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Posted by u/danherczak 2 years ago

How much energy will the ITER produce if successful--in layman's terms?

Physics

I was reading [this article](#) which states that the ITER will produce 500MW of power out of an input of 50MW. The efficiency itself is very exciting, but what does it actually mean? How many homes can you run on that, and for how long? And will it produce 500MW a day, 500MW an hour...?

Bonus: Assuming ITER works 100% as intended, will they use it commercially or is it just a proof-of-concept? What'll the lifespan of this behemoth of a reactor be in a best case scenario?

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RobusEtCeleritas **Nuclear Physics** 33 points · 2 years ago

ITER is not intended to be used for commercial power. It's for fusion research, and proving that we can in fact reach ignition using magnetic confinement fusion reactors.



danherczak 5 points · 2 years ago

Thank you for your answer. What will they do with the energy it produces? Are they not even going to capture it?



restricteddata

History of Science and Technology | Nuclear Technology 19 points · 2 years ago

The heat energy is just "waste" if you don't do anything with it. They have [a cooling system](#) that works like most other cooling systems (cycles water through so that the

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Physics

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(e.g., to actually work over long periods of time, ITER will need to generate its own tritium, and while there are ideas as to how that will work, it will take actually accomplishing it to really know how that works in the real world and not just on paper) which is why people always say it is several decades off... and have been saying that since the 1950s.

 destiny_functional -7 points · 2 years ago 5 children



mfb- Particle Physics | High-Energy Physics 4 points · 2 years ago

ITER will need to generate its own tritium

It doesn't. It will test various methods to produce it, but it doesn't rely on it.

DEMO as potential ITER successor will have to do it.

which is why people always say it is several decades off... and have been saying that since the 1950s.

They said so with much more funding expected. You can't cut funding by 80% and expect the work to proceed at the same speed.

https://upload.wikimedia.org/wikipedia/commons/a/ab/U.S._historical_fusion_budget_vs._1976_ERDA_plan.png



Soloandthewookiee 4 points · 2 years ago

The article doesn't specify, but I would bet that the 500MW number is power-thermal, i.e., the heat generated from the reactor, not the electricity generated. I don't know that they would bother capturing it since that would require an entire steam cycle with turbines and generators. More likely, they'll use heat exchangers and reject the heat to the atmosphere or in some other



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enough to power 125,000 homes.

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Chemistry Besides cilantro, are there any other ingredients that have been identified to taste different to people based on their genetics?

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Posted by u/almost_useless 5 days ago



Lets assume they didn't just get lucky, and the prevalence in the population was such that we expect that they will find it.

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Posted by u/mettuo 3 days ago

Biology Why are some viruses like corona or the flu one and done, while others like herpes or HIV can last your entire life?

Edit: Apparently my phrasing was a little confusing. By one and done I meant "generally" you catch the virus like flu, and it's gone from your body in a couple weeks, as opposed to HIV which lasts your life and is constantly symptomatic. I did not mean that it's impossible to catch the flu again.

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Posted by u/jradio610 5 days ago

Medicine How can medicines like ibuprofen and acetaminophen work on a number of (seemingly) unrelated symptoms (reducing fevers, joint pain, muscle pain, headaches, toothaches, etc.)? Do they do just one thing that affects all of these processes or do they do lots of different things at once?

8.4k 429 Comments Share ...

Posted by u/indigogalaxy_ 7 days ago

Biology Do trees die of old age?

How does that work? How do some trees live for thousands of years and *not* die of old age?

8.4k 606 Comments Share ...

Posted by u/6K6L 1 day ago

Biology Are albino animals ever shunned for looking different from the rest of their group?



what I mean by this is that is it possible for the COVID-19 to be contained before vaccines are approved and administered, or is it impossible to contain it without a vaccine? Because once normal life resumes, wont it start to spread again?

 6.9k   1.1k Comments  Share ...

Posted by u/teddylevinson 2 days ago

Earth Sciences **Could solar power be used to cool the Earth?**

Probably a dumb question from a tired brain, but is there a certain (astronomical) number of solar power panels that could convert the Sun's heat energy to electrical energy enough to reduce the planet's rising temperature?

EDIT: Thanks for the responses! For clarification I know the Second Law makes it impossible to use converted electrical energy for cooling without increasing total entropic heat in the atmosphere, just wondering about the hypothetical effects behind *storing* that electrical energy and not using it.

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Posted by u/rambo77 6 days ago

COVID-19 **How does antibody treatment work with COVID-19?**

My issue is the following: IV administered IgG mixture does seem to work in animal models and in patients. The question really is: does it work on the lung surface? If it does, how? Any papers I have seen suggested that very little IgG reaches the mucosal surface, as the FcnR transport "outside" is not very effective; IgAs use a different mechanism to reach the surface. Yet it seems like IgG based treatments work.

