

# New Scientist

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gets more efficient and accessible, we will see its use skyrocket, turning it into a commodity we just can't get enough of".

"The CEOs, if you speak to them, of course they have to do the hard sell, and they have to predict that AI will need these data centres," says Mirella Lapata at the University of Edinburgh, UK. "But if I can run this stuff

**"If tech companies need less computing power to train AI, this may mean it isn't as damaging to the climate"**

on my computer, on one [graphics processing unit], why would I actually pay OpenAI to do anything?"

However, another aspect of DeepSeek's R1 model might actually increase the energy demands of AI. Like OpenAI's o1 reasoning models, it uses a method called chain of thought, in which the AI "thinks out loud" and shows its working when

**DeepSeek's AI model was a shock to researchers when it was released**

asked to respond to a prompt, which researchers have found can improve its performance on some mathematics and coding tasks. If many more people start using AI tools that need to think in this way, it could lead to a greater computational need and cost, as Nadella predicts.

But DeepSeek's thinking time is divided up between several subsystems that are expert in different fields, such as mathematics or coding, in what is known as a mixture of experts model. This will lead to less computational power being needed than using the entire model, says Nikos Aletras at the University of Sheffield, UK. Also, the vast majority of requests might not need the most computationally intensive "thinking" models, says Aletras, leading to lower overall energy costs.

"If I had to explain every single response to you, we would never finish this meeting," says Aletras. "Sometimes [chain of thought] is useful... but if I ask a question that's very straightforward, then I don't need it there."

Ultimately, how much of an effect DeepSeek's innovations will have on the AI industry and its energy consumption will depend on whether US tech companies can show that their approach delivers superior results. But with customers able to use DeepSeek's R1 for less than one-twentieth of the cost of models like OpenAI's o1, the difference in quality would have to be substantial. "If we don't have to pay, why would we? And that means that the energy consumption would be effectively lower," says Lapata. ■

## Space

# Asteroid has low chance of hitting Earth in 2032

James Dinneen

**AN ASTEROID** up to 100 metres wide has a 1-in-83 chance of impacting Earth on 22 December 2032. That risk is enough to have triggered global planetary defence response procedures for the first time.

"This is a historic moment," says Richard Moissl at the European Space Agency (ESA).

The asteroid, dubbed 2024 YR4, was first detected on 27 December 2024 by an automated telescope in Chile that scans for asteroids. It is now at the top of ESA and NASA's impact risk list, with a 1.3 per cent chance of colliding with Earth in about seven years.

That risk of collision combined with the asteroid's size gives it a rating of 3 out of 10 on the Torino scale, a tool used to categorise the potential damage from the impact of comets and asteroids. That means it qualifies as a "close encounter" that could cause "localized destruction". The kinetic energy released on impact could be equivalent to nearly 8 million tonnes of dynamite, according to

NASA figures – enough to destroy a city.

"This particular score has never been assigned to any asteroid," says Moissl. "Torino scale 3 gives us a mandate to do things we don't normally do," he says, such as ramping up close monitoring.

Collecting measurements of the asteroid from more powerful telescopes could give a more

# 1.3%

Chance that the asteroid will collide with Earth in seven years

accurate idea of its collision risk with Earth. This may shift the risk to zero, says Moissl.

The asteroid Apophis, which will pass near Earth in 2029, was initially assigned a 4 on the Torino scale when it was first detected in 2004. After more measurements, the risk was downgraded to zero. That detection occurred before globally coordinated planetary defence procedures, as well as automated asteroid detection systems, were in place.

But 2024 YR4 is being treated differently. Moissl says a UN-affiliated group called the International Asteroid Warning Network is working to study the asteroid's trajectory. Another international consortium called the Space Mission Planning Advisory Group has been alerted to the asteroid and could begin planning a proposal on how to defend against a collision, such as deflecting the asteroid with a spacecraft, should that ever become necessary.

Currently, the asteroid "is not cause for concern", says Moissl. "But because it is so unusual, it is something to keep a close eye on." ■

An illustration of an asteroid passing close to Earth



SHUTTERSTOCK/MIKAEL DAMKIER