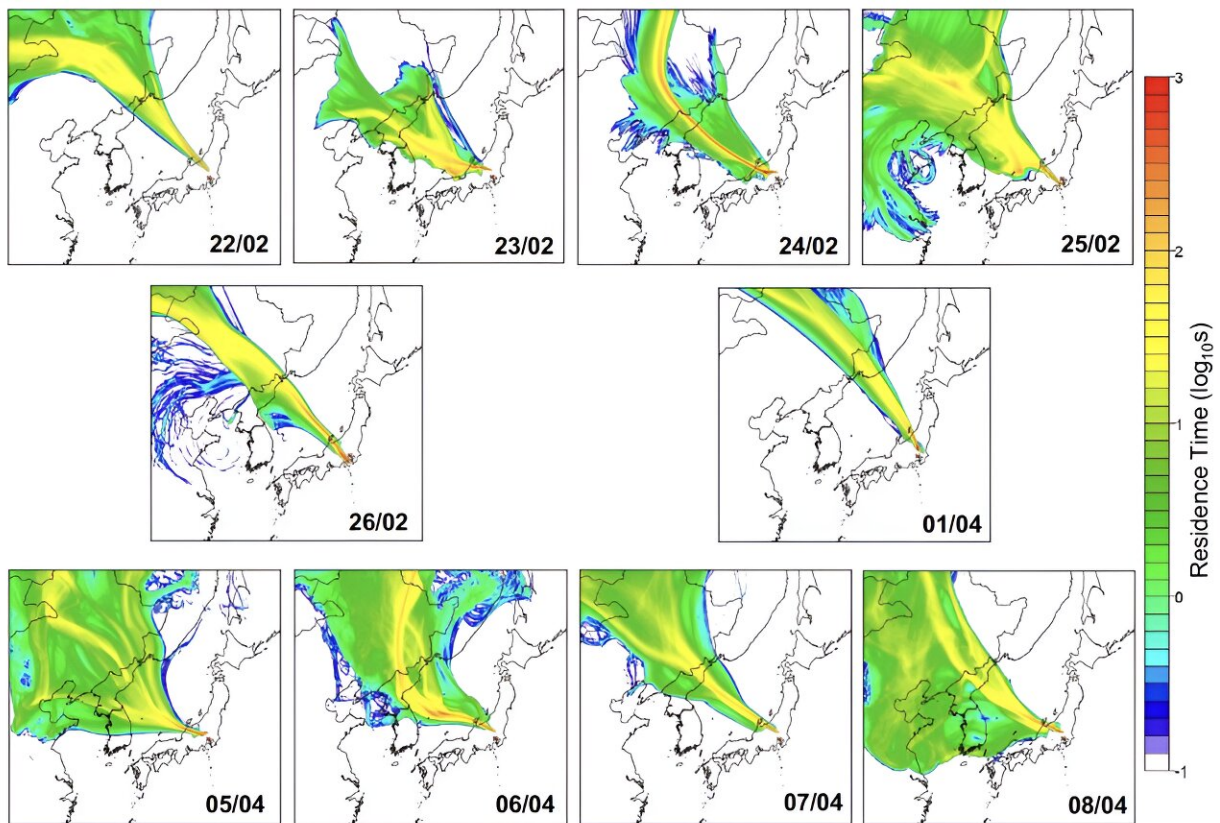


Researchers find live fungi, bacteria and viruses high in the Earth's atmosphere

September 10 2024, by Bob Yirka



FLEXPART space-time simulations 4 days back in time for each individual day of flights for all 10 flights in February and April of 2014. Credit: *Proceedings of the National Academy of Sciences* (2024). DOI: 10.1073/pnas.2404191121

A team of climate, health and atmospheric specialists in Spain and Japan

has found abundant live fungi, bacteria and viruses high in the Earth's atmosphere. In their study [published](#) in the *Proceedings of the National Academy of Sciences*, the group collected air samples from altitudes of 1,000–3,000 meters.

Prior research has shown that dust can travel thousands of miles in the atmosphere—large amounts of dust from Africa are carried to both North and South America, for example. Prior research has also shown that [microbes](#) that attach to dust can be carried equally far.

For this new study, the researchers wondered how high in the atmosphere microbes might be found and whether they could survive the trip. To learn more, they chartered a small plane that carried them aloft over parts of Japan, where they collected [air samples](#) at altitudes of 1,000–3,000 meters near the planetary boundary. They also gathered [weather data](#) related to the air column in areas where they had flown.

In an air-controlled lab, they conducted a DNA analysis on the microbes found in the samples as a way to identify what they were and also which types. They found examples of fungi, bacteria and viruses, many of which, the team noted, are hazardous to human health.

They also found that many of the microbes were still viable—they grew cultures of them in lab dishes. In all, the team found 266 types of [fungi](#) and 305 types of [bacteria](#).

The researchers noted that many of both types were of the kind that are often found in soil or plants. They suspect that due to the geographic location of the microbes, the height at which they were found and the speed of the winds carrying them, that the majority of them came from China, which meant they had traveled at least 2,000 kilometers.

The research team suggests that bio-pathogens are capable of traveling

thousands of kilometers at [high altitudes](#), possibly representing a way to spread diseases.

More information: Xavier Rodó et al, Microbial richness and air chemistry in aerosols above the PBL confirm 2,000-km long-distance transport of potential human pathogens, *Proceedings of the National Academy of Sciences* (2024). [DOI: 10.1073/pnas.2404191121](https://doi.org/10.1073/pnas.2404191121)

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