New Zealand weather and climate news

These clips are courtesy of MetService Library

MetService

Xmas shaping up as hot and sunny in South

The magic of Christmas seems set to spread over Otago and Southland this year.

MetService meteorologist Angus Hines said the weather was expected to be wet and gloomy over the next four days, but Christmas Eve, Christmas Day and Boxing Day were shaping up to be hot and mostly sunny around the region.

https://www.odt.co.nz/news/dunedin/xmas-shaping-hot-and-sunny-south

It's looking like a warm but slightly wet Christmas Day

However, MetService meteorologist Andy Best said an accurate prediction for Christmas Day couldn't be made until Sunday.

https://www.nzherald.co.nz/rotorua-daily-post/news/article.cfm?c_id=1503438&objectid=12178939

Glorious weather to continue for most of country today

The glorious weekend weather is set to continue, with fine and sunny conditions forecast for most of the country today.

https://www.odt.co.nz/news/national/glorious-weather-continue-most-country-today

NZTA urging drivers to be cautious due to surface flooding on State Highways 1 and 2

Wellington drivers have been asked to take care on the roads due to surface flooding following persistent rain.

https://www.stuff.co.nz/national/109492383/nzta-urging-drivers-to-be-cautious-due-to-surface-flooding-on-state-highway-1-in-wellington

Report into ex-cyclone Gita response identifies $4.5m cost and 28 areas for improvement

The cost of dealing with ex-Cyclone Gita has been put at $4.5 million, according to a new report into the crisis that makes six major recommendations for improvements.

https://www.stuff.co.nz/taranaki-daily-news/news/109474410/report-into-excyclone-gita-response-identifies-45m-cost-and-28-areas-for-improvement

MetOcean

An operational high resolution hydrodynamic forecast model for Port Phillip Bay

MetOcean Solutions has recently operationalised a high resolution hydrodynamic forecast model that allows simultaneous simulation of waves, currents and their interaction for Port Phillip Bay, Australia.

http://www.metocean.co.nz/news/2018/12/17/an-operational-high-resolution-hydrodynamic-forecast-model-for-port-phillip-bay

Police Dive Squad readies for another summer of searching our waters for loved ones

Searching under water for drowning victims is a grisly task but it will likely be the reality for the New Zealand Police Dive Squad over the summer season.

https://www.stuff.co.nz/national/108865243/police-dive-squad-readies-for-another-summer-of-searching-our-waters-for-loved-ones

Extreme weather (and other news) – Australia and Pacific

Tonga joins climate resilience group

Tonga is hoping its climate resilience can be improved by becoming the 29th member of the Global Green Growth Institute.

https://www.radionz.co.nz/international/pacific-news/378643/tonga-joins-climate-resilience-group

State of the Climate: Thank goodness for ocean sinks currently holding more warming extremes at bay

The Bureau of Meteorology (BOM) and CSIRO's joint biennial State of the Climate report has just been released and it is not the kind of report card you would want to take home to your parents just before Christmas.

https://www.abc.net.au/news/2018-12-20/bom-csiro-biennial-state-of-the-climate/10631122

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

Storm clouds loom for Asian companies unready for climate change

Increasingly severe flooding poses challenges from finance to farming

https://asia.nikkei.com/Spotlight/Asia-Insight/Storm-clouds-loom-for-Asian-companies-unready-for-climate-change

Extreme weather (and other news) – Americas and Europe

Powerful, rare tornado rips through Seattle area

Tuesday, December 18, 2018, 8:47 PM - A powerful tornado tore through a Seattle-area town on Tuesday afternoon, damaging homes and vehicles along its path.

https://www.theweathernetwork.com/news/articles/port-orchard-tornado-seattle-damage-national-weather-service-suspected-twister-damage-to-homes-shingles-radar-image-satellite/120066

Warmer winters threaten UK blackcurrant farming

Warmer winters may not provide sufficient chilling for blackcurrants in the UK, delaying the start of the growing season and resulting in reduced yields and lower fruit quality, researchers have found. Speaking at the British Ecological Society's annual meeting in Birmingham today, a research group based at the James Hutton Institute highlights that milder winters may cause blackcurrant crops to flower later in the year, produce fewer fruit, and over repeated years, have a reduced plant lifespan.

https://www.sciencedaily.com/releases/2018/12/181217081821.htm

International news and research

Have We Reached the Limits of Predictability for Tropical Cyclone Track Forecasting?

