



INTRUSIVE THOUGHTS: WHY WE THINK BAD THINGS

Science Focus

How James Webb
VISITS THE EDGE OF TIME

Inside the world's
MOST EXTREME LABS

First image of the
MILKY WAY'S BLACK HOLE

RISE OF THE MAMMALS

How our ancestors flourished in the face of an apocalypse



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#378 JUNE 2022
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ASTRONOMY

STARGAZERS CALL FOR GREATER REGULATION OF SATELLITE LAUNCHES

“It’s time to clean up space,” say astronomers, as ever more satellites are launched into low Earth orbit

Here are three numbers for you: 2,000, 100,000 and 327,000. The first is the number of active satellites in orbit around Earth in 2018. The second is the number of satellites predicted to be there by 2030. And the third is the number of new satellites that the Rwanda Space Agency recently applied for permission to launch.

Even though the vast majority of satellite launches these days are of CubeSats – microsattelites that are very small (usually consisting of standardised units

CubeSats of various configurations (above and right) are frequently deployed from the International Space Station

that are 10 x 10 x 10cm) – that’s a huge increase. And if you’re a ground-based astronomer, it presents a real problem.

Having that much hardware floating around so close to Earth makes it more difficult to see the stars. It also makes it highly likely that any excitedly reported ‘new comets’ will turn out to be human-made. Which is why a team of scientists from the UK, US, Canada and the Netherlands, writing in the journal *Nature Astronomy*, has called for greater regulation of satellite launches.

“We really need to get our act together,” said lead author Prof Andy Lawrence, at the University of Edinburgh. “This is about recognising that the problems we see in orbit are the same as those we see when we worry about the land, the oceans and the atmosphere.”

There are, of course, many regulations governing satellite launches already – so much so that the process of having a launch proposal approved by all the relevant regulatory bodies and national authorities takes years. But the rules that currently apply relate almost entirely to proposed launch dates and flight paths, so that the satellites don’t crash, as well as to what frequencies they use to transmit and receive data, so that the satellites’ signals don’t interfere with each other.

The astronomers say that little thought is currently being given to how new launches might affect an Earth-bound view of the night sky. They also point out that satellite launches are highly carbon-intensive and polluting, and that current regulations don’t take into account what’s going to happen to all the satellites when they reach the end of their working lives and re-enter Earth’s atmosphere. The more satellites that do this, the greater the risk posed by falling space debris, argue the researchers. “The first aircraft strike or ground casualty is only a matter of time,” the article says.

“We need to see where we have regulations that we’re not applying properly, and where we need new regulations,” said Lawrence. “We need to knock heads together and ask, ‘How do we solve this problem?’”

