

New Scientist

WEEKLY October 23-29, 2021

SPECIAL REPORT

CLINICAL TRIALS ON TRIAL

Are there better ways to test new treatments?

DAY THE DINOS DIED

New details of fatal asteroid strike emerge

CLEARING THE AIR

Low emissions zones really do work



GOOD BAD COP 26

WHAT WILL SUCCESS LOOK LIKE AT THE CRUCIAL CLIMATE CONFERENCE?

AI IN SPACE

NASA's plan for supersmart Mars missions

PLUS COVID LATEST / SCIENCE OF SOUFFLÉ / NEW IVF HOPE / ARMED ROBODOGS / DO FROGS NOTICE WHEN IT'S RAINING?

Science and technology news www.newscientist.com

No3357 US\$6.99 CAN\$9.99



Archaeology

Ancient faeces show Iron Age salt miners ate blue cheese

Carissa Wong

FUNGI found in faeces from Iron Age people who worked in salt mines in what is now Austria suggest that people were eating blue cheese and beer at least 2700 years ago.

The ancient faeces have “entrapped information like a time capsule”, says Frank Maixner at Eurac Research in Italy, adding that this is the earliest evidence for blue cheese. Maixner and his colleagues discovered four samples of ancient faeces in the salt mines in Hallstatt, Austria. They sequenced the



Ancient faeces found in a salt mine in Hallstatt, Austria

preserved genomes of the microbes in them. One sample contained the mould species *Penicillium roqueforti*, which is used to create blue cheese today (*Current Biology*, doi.org/g2m7).

Maixner says environmental contamination is possible, but all faeces were found in a similar location within the mine and only one sample contained *P. roqueforti*, which makes the team confident the blue cheese was consumed. The team found wooden containers in the mines, which may have been used as cheese strainers, although analysis of any fat molecules in the strainers is needed to confirm this.

The genetic analysis also revealed a domesticated strain of the yeast *Saccharomyces cerevisiae*, which is used to make beer, but not other yeast species, suggesting the beer was “probably more like craft beers, which are more turbid. It would be more of a pale ale,” says Maixner. He adds that the constant temperature of 8°C in the mines is ideal for beer production. ■

Space

Venus’s surface may always have been too hot for oceans

Jonathan O’Callaghan

VENUS might never have had the conditions necessary for water to exist on its surface, meaning the planet wouldn’t have been habitable as once thought.

Today, Venus is a hellish world, with temperatures on its surface hot enough to melt lead. Yet the presence of water vapour in its thick atmosphere, coupled with surface features known as tesserae that look like ancient continents, suggest it could once have supported oceans and maybe life billions of years ago. Three new Venus spacecraft, two from NASA and one from the European Space Agency (ESA), were recently selected for launch in the next decade, partly to investigate this possibility.

Martin Turbet at the University of Geneva in Switzerland and his colleagues, however, present a less rosy picture. Their climate modelling suggests that the planet was never cool enough for the water vapour to condense out of its atmosphere and form liquid water on the ground. “Venus probably never formed oceans,” says Turbet.

Previous modelling of Venus presumed that the planet started with liquid water, which then evaporated as a runaway greenhouse effect took place. Turbet, however, says it is more likely that Venus started out as a “steam” world, with its vapour already trapped in the atmosphere.

“Venus may have started as a ‘steam’ world, with vapour already trapped in its atmosphere”

In such a scenario, the formation of clouds on the cooled, night-time side of Venus would have trapped heat on the planet, preventing temperatures from dropping far enough for rain to fall on Venus’s surface.

“They will create some precipitation, but it will never reach the ground because it will get re-evaporated while it’s falling,” says Turbet (*Nature*, doi.org/g2pw).

If correct, the findings may suggest that the window for planets to become habitable is even more narrow than astronomers had thought.

The researchers found that Earth was only able to condense water early in its history because the sun was about 25 per cent dimmer, seemingly solving a problem known as the faint young sun paradox where Earth was thought to have been too cold to support liquid water. Had it formed today, our planet might well have been a “steam Earth”, like Venus.

Michael Way at the NASA Goddard Institute for Space Studies in New York, who has conducted previous climate studies of Venus, says that while the results describe one of the possibilities for the evolution of Venus, they don’t close the case just yet.

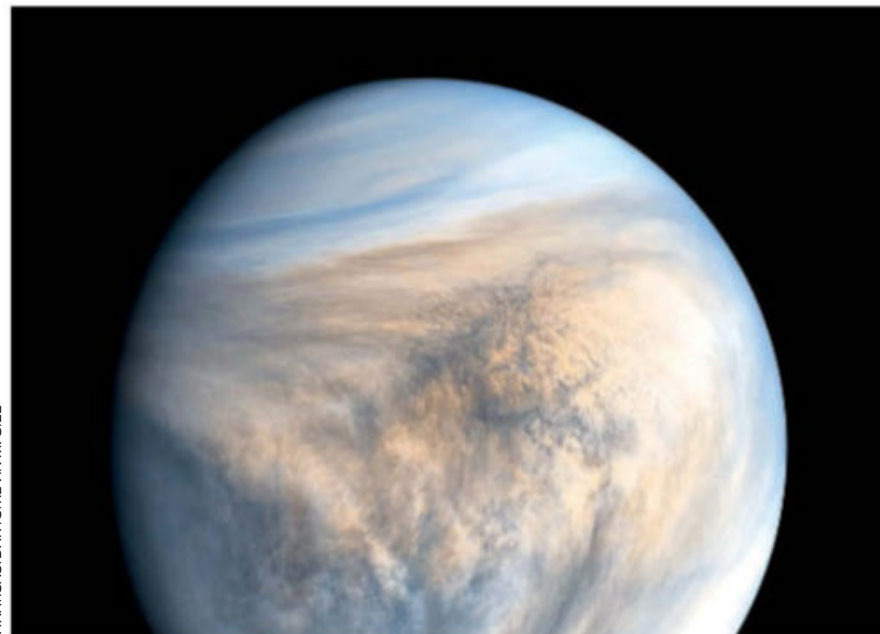
“I do not think this ends the debate on whether Venus ever condensed water on its surface,” he says. “All of these models have limitations. It is necessary for additional models to replicate these results.”

To find out for certain, we will need to study the surface of Venus directly to look for evidence of water, something that NASA and ESA’s upcoming missions plan to do.

Colin Wilson at the University of Oxford, a deputy lead scientist on ESA’s EnVision spacecraft that is set to launch in the 2030s, says the presence of granite-like rock that makes up Earth’s continents could be such evidence.

“Our current understanding is you can’t create those widespread rocks without large amounts of liquid water on the surface,” he says. “If we don’t discover it, that leaves the question somewhat open.” ■

Venus may never have been cool enough for oceans or life to form



JAXA/ISAS/DARTS/KEVIN M. GILL