thanks-to-urban-heat-island/>

### **Clear evidence cyclones are more devastating - scientist**

It is becoming increasingly clear that cyclones are becoming more devastating, and human activity is one of the main drivers, a cyclone scientist says.

<https://www.radionz.co.nz/international/pacific-news/359425/clear-evidence-cyclones-are-more-devastating-scientist>

### **How People Predicted the Weather Before Modern Technology**

Today's meteorologists have more tools available to them than they could ever use at once, so much so that forecasting the weather is both an art and a science.

<http://observer.com/2018/06/how-did-weather-forecasts-operate-before-modern-technology-computers/>

## **WMO**

### **The Japan Meteorological Agency begins operation of its 10th-generation supercomputer system**

The Japan Meteorological Agency (JMA) began the operation of its new supercomputer system on 5 June 2018. The system has 10 times more capacity in terms of meteorological numerical calculation than its predecessor, and can also process larger amounts of data at higher speeds.

[Read more here](#)

## **Business development / commodities / infrastructure etc**

### **April weather event caused \$5 million damage to Rotorua infrastructure**

The extreme weather event which saw more than 150mm of rain pummel the Rotorua District on April 29 caused an estimated \$5 million of damage.

[https://www.nzherald.co.nz/rotorua-daily-post/news/article.cfm?c\\_id=1503438&objectid=12069688](https://www.nzherald.co.nz/rotorua-daily-post/news/article.cfm?c_id=1503438&objectid=12069688)

### **Ottawa-based Weather Telematics acquired in \$2.5M deal**

An Ottawa company that's using artificial intelligence to help autonomous vehicles predict and adapt to weather conditions has been acquired by a Toronto-based strategic investor focused on innovative technologies.

<http://www.obj.ca/article/ottawa-based-weather-telematics-acquired-25m-deal>

## **Advertising/promotion**

### **How temperature affects our response to advertising**

We often say that love "warms" our hearts, or fear "gives us the shivers", but the connection between emotions and physical temperature is closer than you might think.

New research by Professor Valentyna Melnyk from the Massey Business School shows that consumers respond more positively to emotionally warm messages (those that incorporate feelings of love, joy and happiness) if they are feeling physically cold.

[https://www.massey.ac.nz/massey/about-massey/news/article.cfm?mnarticle\\_uid=FA753EF5-A15D-44A4-82E8-61AF150750CE](https://www.massey.ac.nz/massey/about-massey/news/article.cfm?mnarticle_uid=FA753EF5-A15D-44A4-82E8-61AF150750CE)

## **Energy and Mining**

### **UK GAS-Prices mixed on increased Norway flows, weather and storage injections**

British wholesale gas prices were mixed on Monday morning with within-day falling on increased Norwegian flows and warmer-than-expected temperatures, while forecasts for colder weather from Tuesday and coming storage injections boosted the day-ahead.

<https://www.hellenicshippingnews.com/uk-gas-prices-mixed-on-increased-norway-flows-weather-and-storage-injections/>

## **Satellites and radar**

### **China will share its orbiting eyes**

President Xi offers meteorological services to all during SCO Summit

China will offer meteorological services to all parties through its Fengyun 2 weather satellites, President Xi Jinping said in a speech at the two-day Shanghai Cooperation Organization Summit on Sunday in Qingdao, Shandong Province.

<http://www.ecns.cn/news/sci-tech/2018-06-12/detail-ifyuyvzv3228666.shtml>

### **Innovation and technologies (inc data and new products)**

#### **When AI can help build intelligent weather models**

What if we could predict natural disasters in advance and have suitable risk mitigation plans in place that could save lives of thousands? What if we are able to make policy level changes based on solid research for natural resource allocation?

<https://www.thehindubusinessline.com/news/science/when-ai-can-help-build-intelligent-weather-models/article24143238.ece>

#### **Optus ups SMB collaboration focus with Sydney innovation hub launch**

The Optus Innovation Hub is aimed at hooking up SMBs and start-ups with technology to drive innovation

<https://www.arnnet.com.au/article/642260/optus-ups-smb-collaboration-focus-sydney-innovation-hub-launch/>

### **Journals online**

#### **Weather**

© Royal Meteorological Society  
[Volume 73, Issue 6 Pages E1 - E4, 170 - 204, i - iv, June 2018](#)

#### **Cover Information**

Version of Record online: 11 JUN 2018 | DOI: 10.1002/wea.3285

In this issue of Weather

#### **In this issue of Weather (page E1)**

Jim Galvin

Version of Record online: 11 JUN 2018 | DOI: 10.1002/wea.3293

Weather news

[Weather News \(page 170\)](#)

Version of Record online: 11 JUN 2018 | DOI: 10.1002/wea.3126

Research Articles

[Compiling lightning counts for the UK land area and an assessment of the lightning risk facing UK inhabitants \(pages 171–179\)](#)

Derek M. Elsom, Sven-Erik Enno, Andrew Horseman and Jonathan D. C. Webb

Version of Record online: 5 JAN 2018 | DOI: 10.1002/wea.3077

New estimates of lightning counts from the Met Office ATDnet system are obtained for the ‘UK land area’ and compared with those currently available for the ‘UK service area’ (which includes the Republic of Ireland and surrounding seas). Annual counts average 38% of those in the ‘UK service area’. Case studies of thundery periods highlight daily differences. The new annual counts offer a more accurate estimate of the lightning risk facing the UK population.

