

## New Zealand weather and climate news

### Clips Courtesy of MetService Library

#### *MetService focus*

#### **Severe thunderstorm watch for the lower and central North Island dissolves over Cook Strait**

Meteorologist Tui McInnes said thunderstorms over the capital were "long gone" but there were more storm patterns developing around the country.

<https://www.stuff.co.nz/dominion-post/109027822/Severe-thunderstorm-watch-for-the-lower-and-central-North-Island-dissolves-over-Cook-Strait>

More wet weather to come for Tauranga

Meteorologist Tui McInnes said Tauranga is set for another bout of rain overnight and into tomorrow morning.

[https://www.nzherald.co.nz/bay-of-plenty-times/news/article.cfm?c\\_id=1503343&objectid=12169955](https://www.nzherald.co.nz/bay-of-plenty-times/news/article.cfm?c_id=1503343&objectid=12169955)

#### **Hamilton residents evacuated after flash flooding damages 10 homes**

MetService shift meteorologist Tui McInnes said the rainfall for the area was not particularly significant, but the nature of thunderstorms was that they were very localised even though they could produce a lot of rain in a short period of time.

[https://www.nzherald.co.nz/nz/news/article.cfm?c\\_id=1&objectid=12169982](https://www.nzherald.co.nz/nz/news/article.cfm?c_id=1&objectid=12169982)

#### **Weather: New Zealand still waiting for summer as another wet week gets underway**

MetService meteorologist Tui McInnes said "cooler temperatures could be in store mid-week but luckily these are likely to be brief."

<https://www.newshub.co.nz/home/new-zealand/2018/12/weather-new-zealand-still-waiting-for-summer-as-another-wet-week-gets-underway.html>

#### **Your weather: Warm, wet and humid Monday as sub-tropical flow covers New Zealand**

MetService meteorologist Hannah Moes said along with the unsettled weather it was looking to be another "very warm" day.

[https://www.nzherald.co.nz/nz/news/article.cfm?c\\_id=1&objectid=12170149](https://www.nzherald.co.nz/nz/news/article.cfm?c_id=1&objectid=12170149)

### **500 lightning strikes hit Southland**

MetService forecaster Ravi Kandula said parts of Southland were hit by localised storms, with 15mm of rain recorded in Invercargill and 20mm recorded in Riverton between 6pm and 7pm.

<https://www.stuff.co.nz/southland-times/news/108975876/severe-thunderstorm-warning-for-southern-areas>

### **Lightning strikes light up skies**

MetService meteorologist Ravi Kandula said at the peak of the storm at 5pm, following a severe thunderstorm warning for Southland, the region was getting 450-500 strikes an hour.

<https://www.odt.co.nz/regions/central-otago/lightning-strikes-light-skies>

### **Watch: Twister begins to form above Central Otago**

Weather watches are in place and these could be extended and upgraded to warnings given the complex nature of the weather system tracking to the north of New Zealand, MetService meteorologist Angus Hines said.

<https://www.odt.co.nz/regions/watch-twister-begins-form-above-central-otago>

### **Sydney's wild 'once in a century' storm heading to New Zealand, bringing widespread rain**

Meteorologist Angus Hines from MetService told 1 NEWS most parts of the country are expected to get heavy rains but not to the same intensity as Australia

[Read more here](#)

### **Grey and muggy weekend ahead for Hawke's Bay**

Meteorologist Lisa Murray said the grey skies will stick around a while longer, but temperatures will remain warm.

[https://www.nzherald.co.nz/hawkes-bay-today/news/article.cfm?c\\_id=1503462&objectid=12169046](https://www.nzherald.co.nz/hawkes-bay-today/news/article.cfm?c_id=1503462&objectid=12169046)

### **New Zealand is unprepared for more frequent drought, report warns**

More drought could bring disease, power outages and food shortages and New Zealand isn't ready, [a new report warns](#).

<https://www.stuff.co.nz/business/farming/108986222/New-Zealand-is-unprepared-for-more-frequent-drought-report-warns?cid=edm:stuff:dailyheadlines&bid=850361489>

### **Stormy weather set to continue for South**

Parts of the South are set for more thunderstorms today, while an active front is expected to bring rain, gales and even snow in higher parts of Otago by mid-week, MetService says.