The tropical cyclone is the largest single-day-impact meteorological event in the United States and worldwide through its effects from storm surge, extreme winds, freshwater flooding, and embedded tornadoes. Fortunately, over the last three decades there have been incredible advances in forecast accuracy, especially for the track of the tropical cyclone’s center. Errors have been cut by two-thirds in just 25 years due to global modeling advances, data assimilation improvements, dramatic increases in observations primarily derived from satellite platforms, and use of ensemble forecast techniques. These four factors have allowed for highly accurate synoptic-scale atmospheric initial conditions and forecasts of the steering flow out through several days into the future. However, such improvements cannot continue indefinitely. It is well known in the atmospheric sciences that there exists an inherent “limit of predictability”

because of errors at the smallest scales (microscale—meters and seconds) that eventually cascade up to the largest scales (synoptic scale—thousands of kilometers and several days). While there have been estimates of the limits of predictability for tropical cyclone track prediction in the past, our current capabilities have exceeded those somewhat pessimistic earlier outlooks. This essay discusses the current state of the art for tropical cyclone track prediction and reassesses whether reaching the "limit of predictability" is imminent. The ramifications of this eventual conclusion—whether in the short-term or still decades away—could be critical for all users of tropical cyclone track forecast information, including the emergency management community/governments, the media, the private sector, and the general public.

https://journals.ametsoc.org/doi/abs/10.1175/BAMS-D-17-0136.1?af=R

The Future of the Global Weather Enterprise: Opportunities and Risks

The Global Weather Enterprise (GWE) encompasses the scientific research, technology, observations, modeling, forecasting, and forecast products that need to come together to provide accurate and reliable weather information and services that save lives, protect infrastructure, and enhance economic output. It is a value chain from weather observations to, ultimately, the creation of actionable analysis-and-forecast weather information of huge benefit to society. The GWE is a supreme exemplar of the value of international cooperation, public–private engagement, and scientific and technological know-how. It has been a successful enterprise, but one that has ever-increasing requirements for continual improvement as population density increases and climate change takes place so that the impacts of weather hazards can be mitigated as far as possible. However, the GWE is undergoing a period of significant change arising, for example, from the growing need for more accurate and reliable weather information, advances coming from science and technology, and the expansion of private sector capabilities. These changes offer real opportunities for the GWE but also present a number of obstacles and risks that could, if not addressed, stifle this development, adversely impacting the societies it aims to serve. This essay aims to catalyze the GWE to address the issues collectively, by dialogue, engagement, and mutual understanding.

https://journals.ametsoc.org/doi/abs/10.1175/BAMS-D-17-0194.1?af=R

New climate model to be built from the ground up

Scientists and engineers will collaborate in a new Climate Modeling Alliance to advance climate modeling and prediction

https://www.eurekalert.org/pub_releases/2018-12/miot-ncm121218.php

NOAA plan to improve weather forecasting includes UW–Madison

Whether deciding to stock up on nonperishables or assessing energy needs ahead of a winter storm, weather is a billion-dollar industry that touches everyone — individuals and industry alike.

https://news.wisc.edu/noaa-plan-to-improve-weather-forecasting-includes-uw-madison/

Hurricane Michael Cost This Military Base About $5 Billion, Just One of 2018's Weather Disasters

Major hurricanes, devastating wildfires, a drought and a series of extreme storms ran up the count of billion-dollar U.S. climate and weather disasters.