[Daily weather in Dublin 1716–1734: the diary of Isaac Butler \(pages 179–182\)](#)

M. G. Sanderson

Version of Record online: 25 SEP 2017 | DOI: 10.1002/wea.3029

A historical weather diary kept in Dublin between 1716 and 1734 has been analysed, and the numbers of days of several weather types have been calculated.

Many of the aspects of the historical climate are similar to those of the present day.

The diarist experienced a wide range of different types of climate, from cool, wet summers to long periods of warm, dry weather.

Meeting report

[CTR Wilson Meeting 2016 \(pages 183–184\)](#)

James Matthews and R. Giles Harrison

Version of Record online: 30 APR 2018 | DOI: 10.1002/wea.3223

Book review

[Book review \(page 184\)](#)

Version of Record online: 18 JAN 2018 | DOI: 10.1002/wea.3094

Photographs

[Sunsets and sunrises \(page 185\)](#)

Version of Record online: 11 JUN 2018 | DOI: 10.1002/wea.3284

Weather images

[Weather images \(page 186\)](#)

Version of Record online: 11 JUN 2018 | DOI: 10.1002/wea.3129

Weather log

April 2018 Dry and sunny in northern Scotland. Mostly dull and wet elsewhere, though with an early-season 'heatwave' (pages i–iv)

Version of Record online: 11 JUN 2018 | DOI: 10.1002/wea.3128

#### Research Articles

Warning of imminent lightning using single-site meteorological observations (pages 187–193)

A. J. Bennett

Version of Record online: 15 SEP 2017 | DOI: 10.1002/wea.2782

Evaluation of statistical downscaling models using pattern and dependence structure in the monsoon-dominated region of Pakistan (pages 193–203)

Firdos Khan, Shaukat Ali and Jürgen Pilz

Version of Record online: 9 MAR 2018 | DOI: 10.1002/wea.3164

#### Letter

Letters (page 203)

David William Hedding and Michelle Greve

Version of Record online: 30 MAR 2018 | DOI: 10.1002/wea.3245

#### Society news

Society News (page 204)

Version of Record online: 11 JUN 2018 | DOI: 10.1002/wea.3127

#### Inside Cover Photographs

Multiple channels of intra-cloud lightning streak across the sky in Exeter (page E2)

Version of Record online: 11 JUN 2018 | DOI: 10.1002/wea.3286

A highly branched cloud-to-ground lightning bolt strikes the sea off Bournemouth (page E3)

Version of Record online: 11 JUN 2018 | DOI: 10.1002/wea.3287

An impressive cumulonimbus with anvil, to the south-east of Ilstington (page E4)

Version of Record online: 11 JUN 2018 | DOI: 10.1002/wea.3288

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Neal Robert Haddaway & Biljana Macura

doi:10.1038/s41558-018-0180-3

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doi:10.1038/s41558-018-0178-x

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doi:10.1038/s41558-018-0172-3

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A climate for antibiotic resistance pp460 - 461

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doi:10.1038/s41558-018-0183-0

## **Perspectives**

Climate change challenges for central banks and financial regulators pp462 - 468

Emanuele Campiglio, Yannis Dafermos, Pierre Monnin, Josh Ryan-Collins, Guido Schotten et al.

doi:10.1038/s41558-018-0175-0

Climate change poses a financial risk but it is unclear what management role there is for central banks and financial regulators. This Perspective outlines research and policy directions needed for financial sector engagement.

Future climate risk from compound events pp469 - 477

Jakob Zscheischler, Seth Westra, Bart J. J. M. van den Hurk, Sonia I. Seneviratne, Philip J. Ward et al.

doi:10.1038/s41558-018-0156-3

Compound events, events of significant impact that are caused by a combination of processes, are difficult to predict. This Perspective discusses the need for a systematic approach to improve risk assessment of these events.

Climate reddening increases the chance of critical transitions pp478 - 484

doi:10.1038/s41558-018-0160-7

Climate memory is anticipated to increase in the future, a process known as reddening. This Perspective examines how a change in the temporal autocorrelation of climate variables may impact the likelihood of critical transitions, using examples from forests, coral reefs, poverty traps and ice sheets.

