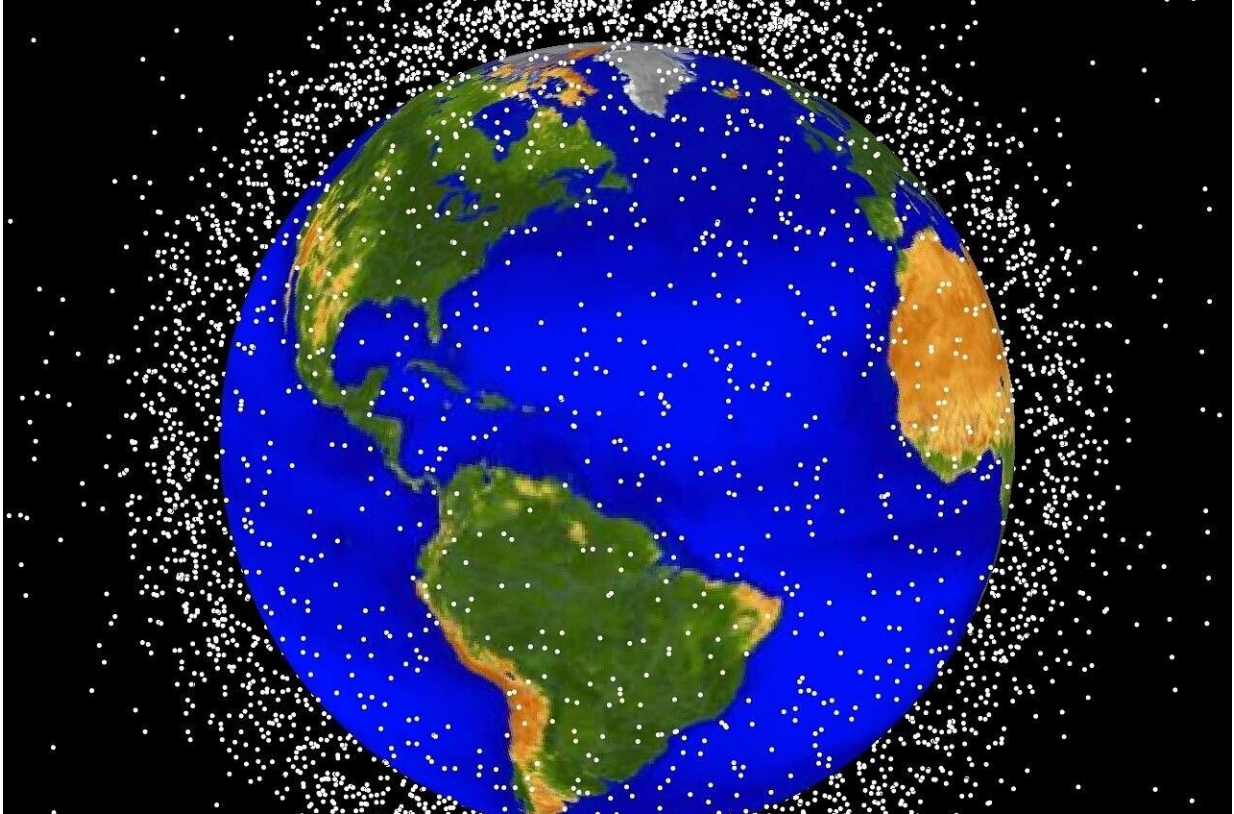


Video: Orbital debris threatens satellites

April 20 2021



Credit: Pixabay/CC0 Public Domain

The launch of Sputnik, humankind's first satellite, in 1957 marked the dawn of a new era for the people of Earth.

Decades later, our planet is now surrounded by spacecraft carrying out extraordinary work to study our changing climate, save lives following

disasters, deliver global communication and navigation services and help us answer important scientific questions.

But these satellites are at risk. Accidental collisions between objects in space can produce huge clouds of fast-moving [debris](#). These clouds can spread and damage additional satellites with cascading effect, eventually making the most useful orbits around Earth no longer safe for spacecraft or people.

Satellites today have to carry out collision avoidance maneuvers to avoid possible impact with debris. These are costly, and hundreds of collision avoidance alerts are already issued every week.

And this is nothing compared to what is coming. Several companies have begun to launch mega-constellations into low-Earth orbit to provide global internet access. They have great benefits, but could be a source of huge disruption if we do not change our behavior.

Our current methods for avoiding collisions in space will become inadequate in just a few years—and even compliance with space debris mitigation guidelines may no longer be enough.

It's time to act.

ESA is developing technologies for an automated [collision](#) avoidance system, as well as methods for refueling, repairing and upgrading satellites in orbit, extending the lifetime of missions and potentially reducing the number of new satellites that need to be launched.

ESA is also working on debris removal missions that will fly up to dead spacecraft and debris objects, capture them and move them to safety—either by sending them down to burn up in Earth's atmosphere or up into 'graveyard orbits.'

By reaching into space, we have brought huge benefits down to Earth, providing technologies that enrich our societies, connect people in previously unimaginable ways and give us an incredible perspective and understanding of our planet.

We know what will happen if we continue on our current path, but we also know exactly what we need to do to change that fate and ensure humankind's access to [space](#) is guaranteed for future generations.

Provided by European Space Agency

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