

New Zealand weather and climate news

Following clips provided courtesy of MetService Library

MetService

Gales to batter central areas on Thursday, after containers blown into Bluff harbour

Stuff.co.nz

After gales blew shipping containers into Bluff Harbour on Wednesday, its the turn of central areas to take a battering on Thursday. MetService is ...

Chilly winds on way out - for now

New Zealand Herald

MetService meteorologist Kyle Lee said containers were blown off the wharf in Bluff on Wednesday and a gust of 148km/h was recorded on Stewart ...

Lightning may have caused loud rumbling

Otago Daily Times

Communications meteorologist Lisa Murray said there was a single lightning strike about 50km out to sea, southeast of Otago Peninsula, at 8.27pm.

First snow arrives on Hawke's Bay mountains, heralding cold nights ahead

New Zealand Herald

MetService meteorologist Lisa Murray said it was normal for the ranges to see snow at this time of year, and if anything, it had been a very mild autumn ...

Your weather: Frosty start clears to fine weather for most of the country

New Zealand Herald

MetService Meteorologist Ravi Kandula said it will essentially be a fine day across the country, with a few showers through Fiordland and Milford.

Government report reveals MetService considering new hot weather warnings

Stuff.co.nz

Stuff made an Official Information Act request to Transport Minister Phil Twyford in January, asking for details of what was being renegotiated, but this ...

Drilling to begin to determine impacts of sea-level rise

May 18, 2019 09:31 pm

Researchers will begin a deep drilling project in Dunedin next week to better understand the impacts of sea level rise.

NIWA

Scientists study how to predict marine heatwaves

Scientists have taken a step closer to predicting marine heatwaves with new NIWA-led research finding a link between their formation and the length of time sea temperatures are warmer than normal.

Thermal images reveal heat levels in New Zealand's glaciers

Thermal images taken by a NIWA scientist during this year's aerial survey of South Island glaciers have revealed in extraordinary detail how heat in the surrounding landscape is affecting the ice.

WMO

New assessment tool supports water management

A new tool to help ensure the sustainable and effective management of water resources was launched today at an international symposium on the Dynamic Water Resources Assessment Tool held in Seoul,...

Nauru becomes 193rd WMO Member

The Republic of Nauru has become the 193rd Member of WMO. The tiny nation lies in the South Pacific and, like other low-lying small island developing states, is particularly exposed to rising sea...

IPCC updates methodology for greenhouse gas inventories

The Intergovernmental Panel on Climate Change (IPCC) released on Monday an update to its methodology used by governments to estimate their greenhouse gas emissions and removals. Governments are...

UN Chief Executives Board appeals for more climate action

The leaders of 37 United Nations organizations called on their member states to "step up ambition and take concrete action" to limit global temperature increase from climate change. Their call for...

Roshydromet (Russian Federation): The marine expedition TRANSARCTIC

The expedition "TRANSARCTICA – 2019, the first stage" precedes the work of the international floating Observatory, planned to be deployed in the framework of the MOSAiC project (The...

Global platform on disaster risk reduction: we need a drastic change of course

Posted:

The impacts of climate change, associated sea level rise and extreme weather are amplifying as a result of record greenhouse gas levels and combining with urbanization, environmental degradation and...

UN Decade of Ocean Science gears up

The First Global Planning Meeting for the UN Decade of Ocean Science for Sustainable Development 2021-2030 has set the stage for wide-ranging action and partnerships to strengthen scientific...

Extreme weather (and other news) – Antarctica and offshore

Nearly 25% of West Antarctic Ice in Danger of Collapse

Live Science

To determine these ice changes, the scientists examined regional climate models and satellite data spanning 25 years, they reported May 16 in the ...

Extreme weather (and other news) – Australia and Pacific

Dry weather ahead for Tonga

Matangi Tonga

There is also a lower chance (50%) of El Nino developing with the outlook decreased from El Nino Alert to El Nino Watch. Last month, above average ...

Met Service presents climate products and services

Cook Islands News

The goal is to build the capacity of stakeholders to understand the Met Service's climate products; demonstrate and review a news bulletin Cook ...

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

BRI partners to get customised weather satellite data

The Straits Times

BEIJING • China will offer customised data services for disaster prevention through its Fengyun meteorological satellites for more countries along the ...

NiMet Opens New Meteorological Observation Centres

Leadership Newspaper (press release) (blog)

The Nigerian Meteorological Agency (NiMet) has opened 96 new metrological centres since the resumption of the DG/CEO of the agency, Prof Sani ...

Extreme weather (and other news) – Americas and Europe

Why The US Just Experienced Its Wettest 12-Month Stretch On Record

Forbes

Other factors include Hurricane Florence and the weak El Nino that recently began, but much of the record-breaking period was associated with El ...

Belarus weather service to improve forecast accuracy

Belarus News (BelTA)

Belarus weather service to improve forecast accuracy ... for Medium-Range Weather Forecasts which boasts one of the best computing technologies.