https://insideclimatenews.org/news/18122018/tyndall-military-hurricane-cost-2018-year-review-billion-dollar-disasters-wildfire-extreme-weather-drought-michael-florence

Q&A: The epic tale of the scientists who unraveled the mystery of the monsoon

This year, India's monsoon rains—critical to the country's harvest and water supply—were below average for the 13th time in 18 years. And alarm spreads when those annual rains don't come between June and September, says Sunil Amrith, a historian at Harvard University who has just released a new book documenting the long quest to understand one of Asia's most important weather patterns.

https://www.sciencemag.org/news/2018/12/qa-epic-tale-scientists-who-unraveled-mystery-monsoon

ECMWF

Natural gas bulls may get what they wanted after all... a January cold blast

Are you surprised by the move up today?

You shouldn't be if you saw what the ECMWF-EPS long-range forecast for January yesterday. Let's just say it was a "cold" reaction.

https://seekingalpha.com/article/4229029-natural-gas-bulls-may-get-wanted-january-cold-blast

WMO

Coastal flooding forecasts strengthened in Caribbean

An operational system has been developed on the island of Hispaniola to produce and disseminate new early warning information on coastal flooding, which will help save lives and protect property in low-lying, populated coastal areas. There is potential to enhance this early warning platform in the future and to extend it to other Caribbean nations.

Read more here

Others

Weather data startup Understory prepares for big expansion

Understory, a Madison startup whose ultra-local weather sensors can tell if a hailstorm that pelted your roof or a downpour that flooded your street left damage in its wake, is heading into a year of explosive growth.

https://madison.com/wsj/business/weather-data-startup-understory-prepares-for-big-expansion/article_ff90517c-8a19-548a-82c4-035daa36c525.html

Iteris ClearPath Weather SaaS Solution Chosen by Roy Jorgensen Associates for Road Maintenance Decision Support

SANTA ANA, Calif.--(BUSINESS WIRE)--Dec 18, 2018--Iteris, Inc. (NASDAQ: ITI), the global leader in applied informatics for transportation and agriculture, today announced that Roy Jorgensen Associates, Inc., a world leader in maintenance management, has selected Iteris' ClearPath Weather® to provide pavement and weather forecasting services for improved winter road maintenance response in support of the Colorado Department of Transportation's (CDOT) Central 70 Project.

https://www.apnews.com/4aef6a6676eb477b8a64e1250ba5c9b3

The Meteorology Of Life-Threatening Waves Along The U.S. West Coast

It this Tweet over the weekend by the National Weather Service-Bay Area did not get your attention then I am not sure what will:

HIGH SURF WARNING continues in effect along the coast from Sonoma County through Monterey County 9 AM Sun to 9 PM Mon. STAY WELL BACK FROM THE OCEAN OR RISK CERTAIN DEATH.

https://www.forbes.com/sites/marshallshepherd/2018/12/17/the-meteorology-of-life-threatening-waves-along-the-u-s-west-coast/#5d8d3eab136c

Aviation

IATA Readies Platform To Share Global Turbulence Information

The International Air Transport Association (IATA) reports good progress with its plan to establish a global database with real-time pooling and sharing of turbulence data generated by participating airlines during flight operations. The association expects trials of the "Turbulence Aware" platform to start in February and run throughout 2019, followed by a full launch in January 2020.

https://www.ainonline.com/aviation-news/air-transport/2018-12-17/iata-readies-platform-share-global-turbulence-information

Qantas launches world's most sophisticated flight planner

Qantas has developed the world's most sophisticated flight plan system that will save the airline up to $40 million in fuel and make flights like the Perth to London non-stop even faster.

https://www.airlineratings.com/news/qantas-launches-worlds-sophisticated-flight-planner/

Rocket Lab launches from the Hawke's Bay after weather improves

Rocket Lab has made it back into space after unfavourable weather cleared in Hawke's Bay on Sunday.

