



NASA Has a \$3.5bn Plan to Save The Planet From The Yellowstone Supervolcano

And it comes with cheap electricity.

PETER DOCKRILL 23 AUG 2017

Scientists at NASA have developed a hugely ambitious strategy to counter the looming threat of an apocalyptic supereruption from the [Yellowstone Caldera](#).

Yellowstone is one of about 20 known [supervolcanoes](#) around the world, and an eruption from any of these could produce so much fiery magma that the ensuing ash cloud might starve the Earth of sunlight in a choking, years-long [volcanic winter](#).

Against such a backdrop, NASA has been working on a plan to

counter this potentially far off but ultimately inevitable circumstance, which could be graver than even the nightmare scenario of a [planet-devastating asteroid strike](#).

"I was a member of the NASA Advisory Council on Planetary Defence which studied ways for NASA to defend the planet from asteroids and comets," researcher Brian Wilcox from the space agency's Jet Propulsion Laboratory told the [BBC](#).

"I came to the conclusion during that study that the supervolcano threat is substantially greater than the asteroid or comet threat."

As recently [as 2011](#), NASA was downplaying the immediate risks of supereruptions, given the staggeringly long timeframes between which they occur – roughly every 100,000 to 1 million years.

This, a [NASA guide explains](#), means that large-scale eruptions from supervolcanoes are "exceedingly rare and the odds that one will occur in the lifetime of anybody reading this article are vanishingly small".

The good news is those reassuring odds still hold, but consider this: Yellowstone itself is thought to erupt [once every 600,000 years or so](#), and it's been about that long since its last supereruption.

While the chances of it exploding in any given year remain low, it's clear we're edging ever closer to its thermal crisis point.

Which is why scientists at NASA compiled an as yet unpublished report – largely unknown outside the space

agency, but [seen by the BBC](#) and other media outlets.

Their research concludes that the most logical way to address the threat is to try to cool down the enormous magma chambers inside a supervolcano.

Yellowstone is thought to leak [about 60–70 percent](#) of the heat it generates into the atmosphere, released through the hot springs that populate [Yellowstone National Park](#).

The remaining, unvented heat is trapped inside the supervolcano's magma chambers, and if enough heat builds up, it can ultimately trigger an [explosive supereruption](#).

Fortunately, NASA thinks Yellowstone would only need to undergo a 35 percent heat reduction to avert such a catastrophe, and they've got an idea for how you could pull off this epic cold shower.

By drilling as far down as 10 kilometres (6.2 miles) deep inside Yellowstone, the space agency thinks it would be possible to pump high-pressure water down into the supervolcano – circulating cool water in, which would absorb scorching levels of heat before being pumped out again.

NASA [estimates](#) the piping hot water making the return trip to the surface would have a temperature of about 350 degrees Celsius (662 degrees Fahrenheit) – and there's something pretty great we could do with all that supervolcanic heat.

"Through drilling in this way, it could be used to create a geothermal plant, which generates electric power at extremely competitive prices of around \$0.10/kWh," Wilcox

explained to the [BBC](#).

"[You would] get electricity which can power the surrounding area for a period of potentially tens of thousands of years. And the long-term benefit is that you prevent a future supervolcano eruption which would devastate humanity."

So, the benefits are not only economic – they're potentially planet-saving – but the estimated costs of building the project are almost as insurmountable as a supervolcano.

NASA puts the price tag for the infrastructure at about \$3.46 billion, but as gargantuan as that fee is, it pales beside an even bigger potential drawback with the plan – which is if something goes wrong.

"If you drill into the top of the magma chamber and try and cool it from there, this would be very risky," [Wilcox said](#).

"This could make the cap over the magma chamber more brittle and prone to fracture. And you might trigger the release of harmful volatile gases in the magma at the top of the chamber which would otherwise not be released."

In the worst case scenario, a botched effort to drill inside the supervolcano could hypothetically induce a supereruption, so humanity will have to tread very carefully if it intends to pursue a plan like the one NASA's come up with.

It's unclear quite where the strategy is up to, and whether NASA will be officially releasing their report in the near future.

At the very least, Wilcox and his fellow researchers hope that, by talking about their idea, it might encourage a serious scientific discussion around ways to mitigate the impending

threat of supervolcanoes.

Because one thing's for sure – these ancient, colossal time bombs aren't going anywhere, and their clocks are ticking louder than ever.

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