

New US solar installations will grow by 14 percent this year thanks to lower equipment prices that helped to revive a slew of delayed projects, consultancy Wood Mackenzie said in its latest outlook, Reuters wrote.

Study reviews potential impacts of future heat waves on humans, wildlife

Climate change is often talked about in terms of averages — like the goal set by the Paris Agreement to limit the Earth's temperature increase to 2°C.

What such numbers fail to convey is that climate change will not only increase the world's average temperature, it will also intensify extreme heat waves that even now are harming people and wildlife, according to a recent review paper by San Francisco State University Professor of Biology Jonathan Stillman, phys.org wrote.

"Summertime is quickly becoming a deadly season for life on Earth," he wrote in the paper.

Heat waves have already produced striking images of mass mortality in animals, from the bleached skeletons of corals across swaths of the Great Barrier Reef to the deaths of horses during Australian summers.

Heat stroke from such extreme events is also a present danger for people, especially the elderly, albeit in a less obvious form.

"Human mortality is different in that a lot of it is not visible in that way. It's happening in homes or in doctors' offices, but it's striking all the same," Stillman explained.

For instance, a 2003 heat wave in Europe killed more than 70,000 people across the continent.

To get a comprehensive view of the effects of future heat waves on humans and wildlife, Stillman gathered information from over 140 scientific studies on the topic. He published the resulting review in the journal *Physiology* last month.

As carbon dioxide and other greenhouse gases in the atmosphere trap heat and raise the Earth's average temperature, the heat waves we're accustomed to will worsen and become more frequent. In some more extreme projected scenarios, temperatures rivaling or exceeding those seen in Europe in 2003 could last as much as four times as long by the end of the 21st century.

"This suggests that (during some years), all summer long we'll have heat that's more intense than what happened in 2003," Stillman said.

There are ways to cope with heat waves, but they won't be available for everyone, or for every species. A lack of available infrastructure may make migrating to cooler climates difficult for many vulnerable human communities and cause large-scale conflict. And thanks to humanity's sprawling ecological footprint, many animals won't have a clear path to cooler climes unless natural space is specifically set aside for that purpose.

Heat waves can also have more subtle effects on the bodies of animals, such as prompting increases in the amount of specialized proteins that protect other molecules from the warping effects of heat.

"If populations of wildlife are experiencing more near-lethal temperatures, you won't see mortality but you might see shifts in their physiology that show they're getting close to mortality," Stillman explained.

By studying responses like these, scientists could potentially get an early warning signal before heat waves start to produce more dire consequences. Some of Stillman's own research deals with these sorts of physiological responses to make predictions about how climate change will affect marine species and ecosystems.

As for when these extreme events will occur and just how extreme they'll be, predictions vary. "We can't say it's going to happen next year," said Stillman.

"But if we continue on the current carbon trajectory, by the end of this century we're going to see heat waves that will dwarf those that have killed huge numbers of people and wildlife."

South Korea steps up fight against pollution, says problem is 'social disaster'

South Korea on Wednesday ramped up its firepower as it battles pollution, passing a set of bills that designate the problem a "social disaster" and which could unlock emergency funds to tackle the issue.

Pollution in Asia's fourth-largest economy has been driven up by factors including coal-fired power generation and high vehicle emissions, sparking widespread concern among the public and weighing on President Moon Jae-in's approval ratings, reuters.com reported.

Designating the issue a "disaster" allows the government to use parts of its reserve funds to help respond to any damage or emergency caused by polluted air. The country's reserve funds stand at up to 3 trillion won (\$2.65 billion) this year.

Other bills that were passed included mandating that every school classroom should have an air purifier and removing a limit on sales of liquefied petroleum gas (LPG) vehicles, which typically produce less emissions than gasoline and diesel.

The latest bills follow previous steps to battle pollution such as capping operations at coal-fired power plants.

South Korea's air quality was the worst among its peers in the Organization for Economic Cooperation and Development (OECD) as of 2017, according to data from the group. Its average annual exposure to fine particulate matter (PM) of less than 2.5 micrometers was 25.1 micrograms per cubic meter, slightly more than double the OECD average of 12.5.

The World Health Organization recommends that air quality standard should be no more than 10 micrograms in terms of PM 2.5 levels.

For six consecutive days in early March, high levels of concentrated pollutants enveloped most parts of South Korea.

According to a weekly poll by Gallup Korea released on March 8, President Moon's approval rating was down by three percentage points from a week earlier at 46 percent.

Unless any objections are raised, it should take around 15 days for the bills to become law.

The nation's regional neighbor China has also been fighting pollution as it tries to reverse damage from over three decades of untrammeled economic growth.

A healthy community requires healthy soil. This idea spurred a consortium of researchers, farmers, and community garden practitioners to dive into the challenges — and opportunities — of urban agriculture, eurekalert.org wrote.

Their efforts, now in a second year, may highlight how urban soil can be a resource for human and environmental health. "We can benefit from how we manage the environment," said researcher Jennifer Nicklay.

"Clean water, clean air, and agriculture benefit us, our waterways, and wildlife. We put a value on crop yield, which is all well and good. But in urban agriculture, we're in such proximity to other humans. The other benefits become really important to think of as a whole."

Nicklay is a doctoral student at the University of Minnesota. Along with researchers at the University of St. Thomas and Hamline University, all located in the Minneapolis-St. Paul region, Nicklay is working with four urban growers to understand the contributions of city soils.

