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Index

| | |
|---|----|
| Is the current climate substantially warmer than during the medieval period?..... | 2 |
| chandrayaan-3 enters lunar orbit..... | 3 |
| Hawaii's deadly wildfire: what we know..... | 5 |
| Warming-induced glacier retreat could create novel ecosystems..... | 8 |
| Rare blue supermoon brightens the night sky this week in the closest full moon of the year..... | 10 |

IS THE CURRENT CLIMATE SUBSTANTIALLY WARMER THAN DURING THE MEDIEVAL PERIOD?

Relevant for: Geography | Topic: Climate and Weather & Changes in Climate

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August 05, 2023 09:20 pm | Updated 09:20 pm IST

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An analysis of tree-ring records from Fennoscandia, a region in northern Europe, from the past 1,170 years suggests that the current climate may be substantially warmer than during the medieval period, contrary to previous research. Large uncertainties persist in climate models and proxies at regional scales, particularly prior to AD 1400. Tree-rings can be used to reflect climate change over many centuries and track the amplitude of climate extremes. However, there is currently a discrepancy between tree-ring data and climate models during the medieval climate. Models have suggested it was cooler during this period compared to now, whereas tree-ring data often suggest the opposite. To address this discrepancy and provide a more precise record of the past climate between AD 850 and 2019 in Fennoscandia, researchers analysed 1,170 years of tree ring data, based on around 50 million wood cell measurements from 188 living and dead Scots pine trees. By measuring individual wood cells, called tracheid cells, the researchers were able to collect more accurate data compared to conventional tree-ring data. The authors found that the Fennoscandian climate is substantially warmer today than during the medieval period, supporting the argument that anthropogenic climate change is increasing temperatures in this region.

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CHANDRAYAAN-3 ENTERS LUNAR ORBIT

Relevant for: Science & Technology | Topic: Space Technology & related matters

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August 05, 2023 06:07 pm | Updated 08:47 pm IST

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Chandrayaan-3's Lunar Orbit Insertion manoeuvre was completed successfully on August 5, 2023. Photo: Twitter/@isro

The Indian Space Research Organisation (ISRO) on August 5 completed the Lunar-Orbit Insertion (LOI) to successfully put the [Chandrayaan-3 spacecraft](#) into the moon's orbit. The LOI manoeuvre was performed from ISRO Telemetry, Tracking and Command Network (ISTRAC) in Bengaluru. LOI manoeuvre commenced at 7 p.m.

"Chandrayaan-3 has been successfully inserted into the lunar orbit. A retro-burning at the Perilune was commanded from the Mission Operations Complex (MOX), ISTRAC, Bengaluru," the space agency said.

After the completion of the crucial manoeuvre, ISRO on its X social media platform posted "Chandrayaan-3 Mission: MOX, ISTRAC, this is Chandrayaan-3. I am feeling lunar gravity."

Following the success of the LOI, ISRO will carry out four orbit manoeuvres to make the spacecraft enter into its final orbit at a distance of about 100 km from the moon's surface. The first of these manoeuvres is scheduled to take place at 11 pm IST on August 6.

"The next operation - reduction of orbit - is scheduled for Aug 6, 2023, around 11 pm IST," ISRO said. The Chandrayaan-3 consists of a lander module (LM), a propulsion module (PM) and a rover.

The PM and LM separation would happen on August 17. A series of deboost manoeuvres is also scheduled to take place before the power descent phase for soft-landing on the moon. The lander is expected to touch down on the moon surface on August 23 at 5.47 p.m.

On August 4, the space agency said that India's third moon mission, which was launched on July 14 has covered about two-thirds of the distance to the moon.

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HAWAII'S DEADLY WILDFIRE: WHAT WE KNOW

Relevant for: Environment | Topic: Environmental Degradation - GHGs, Ozone Depletion and Climate Change

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August 12, 2023 04:29 pm | Updated 04:29 pm IST

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This photo provided by the Hawaii Department of Land and Natural Resources shows burnt areas in Lahaina on Maui island, Hawaii, Friday, Aug. 11, 2023, following a wildfire. | Photo Credit: AP

The terrifying wildfire that destroyed a historic Hawaiian town seems to have caught many occupants unaware.

Here's what we know about the fire that razed Lahaina, a town on Maui's west coast popular with tourists, and why it was so deadly.

A brush fire was initially reported in the Lahaina area around 6:30 am Tuesday, sparking a limited evacuation.

Maui County officials said the blaze was contained a few hours later, but warned high winds had brought down power lines, and electricity was out. The county said on Facebook the cause of the blaze was under investigation.

By late afternoon, the fire was reported to have flared up again, forcing an evacuation warning for some residents, with others "advised to shelter in place."

[Also Read | Death toll from Maui wildfires rises to 67 as survivors begin returning home to assess damage](#)

Over the following hours the fire spread, and near midnight, Maui County was warning all people living in West Maui to stay where they were, unless ordered to evacuate.

Residents say panic spread through Lahaina as flames began to appear in neighborhoods that were previously untouched.

Claire Kent described scenes of panic as people in the town realized they had to leave immediately.

"It was all just word of mouth, like people running down the street saying 'you need to get out.'"

"There were guys riding around on bicycles, just screaming at people to leave."

By Wednesday morning, much of Lahaina lay in ruins.

Crystal Kolden, a fire specialist at the University of California, Merced, said residents appeared to have had no notice that there was a dangerous blaze.

[Also Read | Drought and rising heat bring unusual wildfire warnings in northern Europe](#)

People's "first inkling that there's a fire outside their house is to see flames through the windows. And it's too late," Kolden said, according to the Los Angeles Times.