International news and research

Tropical Pacific variability key for successful climate forecasts

The warming of the Earth by the human-caused greenhouse effect is progressing. But predictions for the next decades still show relatively large uncertainties. A research team has now identified the large natural variations in the tropical Pacific region as the key reason.

Norman Phillips, former meteorology department head, dies at 95

MIT News

Working alongside experienced meteorologists, Phillips developed incredible insight and appreciation for the work. After the war, he was discharged ...

Unprecedented weakening of Asian summer monsoon

Rainfall from the Asian summer monsoon has been decreasing over the past 80 years, a decline unprecedented in the last 448 years, according to a new study.

You can't sue weatherman for wrong forecasts - proposed law

The Star, Kenya

The bill notes all-weather service providers must now be qualified meteorologists who must be registered with a newly-established professional ...

eMerge Americas Revisited: Building superior weather forecasting models

University of Miami

By coupling forecast models from NOAA, NASA, Environment and Climate Change Canada, the National Center for Atmospheric Research, and other ...

New lidar instruments peer skyward for clues on weather and climate

Phys.Org

"From this three-month field experiment we will gain insight into how weather forecasting may be impacted by continuous MPD measurements of ...

US Wind to install Meteorological Tower

4C Offshore (press release)

Baltimore-based offshore wind developer US Wind Inc. has signed an agreement with EPIC Applied Technologies for the installation of a ...

Charles Ewen - Director of Technology and CIO, Met Office

www.computing.co.uk

What's your proudest work-related achievement of the last 12 months? Delivering a large efficiency programme (about 15 per cent revenue) for the ...

The life of a Met Office Chief Forecaster

Royal Meteorological Society

SPEAKWR | Paul Gundersen, Chief Forecaster UK Met Office. ABSTRACT | TBC.

Others

How a Boston Startup Could Revolutionize Weather Forecasting

Fortune

Elkabetz came to Cambridge, Mass. in 2015 to get an MBA at Harvard Business School. But he also reconnected with two buddies from back home, ...

IBM's New Weather Forecast Platform Can Predict Shifts in Consumer Purchasing Patterns

Sourcing Journal

The new AI-based predictive software was developed with insights from IBM's subsidiary, the Weather Company. The venture aims to “make weather a ...

Aviation

Thai Airways posts loss in high season, signaling bad year ahead

Nikkei Asian Review

Thailand tends to welcome the most tourists over January to March because the weather is milder then, with less rain. Lunar New Year also falls within ...

Aviation progress may very well be curbed following local weather emergency declaration

Infosurhoy

The government has admitted that aviation growth in the UK might have to be curbed because of concerns over climate change. It said that the ...

Fog Flaw Found With New Istanbul Airport

Simple Flying

Istanbul's new 'megahub' airport has had to divert numerous flights due to bad weather. Last week, several flights were sent to Çorlu, 60 miles to the ...

Air Transport Monthly Monitor: April 2019

Every month, ICAO produces the latest economic and aviation indicators and rankings – check out the latest numbers here.

Business/Insurance

Tower returns to first-half profit, lifts full-year guidance

New Zealand Herald

The guidance includes a \$5 million allowance for severe weather and large ... In the Pacific, Tower said its businesses in Tonga, Samoa, Vanuatu, ...

Communications/social media

Britain's Guardian newspaper tells staff to avoid saying 'climate change,' use 'climate emergency ...

Fox News

“Increasingly, climate scientists and organizations from the UN to the Met Office are changing their terminology, and using stronger language to ...

Government (regional and national)

Singapore, New Zealand to step up cooperation in four areas

The Singapore-New Zealand Enhanced Partnership, which was two years in the making, paves the way for the countries to intensify collaboration in the areas of trade and economics; defence and security; science, technology and innovation; and people-to-people links.

Health

New Study Looks at the Emotional Toll Of Tornadoes

WeatherNation

“We as researchers can release the best severe weather technologies for our partners, but if people don't use, can't use them and don't want them for ...

History

Royal Charter artwork for wreck that inspired shipping forecast

BBC News

The 160th anniversary of a sea tragedy that inspired the shipping forecast has been marked with a mobile work of art. The Royal Charter ran aground ...

Satellites and radar

UK, France collaborate for a new weather satellite

Geospatial World (press release) (blog)

A partnership between UK and France has led to the development of a highly sophisticated weather satellite, which will set new standards in ...

Transport/roading/shipping/freight

Preliminary design of a smart climatic road in Phillip St. Parramatta

10 May 2019

Mattheos Santamouris, Gloria Pignatta, Shamila Haddad, Riccardo Paolini, Carlos Bartesaghi Koc, Marco Brozzetti, Samin Marzban, Jie Feng, Kai Gao, Geraldo Sansone

CRC for Low Carbon Living

The present study is aiming to pre-design and optimize a smart climatic street in Parramatta, named Phillip st., exhibiting high climatic, environmental, and energy performance.