<https://www.odt.co.nz/news/national/stormy-weather-set-continue-south>

### **Hamilton homes evacuated after flash flooding**

Ten homes have been evacuated in Hamilton after a short, very heavy, downpour caused flash flooding.

<https://www.radionz.co.nz/news/national/377300/hamilton-homes-evacuated-after-flash-flooding>

### **Forest indicators warn of a challenging 2019**

Drought, fires and difficult days for stock may be at hand if traditional Māori botanical indicators are to be believed. Ti kauka, or cabbage trees, in the Maungataniwha Native Forest in inland Hawke's Bay are among several species to be flowering unusually prolifically or early this year, an event understood to forecast a long, hot, dry summer.

<http://www.scoop.co.nz/stories/SC1811/S00087/forest-indicators-warn-of-a-challenging-2019.htm>

### **Mountaineer killed in avalanche was father of two**

MetService reports Mt Cook's weather for today was fine spells, with a chance of a shower or two with light winds and a high of 18C.

<https://www.odt.co.nz/news/national/mountaineer-killed-avalanche-was-father-two>

### **Volcano alert**

### **A new algorithm could help protect planes from damaging volcanic ash**

The technology could keep planes away from the engine-destroying particles

<https://www.sciencenews.org/article/algorithm-volcanic-ash-clouds-airplanes>

### **MetOcean (and oceanmet, marine weather etc)**

Warm seas could lead to further whale strandings- scientist

The El Niño weather pattern warming New Zealand's surrounding seas, could be contributing to the recent spate of whale strandings.

<https://www.radionz.co.nz/news/national/377312/warm-seas-could-lead-to-further-whale-strandings-scientist>

### **University of Western Australia launches centre for subsea research**

The University of Western Australia (UWA) has launched a centre to research new subsea engineering technologies for offshore oil and gas production.

<https://www.offshore-technology.com/news/western-australia-subsea-research/>

### **NIWA**

#### **NIWA's Hotspot Watch**

A weekly update describing soil moisture across the country to help assess whether severely to extremely dry conditions are occurring or imminent. Regions experiencing these soil moisture deficits are deemed “hotspots”. Persistent hotspot regions have the potential to develop into drought.

<http://www.scoop.co.nz/stories/SC1811/S00089/niwas-hotspot-watch-291118.htm>

### **Extreme weather (and other news) – Australia and Pacific**

#### **Prepare for extended severe weather seasons**

[Australian Journal of Emergency Management](#)

[October 2018 edition](#)

Australia needs to prepare itself for the threat of year-round natural hazards that in the past were associated only with the summer months.

This is the view of the Bushfire and Natural Hazards CRC CEO Dr Richard Thornton when asked to comment to the media on bushfires on the east coast during August.

<https://knowledge.aidr.org.au/resources/ajem-oct-2018-prepare-for-extended-severe-weather-seasons/>

### **Sydney weather figures reveal suburbs savaged by storm**

It does not sound like much, but 23 kilometres was all that separated the suburbs that got soaked, and those that escaped relatively unscathed during Sydney's savage storms.

<https://www.abc.net.au/news/2018-11-29/sydney-weather-data-reveals-selective-rainfall/10565502>

### **Winfield residents urged to leave, concerns for Stradbroke Island fires but cyclone expected to miss Queensland**

Residents in Winfield, north of Bundaberg, have been advised to leave immediately as a bushfire burns near Baffle Creek, while concerns remain for the blaze burning on Stradbroke Island.

<https://www.abc.net.au/news/2018-12-02/queensland-fires-winfield-stradbroke-island-blaze-concerns/10575526>

### **Queensland's 'abnormal' bushfires linked to climate change**

Both the bushfires and the heatwave ravaging parts of Queensland have been described as extraordinary and abnormal.

