

# What does 60 years of silence tell us about the search for extraterrestrials?

August 2 2023, by Brian Koberlein

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The Allen Telescope Array searches for alien technosignals. Credit: Seth Shostak, SETI Institute

Aliens are big in the news recently, fueled by congressional hearings about unidentified anomalous phenomena (UAPs), formally known as UFOs. But while the idea of aliens visiting Earth may be exciting, the better bet is still the idea that aliens might exist on distant worlds. We already know potentially habitable planets are common and intelligent life has arisen on at least one world, so why not many? But after 60 years of searching for evidence of extraterrestrials "out there," we've found nothing. So what does that tell us?

Although it seems odd at first blush, an absence of evidence can tell us things about the universe. Given the fact that we have found no definitive technological radio signals from an [alien civilization](#), we can't simply conclude that they don't exist. But a prolonged silence after decades of study does tell us something about the likelihood of [aliens](#), or at least the chances of us finding them. That's the focus of a new study in *Acta Astronautica*, which looks at the statistics of the search for [alien](#) civilizations thus far.

The study uses Bayesian statistics to look at the odds of finding an alien technosignal. One of the main aspects of Bayesian statistics is that it assumes focuses on the likelihood of an outcome, not the certainty of an outcome. It's the betting person's view of the universe. In this case, there are two main assumptions. The first is that we know [intelligent life](#) can evolve in the universe (at least if you consider humans intelligent), and the second is that we've found no signals in 60 years.

To this, the author adds a couple more assumptions. The first is that intelligent civilizations arise at random times and in random locations. In other words, Earth has no special place in the universe and is just as likely to detect aliens as anywhere else. The second is that if an alien civilization sends signals into space, they are directed either in all directions, like the expanding sphere of our radio signals, or are randomly directed. If, for example, most civilizations tended to direct

their signals toward the center of the galaxy, we would be unlikely to detect them being 30,000 light-years away from the [galactic center](#).

These assumptions are pretty reasonable given what we know. Or at least they are no more unreasonable than other assumptions. Given all this, the author found an upper bound on alien technosignatures. At best, there is a 95% chance of no more than five galaxy-wide alien signals emitted per century. This means there is only a 50/50 chance of Earth detecting a signal within the next 1,800 years. So unless some alien civilization intentionally directs a signal our way, our odds of detecting something anytime soon aren't great.

That doesn't mean we shouldn't keep looking. But if you want evidence for aliens in the near future, maybe it's worth watching the congressional hearings on UAPs after all.

**More information:** Claudio Grimaldi, Upper bounds on technoemission rates from 60 years of "silence," *Acta Astronautica* (2023). [DOI: 10.1016/j.actaastro.2023.07.024](https://doi.org/10.1016/j.actaastro.2023.07.024)

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