The specific objective of the study is to propose, investigate, and optimize the combination of advanced thermal mitigation and smart technologies to improve thermal comfort and mitigate the urban overheating in the area.

To satisfy the above described objective, the whole study involves the following research phases:

Phase 1: Aerial monitoring of the surface temperatures using drone technologies. Use of the mobile Energy Bus to measure the temperature distribution in the whole area.

Phase 2: Identification of the climatic conditions and hot spots in the area and development of preliminary mitigation scenarios.

Phase 3: Preliminary climatic evaluation of the proposed mitigation scenarios and final selection of the technologies and systems to be implemented.

Phase 4: Detailed thermal study and optimization of the proposed mitigation scenarios.

Climate change / global warming / sea level rise

The growing frequency of extreme weather dulls people's awareness of climate change impacts, researchers say

Most people normalize extreme weather over just two to eight years, Twitter researchers say.

Climate change could undermine children's education and development in the tropics

A new study concludes that exposure to extreme heat and precipitation in prenatal and early childhood years in countries of the global tropics could make it harder for children to attain secondary school education, even for better-off households.

Public opinion may move surprisingly fast on climate change

Stuff.co.nz

If the Met Office is right, the sequences of hot days, fires, floods and storms will mount, which is likely to start focusing the minds of the average Joe and ...

Emergency preparedness / disaster planning / resilience

Exploring the barriers for people taking protective actions during the 2012 and 2015 New Zealand ShakeOut drills

Author links open overlay panel Sara K. McBride

Julia S. Becker David M. Johnston

International Journal of Disaster Risk Reduction

Volume 37, July 2019, 101150

To reduce future earthquake injuries and casualties, it is important that people understand how their behavior, during and immediately following earthquake shaking, exposes them to increased risk of injury or death. Research confirms that protective actions can reduce injuries and that prior training can help prepare people to take appropriate actions. In this paper, we examine barriers to participation in the ShakeOut drills in New Zealand. Through citizen science research, volunteers observed people performing the drills in 2012 and 2015. Observers reported how long it took to perform the drill and why they thought some people may not have completed it. Our findings illustrate that children, elderly, and those with both mental and physical disabilities struggled with the drill. Furthermore, embarrassment was a reported leading cause for non-participation; we recommend more inclusive messaging to address potential causes of embarrassment.

Journal and articles online

Quarterly Journal of the Royal Meteorological Society

Early View

Online Version of Record before inclusion in an issue

Extended representation of wind–mass correlation by ensemble forecasting for data assimilation

Hyo-Jong Song

Version of Record online: 26 April 2019

In the midlatitudes, anisotropy induced by the advection process can be covered by ensemble forecasts. Ensemble correlation explains high-frequency residuals in momentum conservation in the Antarctic. In the Tropics, the ensemble relationship explains the thermodynamic energy and mass conservation between divergent wind and temperature.

A case-study of land–atmosphere coupling during monsoon onset in northern India

Emma J. Barton, Christopher M. Taylor, Douglas J. Parker, Andrew G. Turner, Danijel Belusic, Steven J. Böing, Jennifer K. Brooke, R. Chawn Harlow, Phil P. Harris, Kieran Hunt, A. Jayakumar, Ashis K. Mitra

Version of Record online: 24 April 2019

The first in situ observations of planetary boundary layer responses to antecedent rain and irrigation in India (aircraft). A comparison of three models (ERA-Interim, ERA5 and NCUM) reveals the influence of surface-induced temperature gradients on the location and strength of large-scale shear and confluence associated with the monsoon trough. Our results provide observation and model-based evidence that soil moisture–atmosphere interactions play an important role in the early phase of the Indian summer monsoon.

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.

A maximum entropy approach to the interaction between small and large scales in two-dimensional turbulence

W. T. M. Verkley, C. A. Severijns, B. A. Zwaal

First Published: 26 April 2019

Urban Impacts on Spatiotemporal Pattern of Short-Duration Convective Precipitation in a Coastal City Adjacent to a Mountain

Hiroyuki Kusaka, Akifumi Nishi, Mayumi Mizunari, Hitoshi Yokoyama

First Published: 26 April 2019

A Surface Temperature and Moisture Inter-comparison Study of the Weather Research and Forecasting Model, In-situ Measurements, and Satellite Observations over the Atacama Desert

Ricardo Fonseca, María-Paz Zorzano-Mier, Armando Azua-Bustos, Carlos González-Silva, Javier Martín-Torres

First Published: 25 April 2019

How Organized is Deep Convection over Germany?