Do they work by limiting the viral replication outside the lung, leaving the lungs "undefended"? Wouldn't this cause serious problems with inflammation in the lungs? The other idea I can think of is that when these are administered, the integrity of the lung tissue is already compromised, so the IgGs can reach the mucosal membrane reasonably well - but this would mean the treatment is not useful as a preventive measure in mild cases when the patient is in a

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Posted by u/all-out-fallout 5 days ago

Human Body Do people require acclimation for descending into the earth the same way they require it when climbing a mountain?

First, I'd like to say I'm not sure if the flair I'm using is the most accurate and appropriate for my question. I've started out with biology, but if another flair would be more appropriate please let me know and I'll change it promptly.



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Posted by u/Bucketlava 5 days ago

COVID-19 If you don't experience(or experience very mild) covid-19 symptoms, does that mean the virus hasn't done much damage to your lungs/system?

Basically the title.

Out of all the covid-19 cases, most are mild or asymptomatic but does that mean that the body successfully defended itself from the virus or it just means that the virus still might've caused (irreversible?) damage but the body didn't show?

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Posted by u/pillowtalkingtonoone 3 days ago

Chemistry How do chemists dispose of the chemicals they make?

I always wonder after watching clips where chemists create cool chemicals, and particularly when they make poisonous/dangerous chemicals, how they dispose of it afterwards.

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Posted by u/Sandman1812 6 days ago

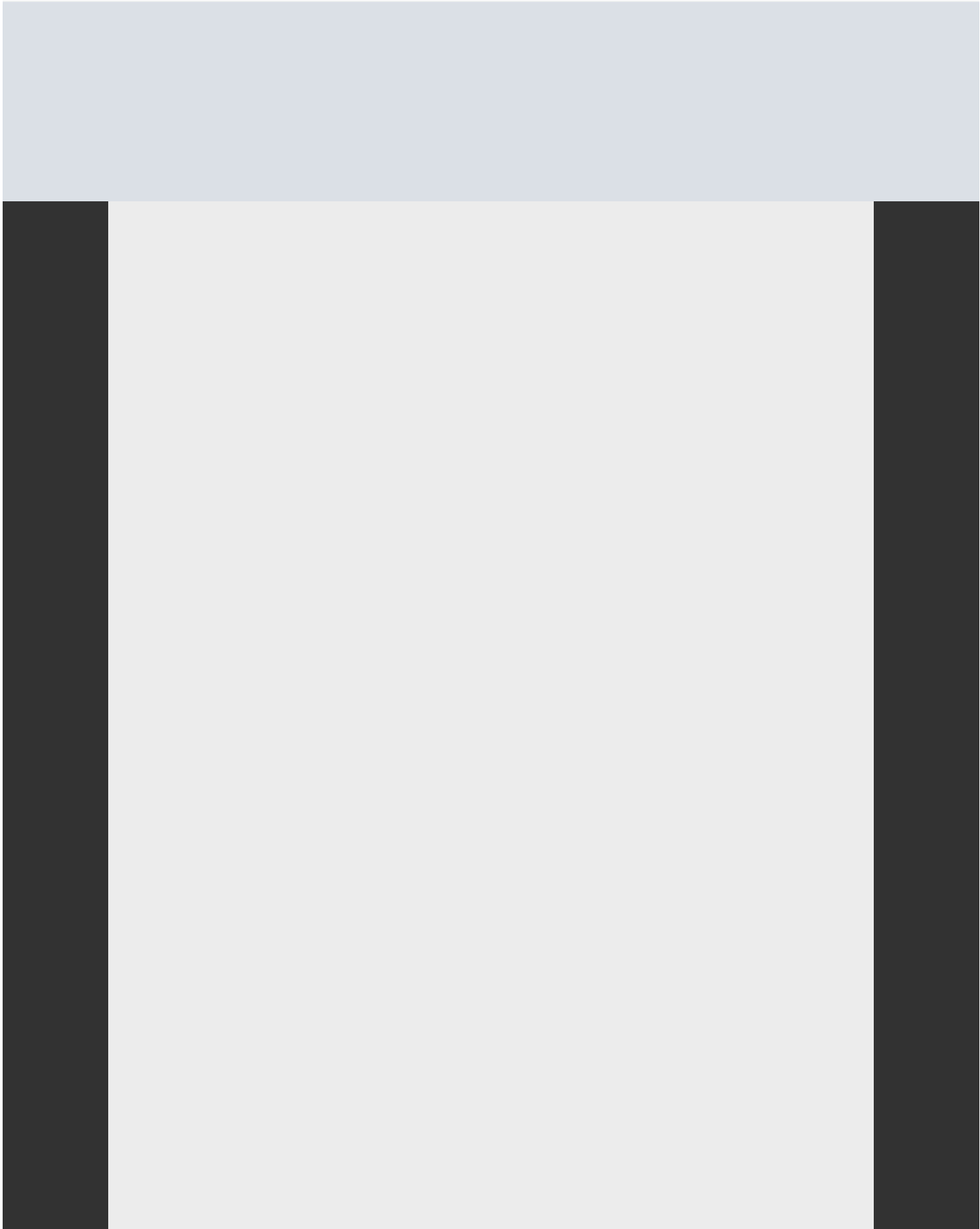
Earth Sciences How much deeper could the Grand Canyon get?

