

ELON MUSK'S SPACE X SATELLITES PROVEN TO BE POISONING THE EARTH WITH RADIATION

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SpaceX's Starlink Satellites Are Leaking Radiation, Scientists Confirm

By [MICHELLE STARR](#)



Futselaar/artsource.nl)

Artist's impression of a large satellite constellation flying over LOFAR. ((Daniëlle

Constellations of satellites [swarming Earth's orbital skies](#) are currently polluting wavelength bands that are supposed to be protected for radio astronomy.

According to [new research](#), the electronics on board SpaceX's [Starlink](#) satellites are 'leaking' low-frequency radio waves, separate from their allocated downlink bands, in a way that could impact our ability to perform astronomy.

"This study represents the latest effort to better understand satellite constellations' impact on radio astronomy," [says engineer Federico Di Vruno](#) of the SKA Observatory and the International Astronomical Union.

"Previous workshops on [Dark and Quiet Skies](#) theorized about this radiation, our observations confirm it is measurable."

As Earth's skies grow more crowded, the effect satellites have on our study of space becomes more and more of a concern. Currently, SpaceX has an [estimated 4,365](#) of their small internet satellites in Earth orbit, with thousands more planned. And they're not the only company. OneWeb [has over 600](#). Amazon [plans to launch thousands more](#) starting [in 2024](#).

SpaceX did listen to concerns about visible light pollution and designed a [new, dimmer satellite](#). But visible wavelengths only represent one kind of Earth-based astronomy. The other, arguably much bigger branch is [radio astronomy](#), and herein lies what might be a problem.

The radio frequencies between 10.7 and 12.7 gigahertz are used by the satellites for communication downlink, at least in Europe; researchers have already [expressed concerns about those](#).

But scientists thought the satellites might be giving off [unintended radio waves](#) outside that band. This is what Di Vruno and his colleagues sought to investigate.

They used the LOw Frequency ARray ([LOFAR](#)) in Europe, a network comprising around 20,000 radio antennas distributed throughout [52 locations](#). With this level of sensitivity, they observed 68 satellites belonging to the Starlink constellation. Sure enough, they detected electromagnetic leakage.



An image stack showing the paths of Starlink satellites captured in a single night in 2019. ([GMN](#))

"With LOFAR, we detected radiation between 110 and 188 MHz from 47 out of the 68 satellites that were observed," [says astronomer Cees Bassa](#) of ASTRON, the Netherlands Institute for Radio Astronomy.

"This frequency range includes a protected band between 150.05 and 153 MHz specifically allocated to radio astronomy by the International Telecommunications Union."

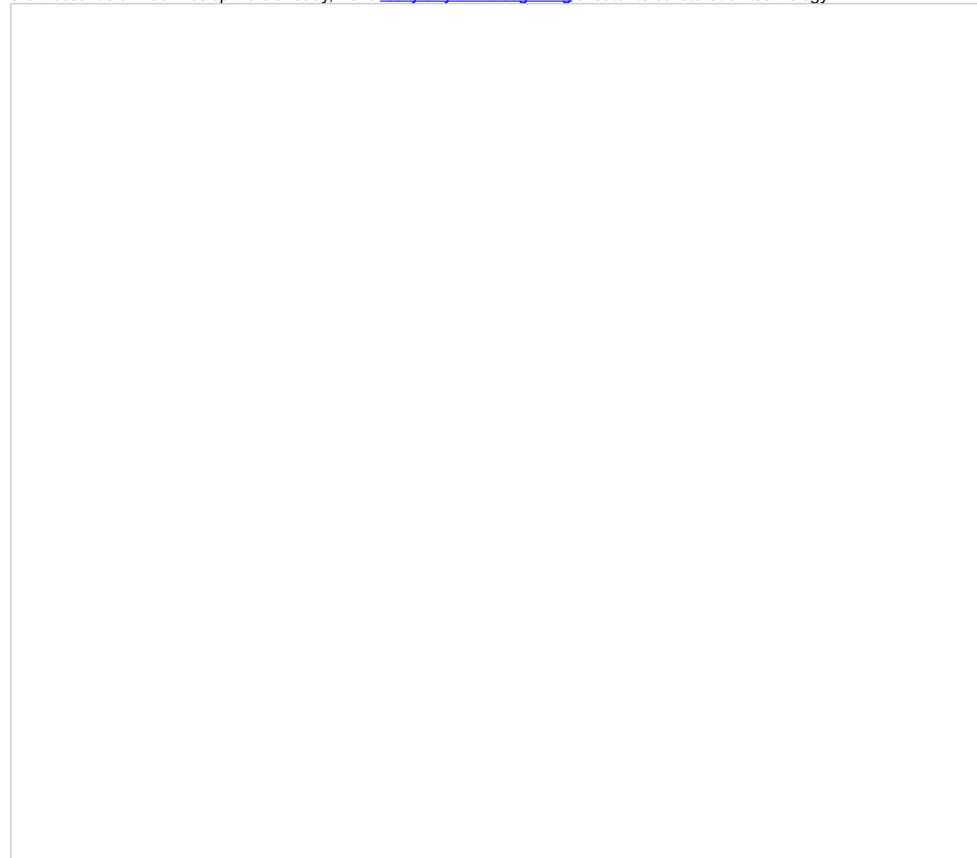
This emission appears to be unintentional, coming from the satellites' electronics. It's also not breaking any rules. Here on Earth, the [International Electrotechnical Commission](#) places stringent restrictions on electrical devices to control electromagnetic interference, but those rules don't apply in space.

The effect is relatively small, so far. But it won't necessarily always be that way. The more satellites up there emitting this unintentional radio signal, the brighter it will become.



Radio telescopes like ASKAP in Australia rely on radio-quiet skies. ([CSIRO](#))

There is, however, a solution already in the works. The researchers have contacted SpaceX, which is working on ways to reduce or remove this unintentional leakage. And although there are thousands of machines up there already, we're [really only at the beginning](#) of satellite constellation technology.



This makes satellite radio leakage a problem that has been caught relatively early. Future designs can be adjusted accordingly while regulators work to fill the unexpected gap in official rules.

"The present study highlights an example of the various channels of how technology development may have unforeseen side effects on astronomy," [says astronomer Michael Kramer](#) of the Max Planck Institute for Radio Astronomy and the Astronomische Gesellschaft in Germany.

"With SpaceX setting an example, we are now hoping for the broad support from the whole satellite industry and regulators."

The research has been published in [Astronomy & Astrophysics](#).