I. Pscheidt, F. Senf, R. Heinze, H. Deneke, S. Trömel, C. Hohenegger

First Published: 23 April 2019

Evaluation of remotely sensed rainfall products over Central Africa

Pierre Camberlin, Geoffrey Barraud, Sylvain Bigot, Olivier Dewitte, Fils Makanzu Imwangana, Jean-Claude Maki Mateso, Nadège Martiny, Elise Monsieurs, Vincent Moron, Thierry Pellarin, Nathalie Philippon, Muhindo Sahani, Gaston Samba

First Published: 22 April 2019

Particle filters for high-dimensional geoscience applications: A Review

Peter Jan van Leeuwen, Hans R. Künsch, Lars Nerger, Roland Potthast, Sebastian Reich

First Published: 22 April 2019

Meteorological Applications

Early View

Online Version of Record before inclusion in an issue

Windshear detection by Terminal Doppler Weather Radar during Tropical Cyclone Mujigae in 2015

Shuk Mei Tse, Masahiro Hagio, Yuji Maeda

Version of Record online: 26 April 2019

Windshear caused by strong winds of tropical cyclones across the complex terrain of the Hong Kong International Airport can be as strong as thunderstorm-related microbursts. A Terminal Doppler Weather Radar (TDWR) was used to detect microbursts and windshear. A case on October 4, 2015 showed that the TDWR performed satisfactorily with a probability of detection and a false alarm ratio of 91% and 1% respectively in detecting the microbursts by comparing microburst features identified by the TDWR and human truth.

Can disaster events reporting be used to drive remote sensing applications? A Latin America weather index insurance case study

Manuel Brahm, Daniel Vila, Sofia Martinez Saenz, Daniel Osgood

Version of Record online: 26 April 2019

A new data set was commissioned over Latin America with the goal of supporting decision-making in various socioeconomic activities. Two different validation methodologies were applied in order to understand the strengths and limitations of the new data set for use in weather index insurance. The results from both validation methodologies show that The Historical Database for Gridded Daily Precipitation Dataset over Latin America (LatAmPrec) performs well when compared with other data sources and can satisfactorily capture the insurance-relevant losses on the ground.

Spatial distribution of secular trends in rainfall indices of Peninsular Malaysia in the presence of long-term persistence

Najeebullah Khan, Sahar Hadi Pour, Shamsuddin Shahid, Tarmizi Ismail, Kamal Ahmed, Eun-Sung Chung, Nadeem Nawaz, Xiaojun Wang

Version of Record online: 26 April 2019

Redistribution of Indian summer monsoon by dust aerosol forcing

P. Maharana, A. P. Dimri, A. Choudhary

Version of Record online: 25 April 2019

The figure shows 2 m air temperature climatology ($^{\circ}\text{C}$) during the monsoon (June, July, August, September) for (a) chemistry, (b) control, (c) Climatic Research Unit observations, (d) chemistry – Climatic Research Unit observations, (e) control – Climatic Research Unit observations and (f) chemistry – control. The regions with 90% significance level are hatched.

Storm naming and forecast communication: A case study of Storm Doris

Andrew J. Charlton-Perez, Danica Vukadinovic Greetham, Rebecca Hemingway

Version of Record online: 25 April 2019

The present study analyses one of the first storms to be given a name by the Met Office and Met Eireann, Storm Doris, in order to understand how this storm was communicated in the traditional and social media. An example of the growth of large, weakly connected social networks discussing the storm is shown (derived from Twitter data). The quantity of information shared about the storm shows the usefulness of storm names as both a communication and a research tool.

Investigation of drought in the northern Iraq region

Kasım Yenigün, Wlat A. Ibrahim

Version of Record online: 24 April 2019

Study area

Characterization of meteorological droughts across South Australia

Md Mamunur Rashid, Simon Beecham

Version of Record online: 22 April 2019

An investigation on the relationship between the Hurst exponent and the predictability of a rainfall time series

Sivapragasam Chandrasekaran, Saravanan Poomalai, Balamurali Saminathan, Sumila Suthanthiravel, Keerthi Sundaram, Farjana Farveen Abdul Hakkim

Version of Record online: 22 April 2019

The Hurst exponent can be considered as an indicator of the predictability of a rainfall series if the overall Hurst exponent of the series as well as those at sublevels are greater than 0.5. This ensures self-similarity in the time series, which can be suitably included in any forecasting to improve prediction. The figure compares two rainfall series HS1 (Hurst exponent > 0.5 both at overall and sublevels) and HS2 (Hurst exponent > 0.5 only at overall and not at sublevels) reflecting better prediction in HS1 over HS2.