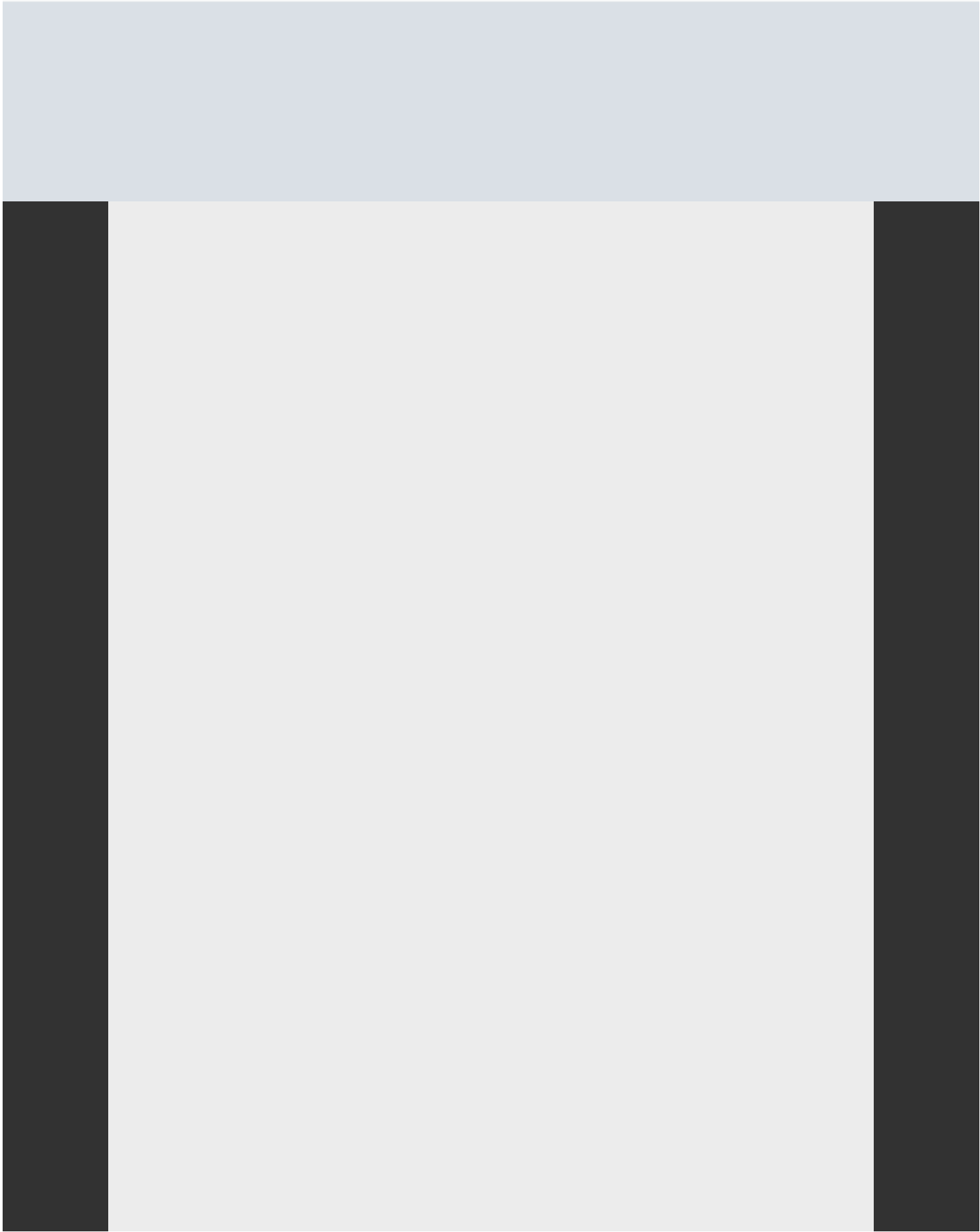
Would the Colorado continue to carve it out until it's down to sea level or, if there is one and it's lower, down to an aquifer?

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Posted by u/kuuzo 7 days ago

Neuroscience Do the memories of people with anterograde amnesia degrade over time?

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