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Plastics, other garbage found in ocean trench nearly 11 kilometres below surface

New research, video footage show humanity's garbage is reaching the furthest depths of the ocean



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In this image provided by the Japan Agency for Marine Earth Science and Technology, plastic bags are seen in the background on the floor of the Pacific Ocean's Mariana Trench, the deepest ocean trench in the world.(JAMESTEC)

You've heard of the Great Pacific Garbage Patch, the island of mostly plastics that's grown to three times the size of France.

But new research published in the journal *Marine Policy* shows that humanity's garbage isn't just floating on the ocean surface where there might be some hope of cleaning it up. Video footage has captured images of garbage — single-use plastics bags, to be specific — on the bottom of the earth's deepest ocean trench more than 10 kilometres below the surface.

The study authors used images and video compiled into the Deep-sea Debris Database, which was made available for public use a year ago by the Japan Agency for Marine-Earth Science and

Technology (JAMSTEC). Collected since 1983, the images were gathered by deep-sea submersibles and remotely operated vehicles.

- **Great Pacific Garbage Patch is 16 times bigger than previously estimated, study finds**
- **Canada's G7 anti-plastics push would fare better with federal policies, professor says**

Pollution from plastic has emerged as a major threat to ocean ecosystems, and previous studies have documented the waste that accumulates on coasts and ocean surfaces.

But until now, limited information has been available on the scale of the human debris problem in deep seas.

This study showed that even the world's deepest environment is now threatened by our daily activities-
Sanae Chiba, ocean scientist

"From the beginning we expected we probably would find lots of plastic products in the deep sea everywhere," said Sanae Chiba, the study's lead author and a senior scientist at JAMSTEC currently on secondment to the UN Environment World Conservation Monitoring Centre in Cambridge.

She said the research started when she and her colleagues realized they had an enormous amount of information available for analyzing debris in the ocean from the 30-plus years of images gathered during high-tech exploration of the ocean depths around the world.

Watch remarkable underwater footage showing debris and wildlife in the Pacific's Mariana Trench.



NOAA releases images of pollution near bottom of Mariana Trench

LISTEN

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Scientists report debris found at depths of more than 10 kilometres 0:58

They were right. Among all the forms of man-made debris in the ocean — including fishing gear, metal, glass, rubber and other materials — clearly visible plastics made up about 33 per cent of the total. Of those so-called macro-plastics, nearly 90 per cent were single-use items like plastic supermarket bags, said Chiba.

- **Plastic planet: Humans have produced 8.3 billion tonnes of the stuff, most of it now waste**

"We expected it but it's still surprising that we found these pieces of plastic bag in the Mariana Trench, that is over 10,000 metres deep. It's the deepest part of the ocean where only the highest technology submersible can reach," she said.

"For most people, the deep-sea environment is far away. Most people believe it's detached from our daily lives," she said. "This study showed that even the world's deepest environment is now threatened by our daily activities.

'An international problem'

Susanna Fuller, a senior project manager with Oceans North, a non-profit that's unaffiliated with the research, said these study results are "another wake-up call to the impact that humans are having in places we have never been."

While she's encouraged by the amount of conversation happening about plastic pollution, Fuller said it's not enough.



Deep-sea equipment captured a photograph of a Budweiser beer can on the floor of the trench. (NOAA)
"We need to move from those good intentions and words to action. I'm just kind of amazed that places like Canada haven't said, 'OK, guys, no more plastic bags. If Kenya can do it, we can do it.'

"Some of the larger grocery stores and businesses are getting on side, but it does need a regulatory response. I think we're getting to that point."

- **Billions of plastic pollutants being dragged into Arctic waters**

Chiba said she hopes governments will work together to tackle the problem of ocean plastics.

"No single country can solve the problem because once the plastic debris enters the ocean it's transported everywhere," she said. "It's an international problem."

The good news, she said, is that compared to other global problems such as warming and ocean acidification, plastic pollution is easier to understand and manage. "If we act now, we can solve it."