Meteorological Applications

Accepted Articles

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

Temperature changes in the Heihe River Basin based on High Accuracy Surface Modeling

Yu Liu, Tianxiang Yue, Yimeng Jiao, Zhao Na, Miaomiao Zhao

First Published: 26 April 2019

Analysis of growth functions that can increase irrigated wheat yield under climate change

Hamed Eyni-Nargeseh, Reza Deihimfard, Sajad Rahimi-Moghaddam, Ali Mokhtassi-Bidgoli

First Published: 26 April 2019

Quarterly Journal of the Royal Meteorological Society

Early View

Online Version of Record before inclusion in an issue

The coupling of deep convection with the resolved flow via the divergence of mass flux in the IFS

Sylvie Malardel, Peter Bechtold

Version of Record online: 17 April 2019

The resolution of the European Centre for Medium-range Weather Forecast Integrated Forecast System (IFS) is expected to reach 5 km in the coming decade. Assumptions in the

parametrization of deep convection, such as that all of the compensating environmental flow occurs in the grid column, i.e. the convective and environmental mass fluxes cancel each other in term of mass transport, have to be challenged. In this paper, we further develop the original concept of separating the convective updraughts from the subsiding branch of the overturning convective circulation and apply it to the global hydrostatic equations of the IFS.

Convective activity in an extratropical cyclone and its warm conveyor belt – a case-study combining observations and a convection-permitting model simulation

Annika Oertel, Maxi Boettcher, Hanna Joos, Michael Sprenger, Heike Konow, Martin Hagen, Heini Wernli

Version of Record online: 17 April 2019

Convection is a ubiquitous element of extratropical cyclones, frequently embedded in its warm conveyor belt. Despite the potential importance of embedded convection in the warm conveyor belt for the large-scale dynamics and surface precipitation, its role has not yet been investigated in detail. In this study, we combine complementary observations with online trajectories from convection-permitting simulations to identify and characterize embedded convection and provide a refined view of the “escalator–elevator” concept of the warm conveyor belt.

Numerical solution of the conditionally averaged equations for representing net mass flux due to convection

Hilary Weller, William A. McIntyre

Version of Record online: 16 April 2019

We present a new framework for representing subgrid-scale convection using conditionally averaged equations of motion—the multifluid equations. Physically based methods of stabilizing the equations are described. Numerical solutions show stability and good energy conservation. Transfers between the partitions mimic buoyant convection. The figure shows a warm rising fluid (grey) with warm anomalies contoured. The velocity of the buoyant fluid is shown by red arrows and the velocity of the stable fluid is in black.

Classifying the nocturnal atmospheric boundary layer into temperature and flow regimes

Lena Pfister, Karl Lapo, Chadi Sayde, John Selker, Larry Mahrt, Christoph K. Thomas

Version of Record online: 16 April 2019

A classification scheme was developed for the nocturnal atmospheric boundary layer using only downwelling long-wave radiative forcing, static stability and the wind regime. This night classification scheme derives physically meaningful boundary-layer regimes, and is adaptable to any field study as long as the aforementioned input variables are measured.

Promoting the use of probabilistic weather forecasts through a dialogue between scientists, developers and end-users

Vanessa J. Fundel, Nadine Fleischhut, Stefan M. Herzog, Martin Göber, Renate Hagedorn

Version of Record online: 16 April 2019

Ensemble predictions provide reliable and sharp probabilistic forecasts, yet these are still rarely communicated to end-users. We present three approaches to introducing probabilistic weather forecasts – and illustrate three key insights: (a) to make informed decisions, users need probabilistic forecasts; (b) users can understand forecast uncertainty if representations follow best practices from risk communication; and (c) users need to experience probabilistic forecasts in their day-to-day practice to evaluate their benefit. With these insights and practical pointers, we hope to support future efforts to integrate probabilistic forecasts into everyday decision making and to encourage everyone to seek interdisciplinary collaborations.

The operational global four-dimensional variational data assimilation system at the China Meteorological Administration

Lin Zhang, Yongzhu Liu, Yan Liu, Jiandong Gong, Huijuan Lu, Zhiyan Jin, Weihong Tian, Guiqing Liu, Bin Zhou, Bin Zhao

Version of Record online: 14 April 2019

The relative error in the tangent-linear model with simple physics with respect to the nonlinear forecast model with full physics at the resolution of 1.0° . The solid line gives the 1 h forecast results, the dashed line represents the 3 h forecast results, and the dotted line shows the 6 h forecast results. (a) u wind; (b) non-dimensional pressure; (c) potential temperature; (d) specific humidity.

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.

Relative Sensitivities of Simulated Rainfall to Fixed Shape Parameters and Collection Efficiencies

Sean W. Freeman, Adele L. Igel, Susan C. van den Heever

First Published: 19 April 2019

Assimilation impact of high-temporal-resolution volume scans on quantitative precipitation forecasts in a severe storm: Evidence from nudging data assimilation experiments with a thermodynamic retrieval method

S. Shimizu, K. Iwanami, R. Kato, N. Sakurai, T. Maesaka, K. Kieda, Y. Shusse, S. Suzuki

First Published: 15 April 2019

Sensitivity of WRF model simulations to parameterizations of depositional growth of ice crystal during the landfall of Typhoon Fitow (2013)

Huiyan Xu, Xiaofan Li

First Published: 15 April 2019

Meteorological Applications

Accepted Articles

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

Development of an Index for Frost Prediction: Technique and Validation

José Roberto Rozante, Enver Ramirez Gutierrez, Pedro Leite da Silva Dias, Alex de Almeida Fernandes, Debora Souza Alvim, Vinicius Matoso Silva

First Published: 16 May 2019

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.

