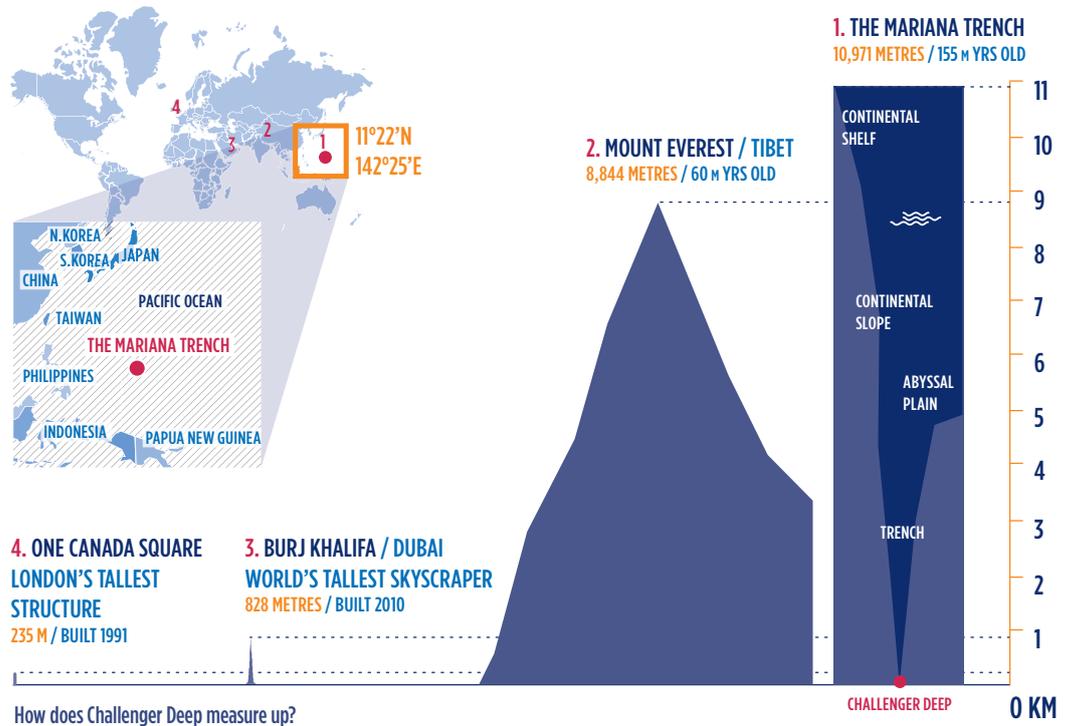


Avatar director to tackle Challenger Deep

James Cameron is planning a voyage to the bottom of the world's deepest ocean. Is human exploration more valuable than robotic research?



SCIENCE
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More men have walked on the moon than have travelled to Challenger Deep. Now, after more than half a century, film director James Cameron is planning to repeat their journey. Challenger Deep, 300km from Guam in the South Pacific, is the deepest point of the world's oceans. Nearly 11km below sea level it is one of the most mysterious places on Earth.

In January 1960, Don Walsh and Jacques Piccard were attempting to explore its depths for the first time. Their specially designed submersible only just had room for two. It was freezing cold and had, remembers Walsh, 'about as much room as you get inside a large household refrigerator.'

It could have been their tomb. As they sank into the blackness of the undersea abyss, the massive pressure of the ocean all around them threatened to crush their fragile craft like a tin can.

Water started seeping in through the windows. And just before they reached the 10 km mark a sudden cracking sound shook the cabin. The two men froze, listening for any sound that would tell them whether the submersible was going to survive.

The sub hung motionless, a tiny bubble of air suspended in the vast, pressing ocean. The metal walls creaked as they struggled to hold back the dark mass of water. But as the minutes passed, and their fears of disaster receded, Piccard and Walsh resumed their descent. Soon, they had landed on the soft sediment of the ocean floor.

Since then, no human has reached the bottom of the Challenger Deep. Only two robot subs have made the journey – part of a general effort to understand the extraordinary trenches that criss-cross the world's oceans.

But robots have made exciting discoveries. One robot lander found fish

living nearly 8km under the sea – a record depth. Another proved that ocean trenches play a significant role in global warming.

HUMAN TOUCH

Of course, if sending robots to the sea floor is hard, sending people is harder and more dangerous. What's more, vehicles that carry people can't take as many instruments or make as many measurements. James Cameron's planned expedition will be very expensive, without much scientific gain.

So what's the point? Cameron's aim is to film 3D footage of this incredible underwater world, perhaps to be used in a new Avatar film. One scientist thinks that's a good thing. Exploring the extreme depths is valuable, he says. Why? 'Because it creates a chance for people to engage their imagination.'

Q & A

Q What exactly is Challenger Deep?

A It's the deepest point of the Mariana Trench, one of several oceanic trenches that cut deep into the ocean floor.

Q So who digs all these trenches then?

A No one. The trenches are formed by the movement of plates in the earth's crust. Sometimes, one plate is pushed under another, forming a trench where the two meet.

Q And why are they so hard to explore?

A The ocean contains billions of tonnes of water. As submarines get deeper, more and more of this water is pressing down on top of them. At the bottom of Challenger Deep, the pressure is more than 1000 times greater than it is at the surface.

Q But robots have been down there?

A Not many. Most machines would be instantly crushed at such high pressure.

Those that can do it are rare and expensive – one had titanium plating and windows made of sapphire.

SOME PEOPLE SAY...

Nothing is more pointless than exploration

WHAT DO YOU THINK?