<https://www.abc.net.au/news/2018-12-01/why-qld-bushfires-have-been-described-as-abnormal-unprecedented/10571122>

### **Perth cruises through dry, 'benign' November as BOM flags glimpse of hot summer to come**

As Queensland sweltered through heatwave conditions which fuelled catastrophic bushfires, and torrential rain flooded New South Wales, Perth cruised through a mild November, recording its driest in 61 years and coolest in a decade.

<https://www.abc.net.au/news/2018-11-30/perths-cool-benign-november-the-driest-in-more-than-six-decades/10571178>

### **Sydney's 'one-in-100-year' storm causes \$10 million in damages: insurers**

Sydney is in mop-up mode after a "one-in-100-year" event poured more than 100mm of rain across the city.

<https://www.smh.com.au/environment/weather/sydney-s-one-in-100-year-storm-causes-10-million-in-damages-insurers-20181129-p50j2z.html>

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

Record May temperatures just the beginning for Hong Kong as global warming means heatwave will be new normal, forecaster says

City broke 10 temperature records this year as it baked through highest number of 'very hot' days

Warmest spring since 1885, maximum temperature of 35.4 degrees Celsius, while weather warning ran for 348 hours

<https://www.scmp.com/news/hong-kong/health-environment/article/2175672/record-may-temperatures-just-beginning-hong-kong>

### **Extreme weather (and other news) – Americas and Europe**

#### **What Met Office has to say about 'worst winter in 70 years' weather forecast**

The Met Office, perhaps unsurprisingly, is unconvinced by the weather forecasts

<https://www.bristolpost.co.uk/news/bristol-news/what-met-office-say-worst-2279877>

### **International news and research**

#### **Weather 101: Forecasting And Supercomputers**

NORTH TEXAS (CBSDFW.COM) – If you're wondering where supercomputers intersect with your life look no further than the latest weather forecast. The very first supercomputer ever built — in 1976 — did weather forecasting.

<https://dfw.cbslocal.com/2018/11/28/weather-101-forecasting-supercomputers/>

#### **How Satellites and Big Data Are Predicting the Behavior of Hurricanes and Other Natural Disasters**

Leveraging machine learning could help diminish the damages of storms and wildfires

Read more: <https://www.smithsonianmag.com/innovation/how-satellites-and-big-data-are-predicting-behavior-hurricanes-and-other-natural-disasters-180970893/#fHOVWphVkfWlcKub.99>

## **WPAFB meteorologists protect base operations, resources with forecasts**

Meteorologists at Wright-Patterson Air Force Base constantly work to give updates on current and upcoming weather conditions to ensure base operations run smoothly.

<https://www.daytondailynews.com/news/wpafb-meteorologists-protect-base-operations-resources-with-forecasts/YwVpfxelNFzn0qlAdGCydO/>

## **After the fire disaster in Paradise, meteorologists mull how to improve warning system**

After claiming at least 88 lives, destroying 18,793 structures and scorching an area 3½ times the size of Washington, California's deadliest wildfire is entirely contained. As communities search for the nearly 300 missing in the wake of the disaster, one must ask: Was a more effective warning possible before the flames tore through Paradise?

[https://www.washingtonpost.com/weather/2018/11/28/after-fire-disaster-paradise-meteorologists-mull-how-improve-warning-system/?utm\\_term=.fa7243302a1f](https://www.washingtonpost.com/weather/2018/11/28/after-fire-disaster-paradise-meteorologists-mull-how-improve-warning-system/?utm_term=.fa7243302a1f)

## **Researchers rise to challenge of predicting hail, tornadoes three weeks in advance**

A prediction lead time of about 2 to 5 weeks is sorely lacking in current forecasting capabilities for severe weather. Atmospheric scientists now demonstrate the ability to make skillful predictions of severe weather across the Plains and southeastern United States, including hail and tornadoes, in that coveted "subseasonal" time scale. To do it, they use a reliable tropical weather pattern called the Madden-Julian Oscillation, which can influence weather in distant parts of the Earth.

<https://www.sciencedaily.com/releases/2018/11/181128192143.htm>

## **WMO**

### **Caribbean to strengthen early warning systems and resilience to climate change**

An initiative to strengthen multi-hazard early warning systems in the Caribbean was launched on November 20 during the dry season Caribbean Climate Forum (CariCOF) meeting in Barbados.