It was the New Zealand-based company's second commercial flight and first since partnering with US space agency Nasa.

https://www.stuff.co.nz/business/109392956/rocket-lab-ready-to-launch-from-the-hawkes-bay-after-weather-improves

NZ-Dutch space startup raises $3.35m

Dawn Aerospace, a New Zealand-Dutch startup building 100% reusable rockets for satellite delivery, has this week raised $3.35m of investment from Kiwi, American and Dutch investors.

http://www.scoop.co.nz/stories/BU1812/S00596/nz-dutch-space-startup-raises-335m.htm

Business/Insurance

Focus on climate risk boosts demand for weather hedging

An increasing focus on climate-related risks has become a significant driver of demand for financial products offering protection against adverse weather conditions, poll winners tell Graham Cooper.

https://www.environmental-finance.com/content/analysis/focus-on-climate-risk-boosts-demand-for-weather-hedging.html

Retailers blame 'alarmist' Met Éireann weather warnings for drop in footfall

Forecaster has defended its position and insist warnings are issued for public safety

https://www.independent.ie/business/irish/retailers-blame-alarmist-met-ireann-weather-warnings-for-drop-in-footfall-37641116.html

Farming/horticulture/Aquaculture

Smart farming: How IoT, robotics, and AI are tackling one of the biggest problems of the century

It's still early days for precision agriculture, but two UK-based projects are proving the feasibility and value of the concept.

https://www.techrepublic.com/article/smart-farming-how-iot-robotics-and-ai-are-tackling-one-of-the-biggest-problems-of-the-century/#ftag=RSS56d97e7

To save agriculture from climate change, we need better weather forecasting

Tiny monitoring stations that alert farmers to every change in conditions on their farms could help them better understand the extreme weather shifts that are becoming more common due to climate change.

https://www.fastcompany.com/90281427/to-save-agriculture-from-climate-change-we-need-better-weather-forecasting

Satellites and radar

AMT Discussions

Investigation of observational error sources in multi Doppler radar vertical air motion retrievals: Impacts and possible solutions by Mariko Oue, Pavlos Kollias, Alan Shapiro, Aleksandra Tatarevic, and Toshihisa Matsui https://www.atmos-meas-tech-discuss.net/amt-2018-442/

Short Summary: This study investigated impacts of the selected radar volume coverage pattern, the sampling time period, the number of radars used, and the added value of advection correction on the retrieval of vertical air motion from a multi-Doppler radar technique. The results suggest that the use of rapid-scan radars can substantially improve the quality of wind

retrievals and that the retrieved wind field needs to be carefully used considering the limitations of the radar observing system.

Innovation and technologies (inc data and new products)

How to Build Great Data Products

Products fueled by data and machine learning can be a powerful way to solve users' needs. They can also create a "data moat" that can help stave off the competition. Classic examples include Google search and Amazon product recommendations, both of which improve as more users engage. But the opportunity extends far beyond the tech giants: companies of a range of sizes and across sectors are investing in their own data-powered products. At Coursera, we use machine learning to help learners find the best content to reach their learning goals, and to ensure they have the support — automated and human — that they need to succeed.

Read more here

4 Ways to Pressure-Test Strategic Decisions, Inspired by the U.S. Military

Every leader wants to avoid major strategic mistakes, but, in a complex world, it's hard to anticipate all the forces that might impact your goal. It's vital to find weaknesses in your strategies before you implement them — and developing a rigorous process to do so.

Read more here

Climate change / global warming / sea level rise

The full story on climate change requires the long view

Researchers offer a new calculation that provides the long view of what nine different world regions have contributed to climate change since 1900. They also show how that breakdown will likely look by 2100 under various emission scenarios.

https://www.sciencedaily.com/releases/2018/12/181217151531.htm

Conferences and professional development

How to Follow Up with People After a Conference

Attending a conference is a whir of activity — flying to a destination, engaging in several days of nonstop networking, and coming home to an inbox that has spiraled out of control in your absence. Back at work, most of us immediately go into catch-up mode; the last thing on your

mind is following up with the people you just met. That's especially true if you're an introvert and feel overtaxed by the whole process.