Effects of topography on in-canopy transport of gases emitted within dense forests

Bicheng Chen, Marcelo Chamecki, Gabriel G. Katul

First Published: 13 April 2019

Dependence on initial conditions vs. model formulations for medium-range forecast error variations

Linus Magnusson, Jan-Huey Chen, Shian-Jiann Lin, Linjiong Zhou, Xi Chen

First Published: 11 April 2019

Storm surge and seiche modelling in the Adriatic Sea and the impact of data assimilation

M. Bajo, I. Meugorac, G. Umgiesser, M. Orlić

First Published: 09 April 2019

Quarterly Journal of the Royal Meteorological Society

Early View

Online Version of Record before inclusion in an issue

Convection-permitting ensembles: Challenges related to their design and use

Inger-Lise Frogner, Andrew T. Singleton, Morten Ø. Køltzow, Ulf Andrae

Version of Record online: 11 April 2019

Added value: Brier Skill Score of IFSSENS ensemble with IFSSENS control as reference forecast (black), MEPS ensemble with MEPS control as reference forecast (blue), MEPS control with IFSSENS control as reference (light blue) and MEPS ensemble with IFSSENS ensemble as reference forecasts (red). Challenges related to the design and use of CPEPSs are discussed; the predictability for scales smaller than ~60 km is lost rapidly within the first 6 h with the smallest predictable scale growing more slowly to ~100 km over the following 18–24 h. For precipitation there is added value of CPEPS over deterministic forecasts and coarser resolution EPSs for precipitation events, although the added value is higher in summer compared to winter and for shorter lead times compared to longer lead times.

Synoptic-flow interaction with valley cold-air pools and effects on cold-air pool persistence: Influence of valley size and atmospheric stability

Peter F. Sheridan

Version of Record online: 11 April 2019

Schematic representation of generic radiative, local and synoptic-scale dynamical factors which (a) support or (b) mitigate CAP formation and (c) lead to destruction of the CAP. Factors are grouped for illustration into the three panels by their effect as regards CAPs – they need not (and some may be unlikely to) occur together in the same case in reality. Not all of the mechanisms shown will feature prominently in explaining results from this study.

Scale interactions and anisotropy in stable boundary layers

Nikki Vercauteren, Vyacheslav Boyko, Davide Faranda, Ivana Stiperski

Version of Record online: 11 April 2019

The paper analyses the degree and type of anisotropy of turbulence in different stability regimes of the atmospheric boundary layer with different levels of influence of submeso-scale motions. The findings support the main hypothesis that the degree of influence of submeso-scale motions impacts the structure of the turbulence, characterized by the degree of anisotropy of the Reynolds stress tensor. In flow regimes under considerable influence of submeso-scale wind variability, the Reynolds stresses show a clear preference for strongly anisotropic, one-component states.

Modulation of the urban boundary-layer heat budget by a heatwave

Liang Wang, Dan Li

Version of Record online: 10 April 2019

In this study, we apply the heat budget approach to the urban boundary layer using WRF simulations and a variety of observational data. In doing so, the relative importance of surface sensible-heat flux and transport processes in heating the urban boundary layer under heatwave conditions is quantified. The results have important implications for the application of one-dimensional convective boundary-layer models at the city scale.

On the hypothesized outflow control of tropical cyclone intensification

Michael T. Montgomery, John Persing, Roger K. Smith

Version of Record online: 09 April 2019

There is a hypothesis in the literature that subgrid-scale mixing in the upper-level outflow layer is the principal control on tropical cyclone intensification. An experiment (EX2) is performed where subgrid-scale mixing in the vertical direction is suppressed above the boundary layer, compared to a control experiment (EX1) with complete physics. The results, as highlighted by the figure, show no significant difference in the simulated intensification between the two experiments. The study suggests that eddy processes in the eyewall play a significant role in determining the structure of moist entropy surfaces in the upper-level outflow, as opposed to sub grid scale mixing there.

Distinct impacts of the MJO and the NAO on cold wave amplitude in China

Mengxia Lyu, Zhiwei Wu, Xiaohui Shi, Min Wen

Version of Record online: 07 April 2019

(a) Long-term climatology (colour shading in unit of °C) and (b) percentage of variance (%) of the cold wave amplitude (CWA) in winter (December–February, DJF) during 1979–2012. The areas included by the thick black curves are 2,500 m AMSL.

