CROW Newsletter

January, 2019

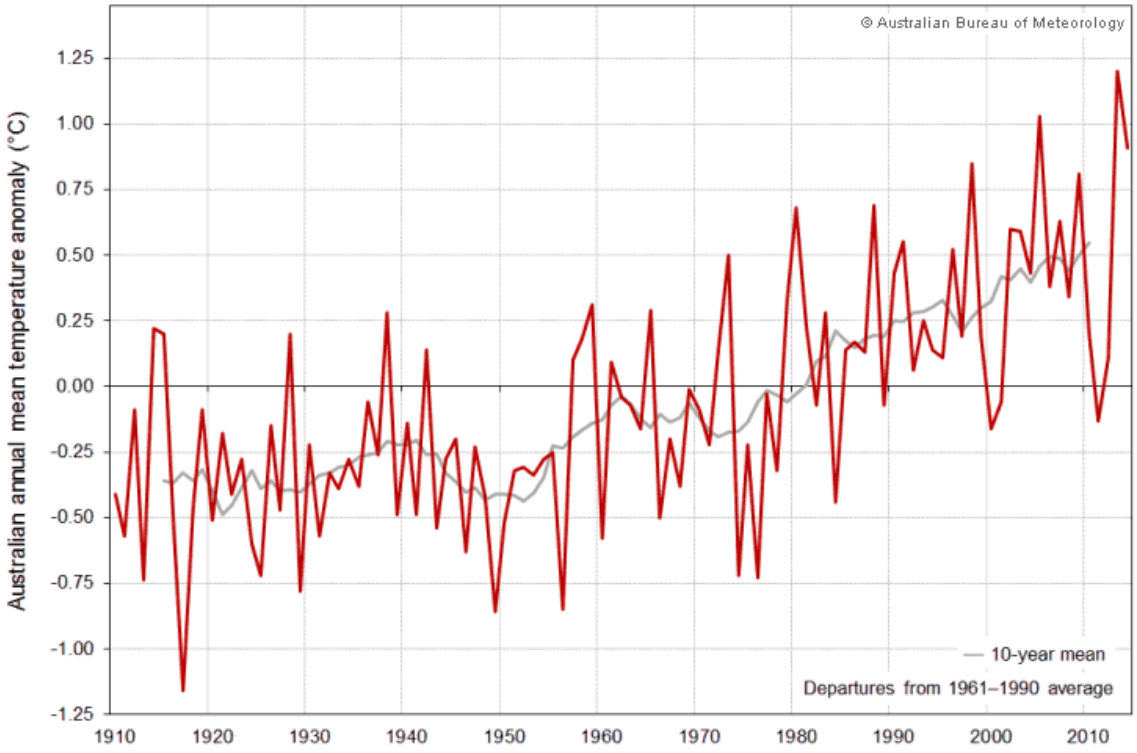
Bureau of Meteorology report for last year

Australia's climate in 2018

(For a short visual summary of this report and for full details, click here.)

- Australia's **third-warmest year on record**, with the annual national mean temperature 1.14 °C above average
- Both mean annual maximum and minimum temperatures **above average for all States** and the Northern Territory
- Annual national **mean maximum temperature second-warmest** on record (1.55 °C above average)
- Widespread warmth persistent throughout the year; January, February, March, April, July, October, and December all amongst the ten warmest on record for Australian mean temperature for their respective months
- **Nationally-averaged rainfall 11% below average** for the year at 412.8 mm (1961–1990 average 465.2 mm)
- Rainfall below average for very large areas, affecting central and southern Queensland, New South Wales, Victoria, eastern South Australia, and the South West Land Division in Western Australia
- Rainfall above average for northwestern to southeastern Western Australia, and scattered areas elsewhere in northern Australia
- El Niño–Southern Oscillation neutral for most of the year, despite a very weak La Niña which decayed in early 2018, and the tropical Pacific Ocean warming steadily from late winter
- A positive Indian Ocean Dipole event during spring