The Caribbean region is highly exposed to high-impact hydrometeorological hazards such as hurricanes and tropical storms, causing floods, landslides and storm surge. In 2017, Hurricane Irma caused massive destruction in Barbuda resulting in the subsequent full evacuation of the island while Hurricane Maria caused devastation Dominica. Barbados suffered from flooding as a result of Tropical Storm Kirk in September 2018.

[Read more here](#)

### **New national guidance for public information and warnings - Australian Institute for Disaster Resilience**

The Australian Institute for Disaster Resilience recently published the [Public Information and Warnings Handbook](#) – the authoritative national guide for those who provide warnings before, during and after emergencies. The handbook outlines evidence-based, nationally agreed principles and provides guidance on developing and issuing warnings. The handbook was developed collaboratively with cross-sector input from Australian and international experts. It responds to Recommendation 2 of the 2014 National Review of Warnings and Information (ANZEMC 2015), to advance a national approach through improved knowledge management.

[Read more here](#)

### **WMO Update: 75-80% chance of El Niño within next 3 months**

There is a 75-80% chance of an El Niño developing by February 2019, although it is not expected to be a strong event, according to the [latest update](#) from the World Meteorological Organization (WMO). Sea surface temperatures are already at weak El Niño levels in part of the tropical Pacific, although the corresponding atmospheric patterns have not yet materialized.

[Read more here](#)

### **Climate change signals and impacts continue in 2018**

The long-term warming trend has continued in 2018, with the average global temperature set to be the fourth highest on record. The 20 warmest years on record have been in the past 22 years, with the top four in the past four years, according to the World Meteorological Organization (WMO).

[Read more here](#)

### **Fiji to Implement Flash Flood Guidance System**

Fiji is to press ahead with an early warning system for floods. Experts, staff of the Fiji Meteorological Service and Disaster Management Office met in Nadi, Fiji from 12 to 16 November 2018, to discuss the implementation of the Flash Flood Guidance System (FFGS). The meeting discussed and developed a work plan for the implementation of FijiFFGS, a name chosen to ensure ownership of the project, and show that its applications are specifically targeting the islands of Fiji.

[Read more here](#)

## **America's Cup**

### **Eight new syndicates lodge entries for America's Cup**

Eight new syndicates have indicated they intend challenging for the America's Cup but only one can be accepted immediately.

<https://www.radionz.co.nz/news/sport/377210/eight-new-syndicates-lodge-entries-for-america-s-cup>

## **Aviation**

### **Rocket Lab wins three medals from Royal Aeronautical Society**

Rocket Lab has won three prestigious awards from the London-based Royal Aeronautical Society, including a gold medal for founder Peter Beck.

[https://www.nzherald.co.nz/business/news/article.cfm?c\\_id=3&objectid=12166534](https://www.nzherald.co.nz/business/news/article.cfm?c_id=3&objectid=12166534)

### **Whanganui flying high - Pilot Academy taking to the skies**

The International Commercial Pilot Academy had 37 students when it opened in Whanganui last year. It now has 83 students and if all goes to plan it will train 200 students each year. Reporter Jacob McSweeney reports on what is fast becoming a jewel in the crown of Whanganui Education.

[https://www.nzherald.co.nz/wanganui-chronicle/news/article.cfm?c\\_id=1503426&objectid=12166342](https://www.nzherald.co.nz/wanganui-chronicle/news/article.cfm?c_id=1503426&objectid=12166342)

## **Business/Insurance**

### **Tower retreats from quake-risk areas, but hit by random weather bombs**

Tower chairman Michael Stiasny says the company did the right thing by charging much higher premiums for earthquake-risk properties and has now begun risk-based pricing for flood, wind and storm.

<https://www.stuff.co.nz/business/108925361/tower-retreats-from-quakerisk-areas-but-hit-by-random-weather-bombs>

### **Tower pushes out dividend resumption to 2019 as wild weather keeps it in the red**

Tower won't pay a dividend this year as planned as the cost of covering wild weather claims across the Pacific and a settlement with its reinsurer kept the firm in the red.