The dynamic and thermodynamic structure of the monsoon over southern India: New observations from the INCOMPASS IOP

Jennifer K. Fletcher, Douglas J. Parker, Andrew G. Turner, Arathy Menon, Gill M. Martin, Cathryn E. Birch, Ashis K. Mitra, G. Mrudula, Kieran M. R. Hunt, Christopher M. Taylor, Robert A. Houze, Stella R. Brodzik, G. S. Bhat

Version of Record online: 07 April 2019

Over a 10-day period the switch from heavy rainfall over the eastern Arabian Sea, and relatively dry conditions over the west coast of South India, was observed in conjunction with the passage of an active phase of the Boreal Summer Intraseasonal Oscillation. This was followed by a mid-tropospheric dry intrusion over the Arabian Sea which suppressed offshore convection, allowing the build-up of boundary-layer humidity which contributed to an enhancement of rainfall over the coast. This change in mid-tropospheric humidity was much more strongly associated with the strength of offshore convection than was orographic blocking.

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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.

May 14, 2019

News

May Snowstorm Breaks 117-Year-Old Record in Minnesota

May 14, 2019 - AccuWeather

While the calendar shows it's more than six weeks into spring, Mother Nature dealt a wintry blow to Minnesota with a storm that unleashed historic snow amounts in some locations.

[Read MORE](#)

The United States Just Had Its Wettest 12 Months on Record. It's Nearly Drought-Free, but Flooding Is Rampant.

May 14, 2019 - The Washington Post

In just over a year's time, the nation's rainfall fortunes have shifted suddenly and dramatically. Rainfall famine has turned to rainfall feast.

[Read MORE](#)

Meet the Women in Charge of NASA's Science Divisions

May 14, 2019 - NASA

For the first time in NASA's history, women are in charge of three out of four science divisions at the agency. The Earth Science, Heliophysics, and Planetary Science divisions now all have women at the helm.

[Read MORE](#)

With Hurricane Season Approaching, Researchers Work To Better Predict Storm Intensity

May 13, 2019 - National Public Radio

As the next hurricane season approaches, researchers are working on new tools to help forecast the intensity of forthcoming storms, enabling residents and emergency managers to be more prepared.

[Read MORE](#)

Here's Why We Cannot Just 'Nuke' Hurricanes

May 13, 2019 - Forbes

One of the interesting things about being a scientist is that people routinely share ideas about how to solve the world's great science problems.

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CLIMATE IMPACTS: Today's floods occur along 'a very different' Mississippi

May 13, 2019 - E&E News

The swollen, churning, unrelenting river that's flooding towns from Minnesota to Louisiana this month is not Mark Twain's Mississippi River. It's a new generation of disasters, experts say.

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[Hurricane hunters fly into dangerous hurricanes – all in the name of science](#)

May 11, 2019 - AccuWeather.com

You've heard of storm chasers with their trusty getaway cars and gizmos. Now get ready for hurricane hunters, who dive nose-first into storms.

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[Take a Rare Look Inside Two 'Hurricane Hunter' Aircraft](#)

May 10, 2019 - The Points Guy

Almost 76 years ago, an Air Force pilot became the first pilot to intentionally fly an aircraft into a hurricane, and it was to win a bet.

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[New Water Cycle on Mars Discovered](#)

May 10, 2019 - Phys.org

Approximately every two Earth years, when it is summer on the southern hemisphere of Mars, a window opens: Only in this season can water vapor efficiently rise from the lower into the upper Martian atmosphere.

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[Flooding in the Chicago area has been so bad in the past decade that only places ravaged by hurricanes sustain more damage](#)

May 10, 2019 - Chicago Tribune

The city's sprawling network of sewers, most of which were laid out during the last century, quickly fills to capacity during intense rainfall like the April 2013 storm and more recently when a month's worth of rain fell in less than five days starting on April 27.

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[New York City Dangerously Unprepared for Next Superstorm, Official Says](#)

May 9, 2019 - The Weather

"The slow pace of investment leaves as much as \$101.5 billion in property value, such as homes, hospitals and businesses, vulnerable to more frequent and more intense storms," according to an analysis of property development within the City's current floodplain.

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[Mass evacuations helped avert 'humongous' tragedy from Cyclone Fani](#)

May 8, 2019 - UPI.com

United Nations and Indian officials credit a relatively low death toll to the mass evacuation of roughly 2.7 million people before Cyclone Fani hit India on Friday and Bangladesh over the weekend.

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[China's Scientists Are the New Kids on the Arctic Block](#)

May 7, 2019 - Wired

For nearly a century, the Arctic has been a scientific playground for American, Canadian, and European researchers studying everything from magnetic fields to krill populations, as well as documenting rising temperatures and a changing climate.

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[Tornado Alley Could Be Hit Next Week. Here Are Five Twister Facts You Might not Know.](#)

May 14, 2019 - The Washington Post

Tornado season is in full swing across the Great Plains. More than 500 have touched down in 2019, slightly above average for this point in the year.

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[Mexico City Residents Warned to Stay Inside From Wildfire Smoke; Smoke Could Reach the U.S.](#)

May 13, 2019 - The Weather

The National Weather Service in Dallas predicted some of the smoke could reach their coverage by later this week.