Australia's Temperature Records, 1910 to 2018

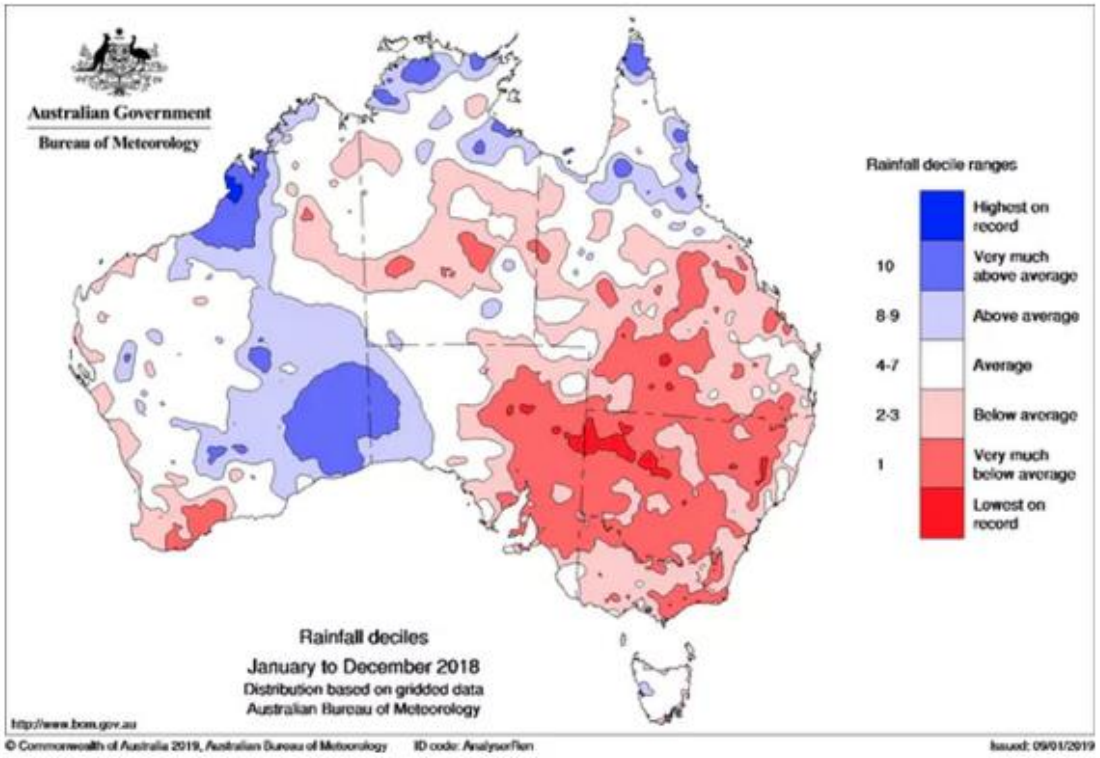


2018 drought

Last year was a time of exceptional weather and record-breaking heat according to the Bureau of Meteorology's annual climate statement, which was released last night.

The Bureau issued four Special Climate Statements relating to "extreme" and "abnormal" heat, and reported a number of broken climate records.

One of the headline stories for the year was drought across eastern Australia — centred on New South Wales, but also affecting Victoria, eastern South Australia and southern Queensland.



Bureau of Meteorology

With the whole of NSW declared in drought during the latter half of 2018, this drought will be recorded as one of the more significant in Australia's history, ranking alongside the Millennium, 1960s, World War Two and Federation Droughts. Of those historic droughts, only the Millennium Drought saw similar, accompanying high temperatures.

Oceans hottest ever year – therefore, so is the Earth

Last year was very likely the hottest year on record, according to the authors of a new study in the journal *Science.*

The study examined "multiple lines of evidence from four independent groups" measuring ocean heat and concluded "ocean warming is accelerating." Researchers found the rate of warming for the upper 2,000 meters of ocean has increased by more than 50 percent since 1991.

As a result, "2018 is shaping up to be the hottest for the oceans as a whole, and therefore for the Earth," a press release accompanying the study explains.

"Global warming is here, and has major consequences already," it adds, bluntly. "There is no doubt, none!"

"It is too late to stop serious global warming,".