## **Letters**

The enduring effect of scientific interest on trust in climate scientists in the United States pp485 - 488

Matthew Motta

doi:10.1038/s41558-018-0126-9

Analysis of longitudinal survey data shows that interest in science at age 12–14 years is associated with increased trust in climate scientists in adulthood (mid thirties) in the United States, irrespective of political ideology.

Comparing extraction rates of fossil fuel producers against global climate goals pp489 - 492  
Saphira A. C. Rekker, Katherine R. O'Brien, Jacquelyn E. Humphrey & Andrew C. Pascale  
doi:10.1038/s41558-018-0158-1

Meeting emissions targets requires limiting use of fossil fuel reserves. For the largest investor- and state-owned producers allowable extraction varies dependent on the approach to calculate burnable fossil fuel allowance.

Model tropical Atlantic biases underpin diminished Pacific decadal variability pp493 - 498  
doi:10.1038/s41558-018-0163-4

Simulation of observed Pacific wind trends is hampered by model limitations in representing variability or the forced response. Improved mean-state climatologies, including the recent Atlantic warming trend, should improve capture of Pacific trends.

Climate change threatens the world's marine protected areas pp499 - 503  
John F. Bruno, Amanda E. Bates, Chris Cacciapaglia, Elizabeth P. Pike, Steven C. Amstrup et al.  
doi:10.1038/s41558-018-0149-2

Marine protected areas aim to conserve biodiversity and habitat. However continued high emissions causing changes in sea-surface temperatures and oxygen levels are likely to disrupt many ecosystems protected by MPAs.

The epigenetic landscape of transgenerational acclimation to ocean warming pp504 - 509  
doi:10.1038/s41558-018-0159-0

Transgenerational acclimation to warmer oceans has been seen for some marine species. This study shows that the coral reef fish has 193 genes correlated to such acclimation traits, suggesting an epigenetic basis of acclimation.

Antibiotic resistance increases with local temperature pp510 - 514  
doi:10.1038/s41558-018-0161-6

Based on an analysis of the distribution of antibiotic resistance across the United States, research shows that increasing local temperatures as well as population density across regions are associated with increasing antibiotic resistance in common bacterial pathogens.

## **Articles**

Framing the challenge of climate change in Nature and Science editorials pp515 - 521  
Mike Hulme, Noam Obermeister, Samuel Randalls & Maud Borie  
doi:10.1038/s41558-018-0174-1

Editorials in multi-disciplinary journals can influence professional scientists and wider public discourse. This study compares how editorials on climate change in Nature and Science have changed over time and in response to wider political events

The carbon footprint of global tourism pp522 - 528

Manfred Lenzen, Ya-Yen Sun, Futu Faturay, Yuan-Peng Ting, Arne Geschke et al.  
doi:10.1038/s41558-018-0141-x

Tourism is a significant contributor to the global economy, with potentially large environmental impacts. Origin and destination accounting perspectives are used to provide a comprehensive assessment of global tourism's carbon footprint.

Compensation of ocean acidification effects in Arctic phytoplankton assemblages pp529 - 533

doi:10.1038/s41558-018-0142-9

The effects of projected ocean acidification on primary productivity of the Arctic and subarctic shelf seas are found to be minimal, with the phytoplankton communities showing a high capacity to compensate for environmental change.

Global controls on carbon storage in mangrove soils pp534 - 538

André S. Rovai, Robert R. Twilley, Edward Castañeda-Moya, Pablo Riul, Miguel Cifuentes-Jara et al.  
doi:10.1038/s41558-018-0162-5

A global model that incorporates information about coastal environmental settings indicates that mangrove soil organic carbon stocks have been significantly underestimated in carbonate settings, and overestimated in deltaic coastlines.

Forest-rainfall cascades buffer against drought across the Amazon pp539 - 543

Arie Staal, Obbe A. Tuinenburg, Joyce H. C. Bosmans, Milena Holmgren, Egbert H. van Nes et al.  
doi:10.1038/s41558-018-0177-y

Tree transpiration in the Amazon enhances downwind rainfall. Research now shows that approximately one-third of Amazon rainfall originates within its own basin, with the southern half of the basin contributing most to this effect.

**Amendments & Corrections**

Author Correction: The carbon footprint of global tourism p544

Manfred Lenzen, Ya-Yen Sun, Futu Faturay, Yuan-Peng Ting, Arne Geschke et al.  
doi:10.1038/s41558-018-0192-z

Publisher Correction: Bottom-up linking of carbon markets under far-sighted cap coordination and reversibility p544

Jobst Heitzig & Ulrike Kornek  
doi:10.1038/s41558-018-0125-x

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