

All aboard the Flat Earth cruise – just don't tell them about nautical navigation

Flat earthers, who believe the Earth is a large disk, may be shocked to find the ship's navigation is based on a spherical planet

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Cruise ships, like this one from Royal Caribbean, are navigated by GPS, which relies on 24 satellites orbiting the Earth. Photograph: Andrew Matthews/PA

A group of people who believe the Earth is flat have announced their “biggest, boldest, best adventure yet”: a Flat Earth cruise scheduled for 2020.

The cruise, organized by [the Flat Earth International Conference](#), promises to be a lovely time. Flat earthers – who include [the rapper B.O.B.](#) and reality television person [Tila Tequila](#) – will be able to enjoy restaurants, swimming pools and perhaps even an artificial surf wave.

There's just one problem for those seeking to celebrate the flatness of the Earth. The navigational systems cruise ships, and other vessels, use rely on the fact that the Earth is not flat: theoretically puncturing the beliefs of the flat Earth crowd.

“Ships navigate based on the principle that the Earth is round,” said Henk Keijer, a former cruise ship captain who sailed all over the globe during a 23-year career.

“Nautical charts are designed with that in mind: that the Earth is round.”

Keijer, who now works as a forensic marine expert for [Robson Forensic](#), said the existence of GPS, the global positioning system, alone is proof that the Earth is a sphere, not a flat disc. GPS relies on 24 main satellites which orbit the Earth to provide positional and navigational information.

“The reason why 24 satellites were used is because on the curvature of the Earth,” Keijer said.

“A minimum of three satellites are required to determine a position. But someone located on the other side of the Earth would also like to know their position, so they also require a certain number of satellites.

Is the Earth flat? Meet the people questioning science

“Had the Earth been flat, a total of three satellites would have been enough to provide this information to everyone on Earth. But it is not enough, because the Earth is round.”

While there are different theories within the Flat Earth community, the core belief is the Earth is flat. The FEIC claims that after “extensive experimentation, analysis, and research”, its adherents came to believe the Earth is not a sphere.



Flat Earth has been a YouTube phenomenon, the same hypotheses tend to appear everywhere: that the Earth is flat and round, like a pancake. That it is surrounded on all sides by the Antarctic, a huge impassable wall of ice, and protected by a dome. That it is not hurtling through space at great speed but rooted somehow, an immovable mass: still, calm, glorious, the epicentre of the universe.

This is contrary to thousands of years of science, of course. Aristotle claimed the world was a sphere some time around 350BC. Plato agreed. So did Pythagoras, Archimedes and later, in 240BC, the astronomer Eratosthenes, who was among the first to estimate the Earth’s circumference. It was confirmed in the 1500s when a Spanish expedition led by Magellan circumnavigated the globe. Most of us have believed ever since, though not all, apparently.

The Flat Earth Society, which is not connected to the FEIC, has suggested that “the space agencies of the world” have conspired to fake “space travel and exploration”.

“This likely began during the cold war,” the Flat Earth Society says. “The USSR and USA were obsessed with beating each other into space to the point that each faked their accomplishments in an attempt to keep pace with the other’s supposed achievements.”

The FEIC did not respond to requests for more information on the Flat Earth cruise. The organization could potentially try to staff the cruise ship with a crew which does not think the Earth is round, but Keijer said that would be difficult.

“I have sailed 2 million miles, give or take,” Keijer said.

“I have not encountered one sea captain who believes the Earth is flat.”

<https://www.theguardian.com/science/2019/jan/09/flat-earth-cruise-nautical-navigation>

<https://www.theguardian.com/global/2018/may/27/is-the-earth-pancake-flat-among-the-flat-earthers-conspiracy-theories-fake-news#img-2>

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