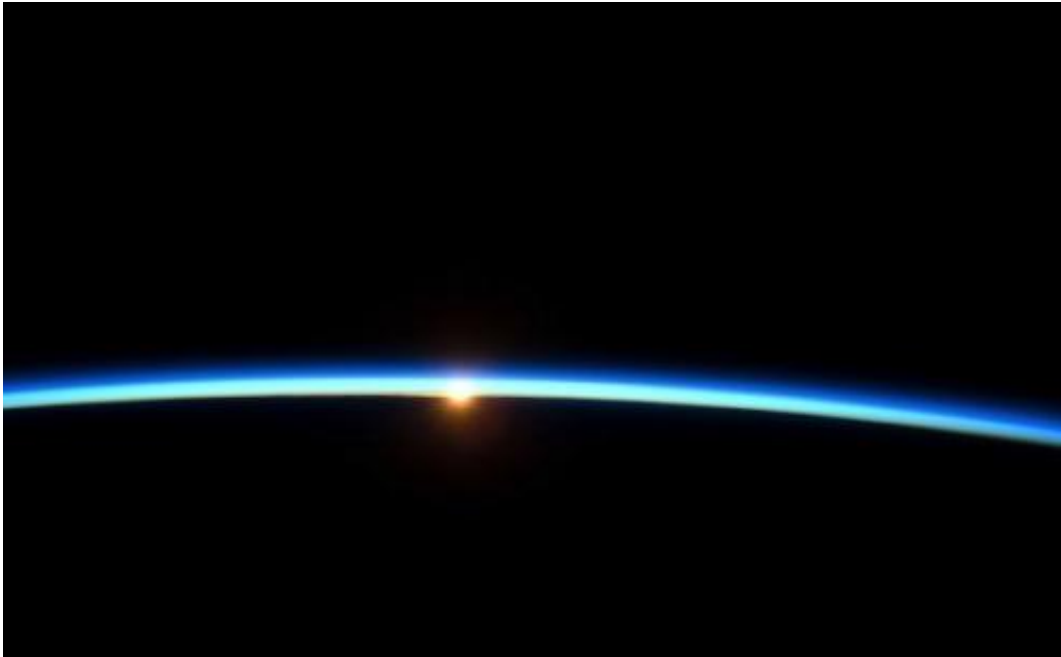


# How high is space?

July 26 2013, by Fraser Cain

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The edge of space. Credit: NASA

Look up, there's space. Astronomically speaking, it's right there, just outside a thin layer of atmosphere. But how far away is it? How high is space?

Space is defined by the point at which the Earth's atmosphere ends, and the vacuum of [space](#) takes over.

As you can probably imagine, with such a subjective definition, people disagree on exactly where space begins.

The first official definition of space came from the National Advisory Committee for Aeronautics (the predecessor to NASA), who decided on the point where atmospheric pressure was less than one pound per square foot.

This was the altitude that airplane control surfaces could no longer be used, and corresponded to roughly 50 miles, or 81 kilometers.

Any NASA test pilot or astronaut who crosses this altitude is awarded their astronaut wings.

Shortly after that definition, the aerospace engineer Theodore von Kármán calculated that above an altitude of 100 km, the atmosphere would be so thin that an aircraft would need to be traveling at [orbital velocity](#) to derive any lift.

This altitude was later adopted as the Karman Line by the World Air Sports Federation.

When Felix Baumgartner broke the record for the highest freefall in 2012, he jumped from an altitude of 39 kilometers, less than halfway to space, according to NASA's definition.

But the atmosphere of Earth extends far out into space.

Even though it orbits at an altitude of more than 400 kilometers, the International Space Station needs to be constantly boosted because of friction with the atmosphere.

Satellites that orbit at a higher altitude can orbit for decades, or even hundreds of years without slowing down from atmospheric drag.

But the Earth's [outer atmosphere](#), also known as the [exosphere](#), extends

out to an altitude of 10,000 km above the planet. Although the atmosphere is tenuous, there are more gas particles in this region than interplanetary space.

Whatever the exact definition of space you use, if you can get above 100 kilometers, I think you deserve your astronaut wings.

Provided by [Universe Today](#)

Citation: How high is space? (2013, July 26) retrieved 26 April 2024 from <https://phys.org/news/2013-07-high-space.html>

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