[https://www.nzherald.co.nz/business/news/article.cfm?c\\_id=3&objectid=12167616](https://www.nzherald.co.nz/business/news/article.cfm?c_id=3&objectid=12167616)

## **Energy and Mining**

### **Energy- and multisector modelling of climate change mitigation in New Zealand: current practice and future needs**

[Dominic White](#), [Niven Winchester](#), [Martin Atkins](#), [John Ballingall](#), [Simon Coates](#), [Ferran de Miguel Mercader](#), [Suzie Greenhalgh](#), [Andrew Kerr](#), [Suzi Kerr](#), [Jonathan Leaver](#), [Catherine Leining](#), [Juan Monge](#), [James Neale](#), [Andrew Philpott](#), [Vincent Smart](#), [Adolf Stroombergen](#), [Kiti Suomalainen](#)

[Motu Economic and Public Policy Research](#)

As New Zealand charts its course toward a low-emissions economy, the quality of energy-sector and multi-sector modelling is becoming increasingly important. This paper outlines why models are useful for answering complex questions, provides a stocktake of energy-sector and multi-sector models used for climate change mitigation modelling in New Zealand, and makes suggestions for improving future modelling work. While New Zealand is fortunate to have a range of different modelling tools, these have historically been used in a sporadic and ad hoc way, and underlying datasets are deficient in some areas. As the foundation for a more strategic development of New Zealand's modelling capability, this paper profiles some of the energy-sector and multi-sector models and datasets currently applied in New Zealand. New Zealand's modelling capability could be strengthened by collecting and sharing data more effectively; building understanding of underlying relationships informed by primary research; creating more collaborative and transparent processes for applying common datasets; increasing international collaboration; and conducting more integrated modelling across environmental issues. These improvements will require strategic policies and processes for refining model development; providing increased, predictable and sustained funding for modelling activities, underlying data collection and primary research; and strengthening networks across modellers inside and outside of government. Many of the suggested improvements could be realised by creating an integrated framework for climate change mitigation modelling in New Zealand. This framework would bring together a suite of models and a network of researchers to assess climate change mitigation policies regularly. Core elements of the framework would include a central repository of data, input assumptions and scenarios, and a "dashboard" that synthesises results from different models to allow decision-makers to understand and apply the insights from the models more easily.

<http://apo.org.au/system/files/206101/apo-nid206101-1055266.pdf>

### **New Zealand Charges Ahead of Australia with World's Largest Virtual Power Plant**

Auckland, 1 December 2018 – today solarcity launched a countdown to the connection of more than 3,000 existing home solar and battery systems to the national grid, to create the world’s largest virtual power plant. The project will create a generation and storage network that will help provide energy to the power grid when it is unable to cope with demand or there is a fault. “Australia says it plans to build the world’s largest virtual power station but we’re actually doing it with our existing systems and we’re adding more everyday,” says solarcity founder and CEO Andrew Booth.

<http://www.scoop.co.nz/stories/BU1812/S00004/worlds-largest-virtual-power-plant.htm>

### **Government (regional and national)**

#### **Cost for last month’s storm \$3m and rising**

The cost of last month’s big storm — which inundated parts of the Clutha district and Dunedin — is climbing.

The estimated cost of repairs for authorities across the lower South Island has already topped \$3 million, and is expected to continue rising.

<https://www.odt.co.nz/news/dunedin/cost-last-month%E2%80%99s-storm-3m-and-rising>

### **Satellites and radar**

#### **Satellites warn African farmers of pest infestations**

UK researchers have developed an early warning system to prevent the crops of African farmers from being devastated.

The Pest Risk Information Service (Prise) combines temperature data and weather forecasts with computer models.

<https://www.bbc.com/news/science-environment-46370601>

#### **Revolutionary Nanosatellites to Monitor Earth Weather**

The first “Pioneer” mission lifted early on Nov. 29 from Sriharikota, India, with the two inventive little nanosatellites now circling the Earth, ready for action.