The growers have unique approaches to their urban plots. One group emphasizes community building and education, another culturally-relevant food. Another uses a community-supported agriculture model, while a final group emphasizes community reconciliation over yield.

For all groups, land permanence in the urban environment is a challenge. A lease may expire, a city code may prevent perennial plantings, or a tax burden

prove unmanageable.

"When you don't know how long you'll be there, it's hard to invest in long-term solutions," Nicklay said. "All the growers value land tenure and land access."

From the growers' perspective, "healthy soil" means it has enough organic matter and nutrients to encourage good plant growth. It's loose instead of compacted so water can move freely. From here, the concept of a "healthy community" moves upwards from the microbiome of helpful soil bacteria to insects, wildlife, and humans.

There's often more than just soil in the soil, from

copper wires to chemical contamination. This challenges the growers. Researchers hope to also determine if they can leave the urban plots better than they found them.

The team is comparing the findings to another urban farm owned and monitored by the University of St. Thomas. They are also comparing the urban agriculture plots to urban green spaces such as parks. To do so, researchers gather soil and plant samples — some weekly, some less often — for 20 different lab tests. The results will provide information on urban agriculture's ecosystem services: changes

to microbes and insect populations, water quality, soil fertility, and greenhouse gas emissions. Researchers also measure how much each urban plot will grow each year using different growing practices.

The two distinct growing experiences build on each other.

"The University of St. Thomas farm allows us to scaffold the data. We can control more variables, see patterns and put them into context. In the less-controlled scenarios of our four urban growers we see the range of possibilities in the real world," Nicklay explains.

The team operates within

What do gardens bring to urban ecosystems?



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a unique collaborative model. An annual "All Hands" meeting in the waning winter months unites community and university participants with common goals.

Weekly workshops and check-ins during the growing season maintain contact with grower sites to help share findings and address concerns. Community meetings and events throughout the year continue this close relationship.

"These regular, repeated interactions — in ways that are both related and not related to the project — are really, really important," Nicklay emphasizes.

"It allows us to honor grower and community knowledge in all aspects of our work, from generating questions to designing methods to analyzing data."

Nicklay said the process is time-intensive but rewarding.

"When something hasn't gone well, they tell me. We're able to work through it," she says.

"We're getting so much from the farmers. We want to give back and answer community questions. We make sure people know we're here and invested in their success."

This research project will conclude in 2020. Researchers hope their findings will help urban growers and policymakers make better land use decisions.

Startling new climate tool shows that by 2050, Australia won't have winter at all

A team of scientists and designers recently teamed up to create a tool that would show Australians what the climate is expected to be like in their cities in the year 2050 — and it led to a startling discovery.

"In 30 years' time, winter as we know it will be non-existent," researcher Geoff Hinchliffe said in a press release — revealing yet another way climate change is poised to dramatically alter life on Earth, sciencealert.com wrote.

The team, comprising designers from the Australian National University's (ANU) School of Art and Design and the ANU Climate Change Institute, relied on data from the Bureau of Meteorology and Scientific Information for Land Owners for their project.

Once it had compiled the data, the ANU team sought a way to present it that would most resonate with the public.

"That meant using color, shape, and size around a dial composition showing a whole year's worth of temperature values in a single snapshot," Hinchliffe said.

"It makes it visually rich and interesting and gives



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a lot of detail in a way that connects emotionally with people by locating it in their own town."

While creating the tool (which you can view here), the team noticed that the projections didn't follow the pattern of our current four seasons.

"We looked at the historical average temperatures of each season and compared them to the

projected data," Hinchliffe explained, "and what we find everywhere is that there's really no period of a sustained or lasting winter."

Instead of winter, the researchers believe Australians will experience spring, autumn, and a longer season they're calling "new summer."

During this new season, temperatures will consistently peak above 40°C for sustained periods of time, based on predictions.

This isn't the only initiative with the goal of presenting climate predictions to the public in an impactful way.

In February, a team of US researchers unveiled a similar web application that compares the climate of US cities in 2080 to the climate of other cities today. For example, it noted that the climate of Washington, D.C. in 2080 will likely resemble that of northern Mississippi today.

By presenting climate predictions in ways that members of the public can directly relate to, these scientists might be able to make the impact of climate change seem more urgent — which could only serve to help us address the problem before we experience our last winter.

New Zealand PM Ardern backs students striking for climate action

New Zealand Prime Minister Jacinda Ardern gave her support to a youth movement urging government action to tackle climate change ahead of protests by students across the world later this week.

Thousands of school children in Australia and New Zealand intend to skip school and protest on Friday as part of similar action by students worldwide taking their cue from 16-year-old Swedish climate activist Greta Thunberg, Reuters reported.

"Don't underestimate the power of your voice," the 38-year-old Ardern told local organizers of the protests and students during a live debate at a college in Wellington.

"Too often we make this assessment that to make an impact we have to be of voting age. That is not the case," she said.

Students who cut class to join protesters have been rebuked by politicians, including Australian Prime Minister Scott Morrison who said last

year more learning and less activism was needed in schools.

Whether students should be striking during school time was a decision for students and their parents, Ardern told local media earlier in the day.

Ardern said great strides had been made in attitudes towards climate change over the years.

She said she was booted by an audience 10 years ago for speaking about climate change, which she has described as her generation's "nuclear free moment".



New Zealand Prime Minister Jacinda Ardern

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