Read more here

Journal and articles online

Welcome to the Bulletin of the Canadian Meteorological and Oceanographic Society

In this issue (Vol.46 No.5) of the CMOS Bulletin, you will find an illuminating article from Ellen Gute, talking about her work on the significance of tree pollen for cloud formation. Sarah Knight, Bulletin Editor, interviews Harinder Ahluwalia, president of the International Forum of Meteorological Societies (IFMS) about the role of IFMS and his thoughts on the future of meteorology. A study looking at sources of particulate air matter at the borders of the province of Québec by Jean-Philippe Gilbert shows that the greatest source of this class of pollutant comes from the region of the Great Lakes. Bob Jones gives his review of the new book Ice, Nature and Culture by Klaus Dodds. Several smaller news items, member's updates, and event notifications are also included.

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How confident are predictability estimates of the winter North Atlantic Oscillation?

Antje Weisheimer, Damien Decremer, David MacLeod, Christopher O'Reilly, T.N. Stockdale, S. Johnson, T.N. Palmer

First Published: 28 November 2018

Estimation of ground-based GNSS Zenith Total Delay temporal observation error correlations using data from the NOAA and E-GVAP networks

Stephen Macpherson, Stéphane Laroche

First Published: 28 November 2018

Influence of a valley exit jet on the nocturnal atmospheric boundary-layer at the foothills of the Pyrenees

M. A. Jiménez, J. Cuxart, D. Martínez-Villagrasa

First Published: 26 November 2018

An Atmospheric Bénard problem

M. Fantini

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Welcome to AMS News You Can Use.

Each week, we send out a sampling of recent news and items of interest in meteorology and related fields, as covered by various media outlets. Searchable archives are available online.

December 18, 2018

A million California buildings face wildfire risk. ‘Extraordinary steps’ are needed to protect them

December 18, 2018 - Los Angeles Times

A Times analysis of wildfire hazard across California found that hundreds of communities from Redding to San Diego are at high risk of deadly wildfires like those in Paradise and Malibu last month.

Read MORE

Has a Mega-Drought Begun in the American West?

December 18, 2018 - The Atlantic

Global warming may have turned an already historic dry spell into the third-worst drought of the past 1,000 years.

Read MORE

How corn farmers are adapting to climate change

December 17, 2018 - ABC News - Go.com

While we live in boom times of agricultural abundance, marked by record crop yields and cheap food, climate change threatens to slash yields and cause worldwide food busts.

Read MORE

Climate and vegetation shape wildfire risk in Hawai'i

December 16, 2018 - Phys.org

Trauernicht used the "footprints" of historical fires mapped on the Big Island by the non-profit Hawaii Wildfire Management Organization to quantify how vegetation, ignition frequency, and climate contribute to wildfire probability.

Read MORE

A damming trend

December 15, 2018 - ScienceDaily

Hundreds of dams are being proposed for Mekong River basin in Southeast Asia. Hundreds of dams are being proposed for Mekong River basin in Southeast Asia. The negative social and environmental consequences greatly outweigh the positive changes of this grand-scale flood control, according to new research.

Read MORE

Tornadoes Don't Form Like Meteorologists Thought They Did

December 14, 2018 - LiveScience

Picture a tornado forming. Does the funnel cloud in your mind's eye reach down from the sky like a malicious, spindly finger?

Read MORE

GPM observes heavy rainfall in intensifying Tropical Cyclone Owen

December 13, 2018 - Phys.org

As expected, tropical cyclone Owen recently intensified as it moved over the Gulf of Carpentaria and NASA and the Japan Aerospace Exploration Agency's GPM core satellite found very heavy rainfall occurring within the revived storm.