"It's very different than... the vast majority of wildfires involving evacuations for most of the 20th century (that) are slow enough moving, where people have several hours, sometimes even days, to evacuate."

The western side of Maui doesn't get much rain because it is sheltered by an extinct volcano, but this year has been particularly dry.

The way it is used has also changed.

"The rural land to the east of Lahaina was once intensely managed plantations, with irrigation ditches and terracing," said Thomas Smith, a specialist in Environmental Geography at the London School of Economics.

Farmed land would have been fire resistant -- frequently watered and without long-established plants.

But "since most of this land has been abandoned, long grasses, shrubs and young trees had taken root, substantially increasing the amount of flammable vegetation surrounding the town."

[Explained | Wildfires and heatwaves raged around the world in July](#)

So whatever sparked the blaze, it had plenty of fuel to burn through.

Crucially, powerful winds were whipping the island, fueled by a hurricane churning in the ocean hundreds of miles (kilometers) to the southwest.

The island's topography -- the volcano slopes down towards Lahaina -- was also a significant factor.

"Downslope winds are dry and warm, further reducing the moisture in the vegetation and driving more extreme fire behavior," said Smith.

The unchecked burning of fossil fuels since the start of the industrial revolution has released billions of tonnes of planet-warming gases into the atmosphere.

This has caused higher average global temperatures -- the Earth just experienced its hottest month ever -- which in turn is changing our weather patterns.

While wildfires are a natural phenomenon, scientists say our warming atmosphere is making disasters like these worse.

"Climate change is leading to warmer atmosphere everywhere, which has more drying power," said Yadvinder Malhi, Professor of Ecosystem Science at the University of Oxford.

"So the same fire that would have been moderate a few decades ago will be more intense now."

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WARMING-INDUCED GLACIER RETREAT COULD CREATE NOVEL ECOSYSTEMS

Relevant for: Geography | Topic: Climate and Weather & Changes in Climate

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August 19, 2023 09:15 pm | Updated 09:15 pm IST

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Climate change caused by human activity under a high-emissions scenario may halve the area covered by glaciers outside the Antarctic and Greenland ice sheets by the end of the century, as per a study published in *Nature*. This will have marked ecological and societal cascading consequences, as novel ecosystems develop to fill emerging new habitats. However, there has been no complete spatial analysis carried out to quantify or anticipate the important changeover.

“Under a high-emissions scenario (in which global greenhouse gas emissions triple by 2075), about half of 2020 glacier area could be lost by 2100,” the authors write. “However, this could be curbed by a low-emissions scenario (in which net zero is achieved by 2050), which would reduce this loss to approximately 22%.”

As per the modelling exercise undertaken by Jean-Baptiste Bosson from the Conservatory of Natural Areas of Haute-Savoie, Annecy, France and others, the loss of glacier area will range from 22% to 51%, depending on the climate scenario. It would mean that by 2100, the decline of all glaciers outside the Antarctic and Greenland ice sheets may produce “new terrestrial, marine and freshwater ecosystems over an area ranging from the size of Nepal (1,49,000 sq. km) to that of Finland (3,39,000 sq. km)”.

In the deglaciated areas, the new ecosystems will be characterised by “extreme to mild ecological conditions” encompassing terrestrial, freshwater and even marine habitats. While such drastic changes might favour primary productivity, it may also lead to increased numbers of non-native species and those that can thrive under certain conditions such as cold-adapted species and generalist species.

“Such vast emergence on a relatively short timescale will add to the complexity of glacial dynamics and will increase the challenge of glacier conservation,” notes an accompanying News & Views piece in the journal. Ironically, less than half of glacial areas are located in protected areas.

In response to the possible scenarios, the authors “emphasise the need to urgently and simultaneously enhance climate-change mitigation and the in-situ protection of these ecosystems to secure their existence, functioning and values”. This is the first ever attempt towards getting a full understanding of the ecosystem shift associated with global deglaciation.

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RARE BLUE SUPERMOON BRIGHTENS THE NIGHT SKY THIS WEEK IN THE CLOSEST FULL MOON OF THE YEAR

Relevant for: Geography | Topic: The Earth and the Solar System

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August 30, 2023 06:04 am | Updated 06:04 am IST - CAPE CANAVERAL, Florida

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Representational file image. | Photo Credit: Rajeev Bhatt

Stargazers are in for a double treat this week: a rare blue supermoon with Saturn peeking from behind.

The cosmic curtain rises Wednesday night with the second full moon of the month, the reason it's considered blue. It's dubbed a supermoon because it's closer to Earth than usual, appearing especially big and bright.

This will be the closest full moon of the year, just 222,043 miles (357,344 kilometers) or so away. That's more than 100 miles (160 kilometers) closer than the Aug. 1 supermoon.

As a bonus, Saturn will be visible as a bright point 5 degrees to the upper right of the moon at sunset in the east-southeastern sky, according to NASA. The ringed planet will appear to circle clockwise around the moon as the night wears on.

If you missed the month's first spectacle, better catch this one. There won't be another blue supermoon until 2037, according to Italian astronomer Gianluca Masi, founder of the Virtual Telescope Project.

Clouds spoiled Masi's attempt to livestream the supermoon rising earlier this month. He's hoping for clearer skies this time so he can capture the blue supermoon shining above St. Peter's Basilica at the Vatican.

Weather permitting, observers don't need binoculars or telescopes — "just their own eyes." said Masi.

"I'm always excited to admire the beauty of the night sky," he said, especially when it features a blue supermoon.

The first supermoon of 2023 was in July. The fourth and last will be in September.

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