

Follow all of ScienceDaily's **latest research news** and **top science headlines!**

## Science News

from research organizations

Print Email Share

# Viruses -- lots of them -- are falling from the sky

## An astonishing number of viruses are circulating around the Earth's atmosphere -- and falling from it

*Date:* February 6, 2018

*Source:* University of British Columbia

*Summary:* An astonishing number of viruses are circulating around the Earth's atmosphere -- and falling from it -- according to new research. The study marks the first time scientists have quantified the viruses being swept up from the Earth's surface into the free troposphere, beyond Earth's weather systems but below the stratosphere where jet airplanes fly. The viruses can be carried thousands of kilometers there before being deposited back onto the Earth's surface.

*Share:*

### RELATED TOPICS

#### Plants & Animals

- > Microbes and More
- > Virology
- > Bacteria
- > Extreme Survival

#### Space & Time

- > Neptune
- > Cosmic Rays
- > Sun
- > Asteroids, Comets and Meteors

### RELATED TERMS

- > Ionosphere
- > Meteor
- > Meteorite
- > Microorganism
- > Virus
- > Moon
- > Space observatory

### FULL STORY

An astonishing number of viruses are circulating around the Earth's atmosphere -- and falling from it -- according to new research from scientists in Canada, Spain and the U.S.

The study marks the first time scientists have quantified the viruses being swept up from the Earth's surface into the free troposphere, that layer of atmosphere beyond Earth's weather systems but below the stratosphere where jet airplanes fly. The viruses can be carried thousands of kilometres there before being deposited back onto the Earth's surface.

"Every day, more than 800 million viruses are deposited per square metre above the planetary boundary layer -- that's 25 viruses for each person in Canada," said University of British Columbia virologist Curtis Suttle, one of the senior authors of a paper in the International Society for Microbial Ecology Journal that outlines the findings.

"Roughly 20 years ago we began finding genetically similar viruses occurring in very different environments around the globe," says Suttle. "This preponderance of long-residence viruses travelling the atmosphere likely explains why -- it's quite conceivable to have a virus swept up into the atmosphere on one continent and deposited on another."

Bacteria and viruses are swept up in the atmosphere in small particles from soil-dust and sea spray.

## Most Popular

this week

### PLANTS & ANIMALS



**Sugar Not So Nice for Your Child's Brain Development, Study Suggests**



**Mice With Hallucination-Like Behaviors Reveal Insight Into Psychotic Illness**



**450-Million-Year-Old Sea Creatures Had a Leg Up on Breathing**

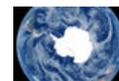
### EARTH & CLIMATE



**More Than 5,000 Tons of Extraterrestrial Dust Fall to Earth Each Year**



**From Stardust to Pale Blue Dot: Carbon's Interstellar Journey to Earth**



**Evidence of Antarctic Glacier's Tipping Point Confirmed**

### FOSSILS & RUINS



**Neanderthal Ancestry Identifies Oldest Modern Human Genome**

**Boy or Girl? It's in the Father's Genes**

**Humans Were Apex Predators for Two Million Years, Study Finds**

## Strange & Offbeat

### PLANTS & ANIMALS

**Unusual Fossil Reveals Last Meal of Prehistoric Pollinator**

**New Jurassic Flying Reptile Reveals the Oldest Opposed Thumb**

**Making Music from Spider Webs**

### EARTH & CLIMATE

**Rapid Evolution in Foxgloves Pollinated by Hummingbirds**

> Venus

Suttle and colleagues at the University of Granada and San Diego State University wanted to know how much of that material is carried up above the atmospheric boundary layer above 2,500 to 3,000 metres. At that altitude, particles are subject to long-range transport unlike particles lower in the atmosphere.

Using platform sites high in Spain's Sierra Nevada Mountains, the researchers found billions of viruses and tens of millions of bacteria are being deposited per square metre per day. The deposition rates for viruses were nine to 461 times greater than the rates for bacteria.

"Bacteria and viruses are typically deposited back to Earth via rain events and Saharan dust intrusions. However, the rain was less efficient removing viruses from the atmosphere," said author and microbial ecologist Isabel Reche from the University of Granada.