The shoebox-sized satellites were launched at 04:27 GMT into low Earth orbit by the Indian Space Research Organisation’s PLSV launcher, and opened their first communication windows with their owner, Spire Global, less than an hour after they separated from the rocket.

<https://www.rdmag.com/news/2018/11/revolutionary-nanosatellites-monitor-earth-weather>

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

The internet will add 1.4 billion new users by 2022 as the world enters the multi-zettabyte era

A Cisco index shows anticipated growth from 3.4 billion to 4.8 billion internet users worldwide by the end of 2022, and IoT, M2M and 5G will play big roles

<https://www.techrepublic.com/article/the-internet-will-add-1-4-billion-new-users-by-2022-as-the-world-enters-the-multi-zettabyte-era/#ftag=RSS56d97e7>

### **Weather in pictures**

Viral fake images of Sydney weather make a return during thunderstorms

It didn't take long for incredible pictures of the wild weather that lashed Sydney on Wednesday to start popping up on the social media feeds of millions of Australians.

<https://www.abc.net.au/news/2018-11-29/the-fake-photos-of-the-sydney-flooding/10566278>

### **Space weather**

#### **Space weather and the very real risks the Sun poses to Earth**

During the depths of the Vietnam War a series of American mines exploded, apparently without cause. No ships were in the area to trigger them and espionage was ruled out.

The official explanation reads like a science-fiction novel: a cloud of plasma ejected from the Sun collided with and compressed Earth's magnetic field, causing the spontaneous explosions.

<https://www.abc.net.au/news/2018-12-01/space-weather-and-very-real-risks-posed-by-suns-darker-side/10559668>

### **Climate change / global warming / sea level rise**

#### **Drought and climate change adaptation: impacts and projections**

Climate change driven  
drought will affect New Zealand.  
Focus on people.

Future drought may very well be the climate change impact with the most significant effect on our economy (see Westpac, 2018). A recent report by Frame et al. (2018) estimated that the economic losses from droughts between mid-2007 and mid-2017 was \$720 million. This exceeds the cost of privately-insured damages from floods over the same period, which are estimated at \$120 million.

<https://motu.nz/assets/Documents/our-work/environment-and-agriculture/climate-change-impacts/Drought-Dialogue-Report.pdf>

### **Climate change: Revealing its hand in today's extreme weather**

It's a fact our insurance data is now making uncomfortably clear: climate change isn't just a problem we'll face in the future, but one that's hitting us hard today.

[https://www.nzherald.co.nz/environment/news/article.cfm?c\\_id=39&objectid=12169940&ref=rss](https://www.nzherald.co.nz/environment/news/article.cfm?c_id=39&objectid=12169940&ref=rss)

### **NZ scientist: Oz fires a climate change wake-up call**

Extreme weather that has forced thousands of Queensland residents to flee their homes should give people a wake-up call over climate change, a New Zealand scientist says.

[https://www.nzherald.co.nz/environment/news/article.cfm?c\\_id=39&objectid=12168230&ref=rss](https://www.nzherald.co.nz/environment/news/article.cfm?c_id=39&objectid=12168230&ref=rss)

### **Trump is only G20 world leader to not sign climate change statement**

US president Donald Trump was the only leader at the Group of 20 Summit in Argentina who refused to sign a statement supporting moves to fight climate change.

[https://www.nzherald.co.nz/climate-change/news/article.cfm?c\\_id=26&objectid=12170074&ref=rss](https://www.nzherald.co.nz/climate-change/news/article.cfm?c_id=26&objectid=12170074&ref=rss)

### **Journal and articles online**

#### **Australian Journal of Emergency Management (AJEM)**

A quarterly journal of analysis, considered views, lessons learned and insights into current and future issues from researchers and practitioners at all levels of emergency management.

<https://knowledge.aidr.org.au/collections/australian-journal-of-emergency-management/>

Back issues from Jan 2015

Has now been added to Koha and may be linked to from the front page of Koha at <http://library.met.co.nz/>

## **Quarterly Journal of the Royal Meteorological Society**

### Accepted Articles

Accepted, unedited articles published online and citable. The final edited and typeset Version of Record will appear in the future.