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News: May 21, 2019

[Twisters were spotted in Oklahoma, Texas, Missouri, Arkansas, Kansas and Arizona, according to multiple media reports.](#)

May 21, 2019 - NY Daily News

At least 20 tornadoes hammered six states on Monday as an intense storm system moved across the Southern Plains and other parts of the U.S.

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[Three Problems With The Word 'Bust' During Real-Time Weather Threats](#)

May 21, 2019 - Forbes

On Monday May 20th, I personally watched tornado polygons illuminate my weather radar screen much of the day. Yet, the word forecast "bust" started creeping into the narrative of our insular meteorology community.

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[Tropical Storm Andrea Forms in the Atlantic, Before the 2019 Hurricane Season Has Even Begun](#)

May 21, 2019 - The Washington Post

The National Hurricane Center announced Subtropical Storm Andrea has formed as of Monday evening. Called a subtropical storm because it has a blend of both tropical and non-tropical characteristics, it is packing peak winds of 40 mph.

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[CO2 Measures Hit Record Levels not Seen During Humanity's Entire Existence](#)

May 21, 2019 - New York Daily News

The peak level, which measured at 415.26 ppm, was recorded Saturday at the Mauna Loa Observatory in Hawaii using the Keeling Curve, a daily record of CO2 levels in the ocean's atmosphere.

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[Eye on EESI Research—Jenni Evans](#)

May 21, 2019 - Penn State Earth and Environmental Systems Institute

Evans, professor of meteorology and director of the Institute for CyberScience at Penn State, takes an extensive approach to studying cyclones that begin in the tropics and then undergo structural changes as they move into the mid-latitudes.

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[Study Aims to Improve Capturing Wind Power for Energy Production](#)

May 20, 2019 - Science and Technology Research News

Results from the project show that the speed and direction of wind over complex terrain at the height of wind turbine hubs differ significantly from standard weather forecasts, according to the report published in the Bulletin of the American Meteorological Society.

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[Could US Wildfires Be Contributing to Heart Disease?](#)

May 20, 2019 - Phys.org

Certain nanoscale particles in the atmosphere known as organic aerosols—particles released when organic materials like trees and other plant matter are burned—have been linked to an increased risk of heart disease, and even death.

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[ARMY CORPS: Floods prompt scrutiny of Missouri River dams and levees](#)

May 20, 2019 - E&E News

The Army Corps of Engineers is looking into strengthening flood control along the Missouri River in response to the record deluge this spring and criticism that the agency is not doing enough to protect communities.

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[What Panama's Worst Drought Means for Its Canal's Future](#)

May 19, 2019 - MSN.com

The canal handles about 5 percent of maritime trade. Any hiccup in its operation can ripple through the global economy and affect the United States, the origin or destination for much of the canal's traffic.

[Read MORE](#)

[Why Two Tornadoes That Happened 71 Years Ago Are the Most Important in U.S. History](#)

May 17, 2019 - The Weather

Severe weather forecasting as we know it today was essentially launched 71 years ago, thanks to a courageous forecast and an unusual pair of tornadoes within five days striking an Oklahoma Air Force base.

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['Water is what's killing people': Hurricanes could cause catastrophic flooding in Florida](#)

May 16, 2019 - MSN.com

Could portions of the Florida peninsula get drenched by catastrophic flooding like Hurricanes Harvey and Florence unleashed the last two years in Texas and the Carolinas?

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[National Oceanic and Atmospheric Administration Calls Past Year Wettest Ever in the U.S.](#)

May 16, 2019 - MSN.com

Precipitation across the lower 48 during the past 12 months averaged more than 36 inches, which is more than 6 inches above the 20th century average, according to NOAA.

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[West Africa warms but airborne dust keeps the Red Sea cool](#)

May 16, 2019 - Phys.org

"We show that summer conditions over the Red Sea produce the world's largest aerosol radiative forcing, and yet the impact of dust on the Red Sea was never studied—it was simply unknown," says Sergey Osipov.

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[Ben Franklin was right about Iceland's Laki volcano](#)

May 15, 2019 - Futurity.org

An enormous volcanic eruption on Iceland in 1783-84 didn't cause an extreme summer heat wave in Europe, but it did trigger an unusually cold winter, according to a new study.

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[El Niño may lessen number of Atlantic hurricanes this upcoming season](#)

May 15, 2019 - Florida Today

Will El Niño's wind shear help dampen the upcoming Atlantic hurricane season, decreasing the odds of another catastrophic landfall like Florence and Michael last year?

[Read MORE](#)

[Penn State to celebrate naming of building after science pioneer](#)

May 14, 2019 - Penn State University

Warren Washington made history at Penn State by becoming the second African-American to earn a doctoral degree in meteorology nationwide. He's making history again, becoming the first Penn State innovator or pioneer to have a building named after him.

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My latest WeatherEye John Maunder

<https://www.sunlive.co.nz/blogs/13354-the-southern-oscillation-index.html>

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