Read MORE

Off-Season Wildfires – New Tools Help Firefighters Prepare

December 12, 2018 - Chron.com

Researchers at The South Dakota School of Mines and Technology are working with NASA and NOAA officials to use satellite technology to give fire managers a heads up when the fuels are abnormally dry.

Read MORE

Don Paul: Is there a connection to extreme-weather events and our warming climate?

December 12, 2018 - The Buffalo News

My old standby, and that of thousands of meteorologists, used to be you really couldn’t connect most extreme individual weather events to our mean warming climate.

Read MORE

As Snow Disappears, the Sierras and Rockies Are Shrinking

December 12, 2018 - Wired

The mountains of the High Sierra and the Rockies are, in effect, shrinking, according to a new analysis of the nation's snowpack over the past 36 years.

Read MORE

Eyes in the sky capture carbon, other climate culprits

December 12, 2018 - Seattlepi.com

A growing fleet of satellites is monitoring man-made greenhouse gas emissions from space, spurred by the need to track down major sources of climate changing gases such as methane and carbon dioxide.

Read MORE

Coral larvae use sound to find a home on the reef

December 12, 2018 - EurekAlert!

Researchers found that the soundscape of a reef--the combined sounds of all animals living nearby--might play a major role in steering corals towards healthy reef systems and away from damaged ones.

Read MORE

Hypoxic Dead Zones Found in Urban Streams, Not Just at the Coast

December 12, 2018 - Research & Development

Hypoxic dead zones, which occur when dissolved oxygen levels in water drop so low that fish and other aquatic animals living there suffocate, are well-documented problems in many coastal waters. Now, a new Duke University-led study reveals they also occur in freshwater urban streams.

Read MORE

Wildfires in Sweden Signal Europe's Climate Disaster Is Growing

December 12, 2018 - Bloomberg

Insurance claims linked to global warming are set to surpass $15 billion this year as events like tornadoes in Italy become routine.

Read MORE

Artificial intelligence helps predict volcanic eruptions

December 11, 2018 - Science

New algorithms processing satellite data automatically caught the ground motion before the eruption of Wolf Volcano in the Galápagos Islands.

Read MORE

Trump's NOAA Nominee Won't Get Senate Vote This Year

December 18, 2018 - The New York Times

The Senate will not vote this year to confirm a new head of NOAA, leaving the agency responsible for understanding and predicting changes in the Earth's climate without a Senate-confirmed leader for the longest period since it was created in 1970.

Read MORE

The Meteorology of Life-Threatening Waves Along the U.S. West Coast

December 18, 2018 - Forbes

High Surf Warnings remain in effect for parts of the coastal western United States. What does this mean, and why is it so bad?

Read MORE

Scientists Used Satellites to Spot Arctic Methane From Space

December 13, 2018 - MotherBoard

An experimental technique for measuring potent methane emissions in the Arctic proved successful.

Read MORE

A Weird Severe Drought Is Affecting Alaska in One of the Wettest U.S. Locations

December 11, 2018 - The Weather Channel

This is one of the wettest climates in the U.S., but it's in a severe drought.

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nature climate change magazine

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A research roadmap for quantifying non-state and subnational climate mitigation action pp11 - 17
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doi:10.1038/s41558-018-0338-z

Global climate change governance has seen an increase in action beyond national governments. This Perspective sets forth a research agenda and recommendations for evaluating non-state and subnational climate mitigation action.

The private sector's climate change risk and adaptation blind spots pp18 - 25
Allie Goldstein, Will R. Turner, Jillian Gladstone & David G. Hole
doi:10.1038/s41558-018-0340-5

Investors are increasingly asking businesses to disclose their climate risk and corresponding management strategies. A review of corporate adaptation strategies reveals limited consideration of broader risks to supply chains, customers and employees.