The researchers also found the majority of the viruses carried signatures indicating they had been swept up into the air from sea spray. The viruses tend to hitch rides on smaller, lighter, organic particles suspended in air and gas, meaning they can stay aloft in the atmosphere longer.

**Story Source:**

Materials provided by **University of British Columbia**. *Note: Content may be edited for style and length.*

**Journal Reference:**

1. Isabel Reche, Gaetano D'Orta, Natalie Mladenov, Danielle M. Winget, Curtis A. Suttle. **Deposition rates of viruses and bacteria above the atmospheric boundary layer.** *The ISME Journal*, 2018; DOI: 10.1038/s41396-017-0042-4

**Cite This Page:**

|     |     |         |
|-----|-----|---------|
| MLA | APA | Chicago |
|-----|-----|---------|

University of British Columbia. "Viruses -- lots of them -- are falling from the sky: An astonishing number of viruses are circulating around the Earth's atmosphere -- and falling from it." ScienceDaily. ScienceDaily, 6 February 2018. <[www.sciencedaily.com/releases/2018/02/180206090650.htm](http://www.sciencedaily.com/releases/2018/02/180206090650.htm)>.

**Could Mario Kart Teach Us How to Reduce World Poverty and Improve Sustainability?**



**More Than 5,000 Tons of Extraterrestrial Dust Fall to Earth Each Year**

**FOSSILS & RUINS**

**Unusual Fossil Reveals Last Meal of Prehistoric Pollinator**

**Scientists Discover Two New Species of Ancient, Burrowing Mammal Ancestors**

**Fossil Discovery Deepens Snakefly Mystery**

**RELATED STORIES**

**Ocean Algae Get 'Coup De Grace' from Viruses**

Sep. 15, 2020 — Scientists have long believed that ocean viruses always quickly kill algae, but new research shows they live in harmony with algae and viruses provide a 'coup de grace' only when blooms of algae are ...

**Lava or Not, Exoplanet 55 Cancri E Likely to Have Atmosphere**

Nov. 16, 2017 — Twice as big as Earth, the super-Earth 55 Cancri e was thought to have lava flows on its surface. Now, a new analysis finds this planet likely has an atmosphere whose ingredients could be similar to ...

**Atmosphere Detected Around an Earth-Like Planet**

**FROM AROUND THE WEB**

*ScienceDaily shares links with sites in the TrendMD network and earns revenue from third-party advertisers, where indicated.*

Apr. 6, 2017 — Astronomers have detected an atmosphere on another Earth-like planet. This marks the first detection of an atmosphere around an Earth-like planet other than Earth itself, and thus is a significant ...

**Giant Viruses May Simply Be a 'Frankenstein' of Smaller Viruses**

Apr. 6, 2017 — Viruses are thought to outnumber the microbes on Earth; both outnumber the stars in the Milky Way. A handful of giant viruses have been discovered in the past two decades, and scientists report a ...

**Free Subscriptions**

---

Get the latest science news with ScienceDaily's free email newsletters, updated daily and weekly. Or view hourly updated newsfeeds in your RSS reader:

-  [Email Newsletters](#)
-  [RSS Feeds](#)

**Follow Us**

---

Keep up to date with the latest news from ScienceDaily via social networks:

-  [Facebook](#)
-  [Twitter](#)
-  [LinkedIn](#)

**Have Feedback?**

---

Tell us what you think of ScienceDaily -- we welcome both positive and negative comments. Have any problems using the site? Questions?

-  [Leave Feedback](#)
-  [Contact Us](#)

[About This Site](#) | [Staff](#) | [Reviews](#) | [Contribute](#) | [Advertise](#) | [Privacy Policy](#) | [Editorial Policy](#) | [Terms of Use](#)

Copyright 2021 ScienceDaily or by other parties, where indicated. All rights controlled by their respective owners. Content on this website is for information only. It is not intended to provide medical or other professional advice.

Views expressed here do not necessarily reflect those of ScienceDaily, its staff, its contributors, or its partners.

Financial support for ScienceDaily comes from advertisements and referral programs, where indicated.

— CCPA: Do Not Sell My Information — — GDPR: Privacy Settings —