#### Laplace Transform Integration of a Baroclinic Model

Eoghan Harney, Peter Lynch

First Published: 24 November 2018

#### Estimation of physical parameters under location uncertainty using an Ensemble 2-Expectation-Maximization algorithm

Y. Yang, E. Mémin

First Published: 24 November 2018

#### Effects of the wind-mass balance constraint on ensemble forecasts in the hybrid-4DEnVar

Hyo-Jong Song, Jeon-Ho Kang

First Published: 24 November 2018

#### Sensible heating as a potential mechanism for enhanced cloud formation over temperate forest

P.J.M. Bosman, C.C. van Heerwaarden, A.J. Teuling

First Published: 24 November 2018

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## **NATURE MAGAZINE OF CLIMATE CHANGE**

**December 2018 Volume 8, Issue 12**

### **Editorial**

The year that was p1023

doi:10.1038/s41558-018-0369-5

Saying thanks p1023

doi:10.1038/s41558-018-0366-8

### **Correspondence**

Early oil industry knowledge of CO<sub>2</sub> and global warming pp1024 - 1025

Benjamin Franta

doi:10.1038/s41558-018-0349-9

Antarctic ice losses tracking high pp1025 - 1026

Thomas Slater & Andrew Shepherd

doi:10.1038/s41558-018-0284-9

### **Comment**

A new scenario resource for integrated 1.5 °C research pp1027 - 1030

Daniel Huppmann, Joeri Rogelj, Elmar Kriegler, Volker Krey & Keywan Riahi

doi:10.1038/s41558-018-0317-4

Five dimensions of climate science reductionism pp1030 - 1032

Jonathan Rigg & Lisa Reyes Mason

doi:10.1038/s41558-018-0352-1

### **Research Highlights**

Amazonian drying p1033

Alastair Brown

doi:10.1038/s41558-018-0362-z

Diesel boom, emissions bust p1033

Adam Yeeles

doi:10.1038/s41558-018-0363-y

Bleaching impacts p1033

Bronwyn Wake

doi:10.1038/s41558-018-0364-x

Beliefs about minority groups p1033

Jenn Richler

doi:10.1038/s41558-018-0365-9

## **News & Views**

### Urban growth and climate adaptation p1034

Lei Zhao

doi:10.1038/s41558-018-0348-x

### Local processes with a global reach pp1035 - 1036

Patrick C. Taylor

doi:10.1038/s41558-018-0342-3

## **Perspectives**

### Limiting fossil fuel production as the next big step in climate policy pp1037 - 1043

Peter Erickson, Michael Lazarus & Georgia Piggot

doi:10.1038/s41558-018-0337-0

Climate policy is heavily focused on reducing demand for fossil fuels, but supply-side policies represent a potentially powerful tool to reduce CO<sub>2</sub> emissions. This Perspective uses the US state of California as a case study to explore the rationale and possible impacts of limiting oil production.

### Antarctic surface hydrology and impacts on ice-sheet mass balance pp1044 - 1052

Robin E. Bell, Alison F. Banwell, Luke D. Trusel & Jonathan Kingslake

doi:10.1038/s41558-018-0326-3

With warming, meltwater will play an increasingly important role in driving ice loss from Antarctica, raising global sea levels. This Perspective discusses the key process through which Antarctic surface hydrology impacts mass balance.

## **Review Articles**

### The Greenland and Antarctic ice sheets under 1.5 °C global warming pp1053 - 1061

Frank Pattyn, Catherine Ritz, Edward Hanna, Xylar Asay-Davis, Rob DeConto et al.

doi:10.1038/s41558-018-0305-8

This Review synthesizes knowledge on projections of the Antarctic and Greenland ice sheets at 1.5 °C and 2 °C of warming, discussing possible nonlinear responses, and outlining the need for more insight into future atmospheric and oceanic forcings.