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Eric D. Maloney, Ángel F. Adames & Hien X. Bui
doi:10.1038/s41558-018-0331-6

The Madden–Julian Oscillation (MJO) is the leading mode of intraseasonal variability in the tropical atmosphere. This Perspective examines how the MJO may change with anthropogenic warming, revealing a projected increase in MJO-related precipitation.

Letters

Increased snowfall over the Antarctic Ice Sheet mitigated twentieth-century sea-level rise pp34 - 39
B. Medley & E. R. Thomas
doi:10.1038/s41558-018-0356-x

Ice loss from Antarctica contributes to global sea-level rise. Analysis of ice core records and reanalysis datasets reveals that increased snowfall over the Antarctic Ice Sheet has offset contemporary sea-level rise by ~10 mm since 1901.

Ecological memory modifies the cumulative impact of recurrent climate extremes pp40 - 43
Terry P. Hughes, James T. Kerry, Sean R. Connolly, Andrew H. Baird, C. Mark Eakin et al.
doi:10.1038/s41558-018-0351-2

The increasing frequency of marine heatwaves suggests that the impacts of successive events may be influenced by previous events. The extent of the 2016 and 2017 bleaching events on the Great Barrier Reef shows that ecological memory played a role in the impacts of the second heatwave.

Hydrologic implications of vegetation response to elevated CO2 in climate projections pp44 - 48
Yuting Yang, Michael L. Roderick, Shulei Zhang, Tim R. McVicar & Randall J. Donohue
doi:10.1038/s41558-018-0361-0

This paper introduces a modification to the Penman–Monteith equation—for net evapotranspiration—to account for vegetation under elevated atmospheric CO2. In so doing it reconciles contradictions between drought indices and modelled runoff projections.

Boreal forest biomass accumulation is not increased by two decades of soil warming pp49 - 52
Hyungwoo Lim, Ram Oren, Torgny Näsholm, Monika Strömgren, Tomas Lundmark et al.
doi:10.1038/s41558-018-0373-9

Nearly two decades of data from a boreal forest soil warming experiment (+5 °C) show no significant increase in aboveground biomass accumulation beyond an initial transitory response.

Articles

Consumers underestimate the emissions associated with food but are aided by labels pp53 - 58
Adrian R. Camilleri, Richard P. Larrick, Shajuti Hossain & Dalia Patino-Echeverri
doi:10.1038/s41558-018-0354-z

Consumer adoption of more plant-based diets has high technical potential to reduce global GHG emissions. This study shows that consumers underestimate the GHG emissions associated with foods, but carbon labels that provide this information promote the purchase of lower-emitting options.

Natural variability of Southern Ocean convection as a driver of observed climate trends pp59 - 65
Liping Zhang, Thomas L. Delworth, William Cooke & Xiaosong Yang
doi:10.1038/s41558-018-0350-3

Sea-ice expansion around Antarctica, and related surface cooling, is shown to be linked to natural long-term variability of Southern Ocean convection. Model simulations reproduce the observed trends, if they start from an active phase of convection.

Agricultural non-CO2 emission reduction potential in the context of the 1.5 °C target pp66 - 72
Stefan Frank, Petr Havlík, Elke Stehfest, Hans van Meijl, Peter Witzke et al.
doi:10.1038/s41558-018-0358-8

Agricultural CH4 and N2O emissions represent around 11% of total anthropogenic GHGs. Here agriculture mitigation potentials are quantified, in the context of the 1.5 °C target, and decomposed by emission source, region and mitigation mechanism.

Global trends in carbon sinks and their relationships with CO2 and temperature pp73 - 79
M. Fernández-Martínez, J. Sardans, F. Chevallier, P. Ciais, M. Obersteiner et al.
doi:10.1038/s41558-018-0367-7

Global net ecosystem production (NEP) from a number of atmospheric inversions and dynamic global vegetation models is analysed to attribute trends to potential drivers. CO2 is found to have a positive effect on NEP that is constrained by climate warming.

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Thanks and Season's greetings to our regular contributors and readers

Bob McDavitt