From <https://thinkprogress.org/study-2018-is-shaping-up-to-be-the-hottest-year-on-record-as-ocean-warming-speeds-up-a08a85c8438a/>

AEMO, CSIRO report: Wind, solar, batteries cheaper than coal

Australia's leading scientific research group and the country's energy market operator have released a benchmark study that shows the cost of new wind and solar – even with hours of storage – is "unequivocally" lower than the cost of new coal generation.
The joint study – GenCost 2018 – by the CSIRO and AEMO shows that the levellised cost of energy (LCOE) of solar and wind is well below that of any other generation source.
Even adding two and six hours of storage with batteries or pumped hydro still leaves the cost of "firm" solar and wind power cheaper than any fossil fuel alternative.
The study follows similar conclusions from the likes of Bloomberg New Energy Finance, and the observations of big utilities such as AGL, Origin, and the government's own Snowy Hydro. But it has added significance because of the importance and reputation of the two institutions involved.
"I fully expected the LCOE of renewables to be cheaper," CSIRO economist and lead author Paul Graham told RenewEconomy in an interview. "I thought that once you added storage, maybe it would be line ball. But it is unequivocally cheaper. Wind and solar are still lower cost even if you take into account those balancing costs."
And Graham says these are conservative estimates. He points out, as previous studies from the CSIRO and chief scientist Alan Finkel have shown, that the level of storage required for wind and solar is minimal up to a point of around 50 per cent.

From <https://reneweconomy.com.au/csiro-aemo-study-says-wind-solar-and-storage-clearly-cheaper-than-coal-45724/>

Australia tops two million solar houses

New solar energy installations tripled in capacity in 2018 in Australia, with solid growth in rooftop solar eclipsed by a massive increase in utility-sized ventures.
According to data collected by Green Energy Trading, the nation added just over 3775 megawatts of photovoltaic capacity last year, up from 1270MW a year earlier.

"That's blown away" the previous records, Tristan Edis, director of Green Energy Markets, said. "It's going to have a significant impact on [wholesale] power prices in the middle of the day."
Total installations are forecast by the consultancy to rise another quarter this year to 4700MW.

While 2018 was a year the solar farm came into its own – with more than 2000MW added, half of it in Queensland – rooftop solar for homes and businesses continued to expand at annual rates of more than 40 per cent, the firm estimated, using certificates surrendered by installers.

For residential users, NSW regained the lead as the nation's largest market, with 326MW added, up almost 60 per cent from 2017 levels.
Victoria, though, grew at close to 70 per cent during the year, thanks in large part to a pre-election promise from the Andrews Labor government to support the installation of 650,000 new systems.
Australia late last year passed its two millionth home with solar PV, with installations running at six panels a minute. All up about one in five houses have solar systems, one of the highest penetration rates anywhere.

From <https://www.smh.com.au/business/consumer-affairs/records-blown-away-as-rising-power-bill-fears-trigger-solar-pv-surge-20190108-p50q8f.html>

While the government gave up, everyone else got going

A great article from Simon Holmes-a-Court in the Guardian. (If you don't follow this guy on Twitter, you should.)

While the federal government dithered, business, the states and the public took matters into their own hands to dramatically change the energy picture

While the government continued to trash Australia's international reputation by reaffirming allegiance to coal on the global stage, lying about progress on our climate commitmentsand dismissing the findings of the landmark IPCC report, the transformation in our electricity sector tells a different and hopeful story.
Attacks by the former prime minister Tony Abbott and his environment minister Greg Hunt on the renewable energy target, and the investment strike that followed, are a fading memory. Momentum is now unstoppable.
In the three years from 2018 Australia will install a little over 12 gigawatts of renewables, as much as was installed in the 30 years after the country's first windfarm opened at Salmon Beach in Western Australia in 1987.
Since 2017, 19 new windfarms and 30 new solar farms have been registered and in early December the two millionth Australian household went solar. Once derided as insignificant, solar supplied more than 7% of Australia's power over the past three months.
A little over a decade ago, when just 5.2% of our power was from renewables, the Rudd government was swept into office with an aspirational pledge of "20% by 2020". That target has been met two years early, and analysts Green Energy Markets predict one-third of our power will be from clean energy by 2021.
The transformation of the national electricity market over the decade has been stunning. Highly polluting brown coal use is down 36.6% and black coal (still dirty!) has fallen 9.4%, mostly replaced by wind and solar. Surprising to many, we burn less gas in the NEM now than we did a decade ago.