### Broad threat to humanity from cumulative climate hazards intensified by greenhouse gas emissions pp1062 - 1071

Camilo Mora, Daniele Spirandelli, Erik C. Franklin, John Lynham, Michael B. Kantar et al.

doi:10.1038/s41558-018-0315-6

This Review examines the pathways through which humans are impacted by climate change and shows that by 2100 the world's population will be simultaneously exposed to at least three hazards, and in some locations as many as six, under an RCP 8.5 scenario.

## **Letters**

### An assessment of climate action by high-carbon global corporations pp1072 - 1075

Simon Dietz, Charles Fruitiere, Carlota Garcia-Manas, William Irwin, Bruno Raus et al.  
doi:10.1038/s41558-018-0343-2

Corporations are an important source of GHG emissions and an important climate-mitigation actor. An assessment of corporate climate action and systematic benchmarking against international targets is conducted for 138 companies in high-emitting sectors.

### Polar amplification dominated by local forcing and feedbacks pp1076 - 1081

Malte F. Stuecker, Cecilia M. Bitz, Kyle C. Armour, Cristian Proistosescu, Sarah M. Kang et al.  
doi:10.1038/s41558-018-0339-y

Model simulations with CO<sub>2</sub> forcing prescribed in discrete geographical regions reveal that polar amplification arises primarily due to local lapse-rate feedback, with ice-albedo and Planck feedbacks playing subsidiary roles.

### Toxic algal bloom induced by ocean acidification disrupts the pelagic food web pp1082 - 1086

Ulf Riebesell, Nicole Aberle-Malzahn, Eric P. Achterberg, María Algueró-Muñiz, Santiago Alvarez-Fernandez et al.  
doi:10.1038/s41558-018-0344-1

Ocean acidification will result in biological winners and losers. A mesocosm experiment shows that a toxic algal species is a winner under ocean acidification, with implications for the marine food web and, more generally, ecosystem services.

### Global predation pressure redistribution under future climate change pp1087 - 1091

Gustavo Q. Romero, Thiago Gonçalves-Souza, Pavel Kratina, Nicholas A. C. Marino, William K. Petry et al.  
doi:10.1038/s41558-018-0347-y

A global experiment using model caterpillars shows that climate explains patterns of predation better than latitude or elevation alone. Predation pressure is found to be greater under higher temperatures and more stable climatic conditions.

### Contrasting responses of autumn-leaf senescence to daytime and night-time warming pp1092 - 1096

Chaoyang Wu, Xiaoyue Wang, Huanjiong Wang, Philippe Ciais, Josep Peñuelas et al.  
doi:10.1038/s41558-018-0346-z

Rising pre-season daytime and night-time temperatures have contrasting effects on the timing of autumn-leaf senescence date in the Northern Hemisphere. Diurnal differences in drought stress may be the underlying mechanism.

### **Articles**

Diurnal interaction between urban expansion, climate change and adaptation in US cities pp1097 - 1103

E. Scott Krayenhoff, Mohamed Moustouai, Ashley M. Broadbent, Vishesh Gupta & Matei Georgescu  
doi:10.1038/s41558-018-0320-9

Urban expansion and climate change interact to produce less night-time warming than their sum. Combined implementation of adaptation strategies can offset projected daytime urban warming when applied with GHG emissions reductions, but cannot offset projected nocturnal warming.

Climate-driven thresholds in reactive mineral retention of soil carbon at the global scale pp1104 - 1108

Marc G. Kramer & Oliver A. Chadwick  
doi:10.1038/s41558-018-0341-4

Reactive mineral retention of carbon accounts for 3–72% of organic carbon found in mineral soil. In many biomes, the size of this fraction is determined by modest shifts in effective moisture, suggesting high sensitivity to climate change.

Coastal wetland management as a contribution to the US National Greenhouse Gas Inventory pp1109 - 1112

Stephen Crooks, Ariana E. Sutton-Grier, Tiffany G. Troxler, Nathaniel Herold, Blanca Bernal et al.  
doi:10.1038/s41558-018-0345-0

Managed coastal wetlands have been included for the first time in the US Greenhouse Gas Inventory. Intact vegetated coastal wetlands are shown to represent a net greenhouse gas sink, but these are being lost to development, despite robust regulation, causing emissions.

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