



ASK A SPACE SCIENTIST

Our universe is full of mysteries, and some of the most mind-boggling are in space. Curious kids asked questions, and we sent them to two Bahá'í space scientists. Have questions about space? Send them to us at brilliant@usbnc.org (with your name and age).

Will pollution ever get so bad that our civilization will have to leave Earth? –Soraya, age 10

Hi, Soraya,

This is an important question, because we humans are responsible for the pollution that's damaging our environment. The Earth does so much for us that there's no better place in the known universe for us to live. It provides the exact level of gravity our bodies have evolved for. It holds on to a thick atmosphere, while plants and bacteria recycle carbon dioxide and pump the air full of oxygen for us to breathe. The Earth's magnetic field shields us from the Sun's harmful radiation and keeps the atmosphere from being blown away by the solar wind. Earth's oceans regulate the surface temperature and provide a refuge for all sea life, much of which we eat. The water cycle purifies water and rains it down on land where we live. Earth and its organisms generate the soil in which we grow our food. We depend upon Earth for every aspect of our material existence.

Currently, we can only send three humans into space at a time, and only into low orbit. We can't get to the moon right now, we've never sent a human to Mars, and there's no way either of those places could keep all of us alive. There is no backup planet. If we want our species to survive, we have no choice but to put an end to pollution and bring our civilization and technology into balance with the natural environment.

–George



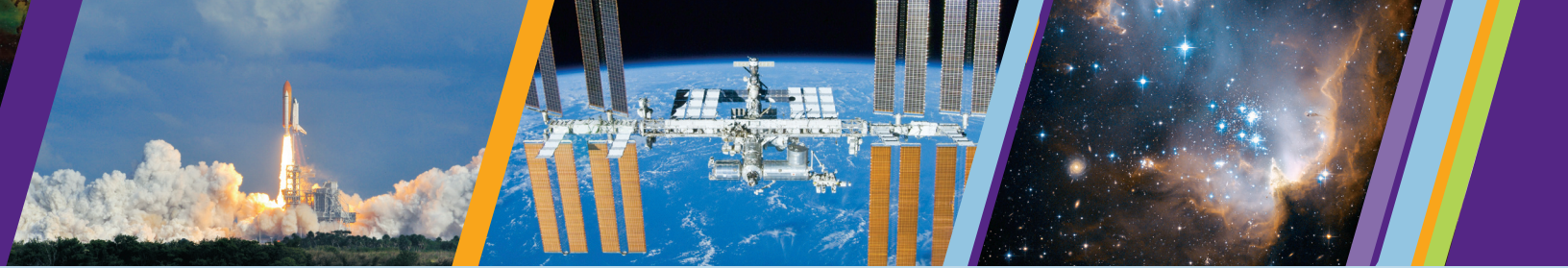
NASA's flying laboratory measures over 200 atmospheric gases and airborne particles.

BACH IN TIME

A NASA spacecraft named for Italian astronomer Giovanni Cassini (1625–1712) spent 13 years exploring Saturn and sending valuable data to Earth. Among other contributions, the astronomer is famous for discovering four of Saturn's moons and a gap in its rings known as the Cassini:

D V S O N



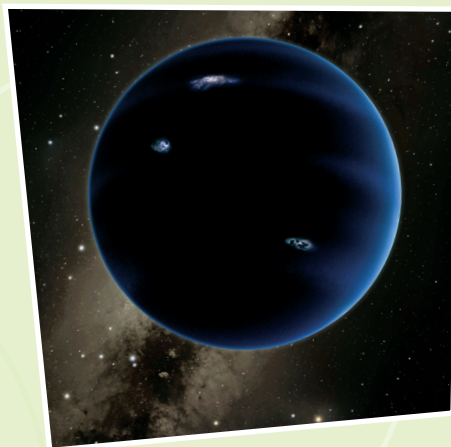


I've heard that there is a ninth planet. What is its name and location? –Olivia, age 11

Hi, Olivia,
At one time, Pluto was known as the ninth planet. But because it is so small (it's smaller than our moon), astronomers eventually decided that it should be considered only a dwarf planet.

However, astronomers have found evidence that there is a ninth true planet orbiting our Sun. They are calling it Planet Nine for now, since they haven't definitely proven that it exists. They estimate that it is about the size of Neptune (which is about four times larger than Earth). Neptune is currently the farthest known planet, but Planet Nine may be 20 times farther from the Sun than Neptune.

–Steve



This illustration depicts a view of Planet Nine, which is thought to consist mostly of gases, like Neptune and Uranus. It would take Planet Nine at least 10,000 years to orbit the Sun once!



STEVE SCOTTI is a research engineer at NASA Langley Research Center in Virginia, U.S. He works to develop lighter, stronger materials and structures for aircraft and spacecraft. Watching the first astronaut launched into space inspired his interest in space exploration. He enjoys sharing his enthusiasm about science and space with kids.



GEORGE HATCHER was an avionics engineer at the Kennedy Space Center in Florida, U.S., from 2004–2017. He worked on electrical systems of the space shuttle and uncrewed rockets. He also studied planetary science at the University of Central Florida. Working in avionics was a dream come true for George. He's aspired to be an astronaut since he was three. He's one of 100 finalists in the Mars One Project, which aims to create a human settlement on Mars.

COSMIC QUIZ

A burst of energy and particles from the Sun is called a:

- A) Sun tantrum
- B) Solar blast
- C) Solar flare
- D) Sun explosion
- E) Sun dazzle