Read the rest of the article at the link below:
From <https://www.theguardian.com/commentisfree/2018/dec/31/2018-australian-government-energy-more-hopeful-story>

The Murray Darling Mess

Governments of all political stripes are almost always willing to sacrifice the environment for big business, but the toxic mess in the Darling River shows the environment can only be pushed so far before it collapses. And when ecosystems collapse we can't buy our way out of it, we can't return cotton for a water refund so that people in Pooncarie can take a shower without giving their children skin infections that require hospitalisation.
The Murray Darling Basin Plan is supposed to deliver more water for the rivers. It was designed to prevent environmental disasters like the one currently stinking up the Darling River. The Barkandji People, after waiting 18 years for their Native Title to be acknowledged, have seen the Barka (Darling river) just dry up.
Barkandji Elder Badger Bates said "without the river, us Barkandji people, we are nothing. We've got no land, no name, nothing. This is our lifeblood, this is our mother."
Australia is a land of droughts and flooding rains, but this is a man-made ecological disaster. Draining the Menindee lakes twice in four years has proven to be an an environmental catastrophe and it was a deliberate decision that must now be explained. The only flood the Murray Darling has seen lately is the flood of media reports unleashed after ABC Four Corners blew the lid on allegations of water theft – since then stories of agency cover ups, political and regulatory capture, agencies with cultures of non-compliance, dodgy water deals, alleged fraud and unlawful amendments have been flowing non-stop.

From <https://www.canberratimes.com.au/environment/conservation/policy-and-politicians-are-failing-our-environment-and-our-future-20190111-p50qt8.html?fbclid=IwAR20-XZwOZCEozGLae0ambXB0-WkSLHCzN44pgomihFuFF7855hupa5DYL0>

A shaky future for Australia's coal

Economists are predicting Australia's thermal coal exports to plummet faster than expected due to falling demand across Asia that appears permanent and irreversible.

Key points:

- Thermal coal refers to coal that is used to make heat and, subsequently, produce power
- The report was commissioned by Institute for Energy Economics and Financial Analysis
- The report's findings are at odds with industry predictions

A study by the Institute for Energy Economics and Financial Analysis (IEEFA) found Australia's top four export markets — China, Japan, Taiwan and South Korea — were shifting rapidly to renewables.

The study found New South Wales, the source of nearly 70 per cent of thermal coal exports, should brace for disruption in energy markets.

An analysis of international data in the report found global demand for thermal coal would drop 28 per cent by 2025.

The decline will continue, and be 59 per cent by 2040, the report says.

The figures are drawn from the International Energy Agency (IEA), which models trade data against climate policies and new technologies.

IEEFA's report found the key issues facing Australia's thermal coal industry were:

- Total coal demand in Japan, NSW's largest market, is expected to drop 71 per cent in the long term
- Total demand for coal in China, NSW's second-largest export market, is forecast to fall 57 per cent by 2040
- The Port of Newcastle, the world's largest coal export facility, is currently operating with 24 per cent spare capacity — and is a "stranded asset risk"
- Coal is expected to account for just 11 per cent of the world's energy mix by 2050, from a high of 40 per cent in 2010

The report's dire predictions on global demand for thermal coal are at odds with industry forecasts.

From <https://www.abc.net.au/news/2018-11-01/coal-report-warns-of-grim-future-for-australian-thermal-coal/10452456>

Country's largest community solar farm in Canberra

Canberra will soon host Australia's largest community-owned solar farm.

The ACT Government has given the green light to community solar company, SolarShare, to build its flagship 1 MW solar farm in the Majura Valley.

The ACT Government's approval of SolarShare's application for a feed-in tariff means SolarShare can sell to a participant in the wholesale energy market and earn 19.5 cents per kilowatt-hour. This rate is guaranteed for 20 years, providing long-term stability for the flagship renewable energy project. Construction will begin in the third quarter of 2019.

"We're excited to be part of Canberra's renewable energy future, helping power the Bush Capital's plan to run on 100 per cent clean energy by 2020" said SolarShare's project leader, Lawrence McIntosh.

"I thank the 800+ individuals who have signed up to becoming investors in this project. The huge interest we've seen goes to show just how enthusiastic Canberrans are about investing in clean community-owned energy."

SolarShare allows ACT residents to purchase shares in the solar farm and receive a financial return on their investment when energy is sold to Canberra's power grid. Anyone who may have difficulty getting their own residential solar panels, including those renting, living in apartments, or with limited finances, can support and profit from solar panels through SolarShare.

Once complete, SolarShare's flagship solar farm will generate enough clean energy to power 260 homes, preventing some 1,700 tonnes of CO_2 a year from polluting the atmosphere.