

Shortest day ever as Earth keeps breaking series of speed records

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SCIENCE

Reading level: Orange

Scientists have been left baffled* after discovering the Earth is spinning faster than normal – making days shorter than usual.

New measurements by the UK’s National Physical Laboratory show that the Earth is currently spinning faster than it was half a century ago.

On 29 June, the Earth’s full rotation took 1.59 milliseconds less than 24 hours – the shortest day ever recorded.

Scientists have said that if the rotation rate continues to speed up, we may need to remove a second from our atomic clocks*.

“If Earth’s fast rotation continues, it could lead to the introduction of the first-ever negative leap second*,” astrophysicist* Graham Jones reported via timeanddate.com.

“This (measure) would be required to keep civil time – which is based on the super-steady beat of atomic clocks – in step with solar time, which is based on the movement of the sun across the sky,” Mr Jones said.

“A negative leap second would mean that our clocks skip one second, which could potentially create problems for IT systems.”

Researchers at tech company Meta said a leap second would have colossal* effects on technology and become a “major source of pain” for hardware systems.

“The impact of a negative leap second has never been tested on a large scale; it could have a devastating effect on the software relying on timers or schedulers,” wrote production engineer Oleg Obleukhov and research scientist Dr Ahmad Byagowi in a Meta blog post.

“In any case, every leap second is a major source of pain for people who manage hardware infrastructures*.”

Scientists Dr Leonid Zotov, Dr Christian Bizouard and Dr Nikolay Sidorenkov claim the irregular rotations are the result of something called “the Chandler wobble”, an irregular movement of Earth’s geographical poles across the surface of the globe.

“The normal amplitude* of the Chandler wobble is about 3m to 4m at Earth’s surface,” Dr Zotov told timeanddate.com, “but from 2017 to 2020 it disappeared”.



Some experts believe the melting and refreezing of ice caps on the world's tallest mountains could be contributing to the irregular speed.

“Earth has recorded its shortest day since scientists began using atomic clocks to measure its rotational speed,” timeanddate.com reported.

“On June 29, 2022, Earth completed one spin in 1.59 milliseconds less than 24 hours. This is the latest in a series of speed records for Earth since 2020.”

But Professor Zotov told timeanddate.com that there's a “70 per cent chance” the planet has already reached the minimum length of a day, meaning we will likely never have to use a negative leap second.

However, he said there was no way to know for sure using current technology.

The potential consequences of a negative leap second echo back to Y2K theories, where many believed computers would not be able to handle the clocks ticking over into the new millennium.

Although Y2K was ultimately no more than a mere hiccup in our heavily computerised civilisation, a limitation in current date and time programming was detected in 2014.

But there is no need to mark 19 March 2038 in the calendar just yet – planning this far in advance should allow programmers to address any major issues.

Does "the Chandler wobble" sound like the likeliest explanation for Earth's faster rotations to you?

Yes

No

Undecided

Cast your vote

GLOSSARY

- **baffled:** perplexed, puzzled, confused
- **atomic clock:** extremely accurate clock that uses the resonance frequencies of atoms
- **negative leap second:** taking a second off our clocks to keep time with the Earth's rotation
- **astrophysicist:** scientist who studies space, stars, planets and the universe
- **colossal:** massive, huge, extremely large, gigantic
- **infrastructure:** the hardware, software, facilities and service components enabling IT function
- **amplitude:** the extent or range of a quality, property, process, or phenomenon

EXTRA READING

[SpaceX junk crashes into Aussie farm at speed\(https://www.kidsnews.com.au/space/elon-musks-space-litter-lucky-to-miss-farmers-at-nsw-sheep-station/news-story/ed54a550516b1a002e615e5e9aa5bbb4 \)](https://www.kidsnews.com.au/space/elon-musks-space-litter-lucky-to-miss-farmers-at-nsw-sheep-station/news-story/ed54a550516b1a002e615e5e9aa5bbb4)

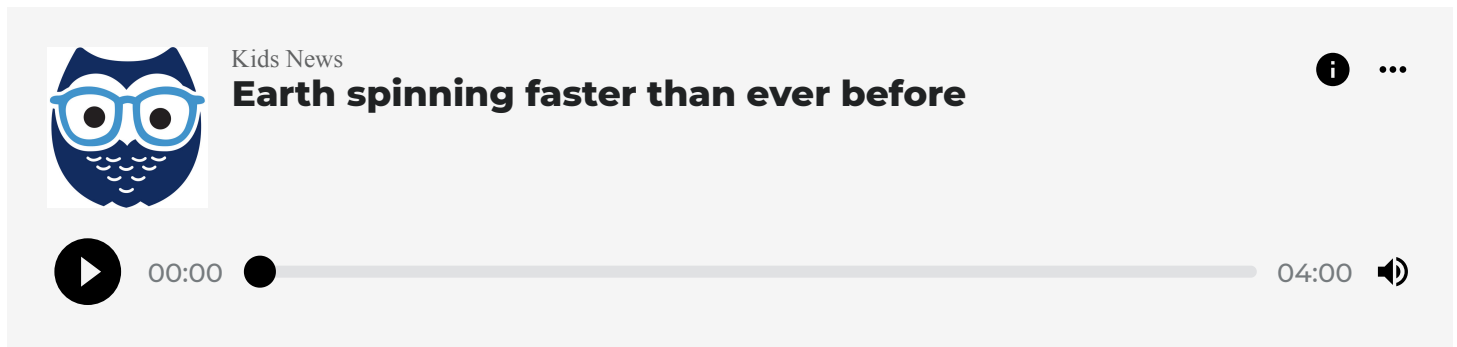
[Two epic blobs below Earth's surface\(https://www.kidsnews.com.au/science/mysterious-unstable-and-massive-blobs-beneath-surface-of-planet/news-story/b599120c4b5531a26697ea1861edc918 \)](https://www.kidsnews.com.au/science/mysterious-unstable-and-massive-blobs-beneath-surface-of-planet/news-story/b599120c4b5531a26697ea1861edc918)

[NASA's new 'time travel' telescope\(https://www.kidsnews.com.au/space/how-nasas-james-webb-telescope-can-see-back-in-time/news-story/fbb9536139a49de3de14f03c5716d8f0 \)](https://www.kidsnews.com.au/space/how-nasas-james-webb-telescope-can-see-back-in-time/news-story/fbb9536139a49de3de14f03c5716d8f0)

QUICK QUIZ

1. How long did the Earth's rotation take on 29 June?
2. What might have to be introduced if the rotations continue to get faster?
3. A negative leap second would potentially produce colossal problems for which industry?
4. What is the Chandler wobble and what is its normal amplitude?
5. Earth has been setting a series of speed records since what year?

LISTEN TO THIS STORY



CLASSROOM ACTIVITIES

1. What would happen?

What would happen if the Earth kept spinning faster and we suddenly had one hour less per day? Write a story based on your ideas.

Time: allow 30 minutes to complete this activity

Curriculum Links: English; Science

2. Extension

Create a diagram that will help a younger child understand why scientists think the Earth is spinning faster.

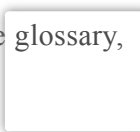
Time: allow 45 minutes to complete this activity

Curriculum Links: English; Science; Visual Communication Design

VCOP ACTIVITY

Wow word recycle

There are plenty of wow words (ambitious pieces of vocabulary) being used in the article. Some are in the glossary, but there might be extra ones from the article that you think are exceptional as well.



Identify all the words in the article that you think are not common words, and particularly good choices for the writer to have chosen.

Select three words you have highlighted to recycle into your own sentences.

If any of the words you identified are not in the glossary, write up your own glossary for them.

