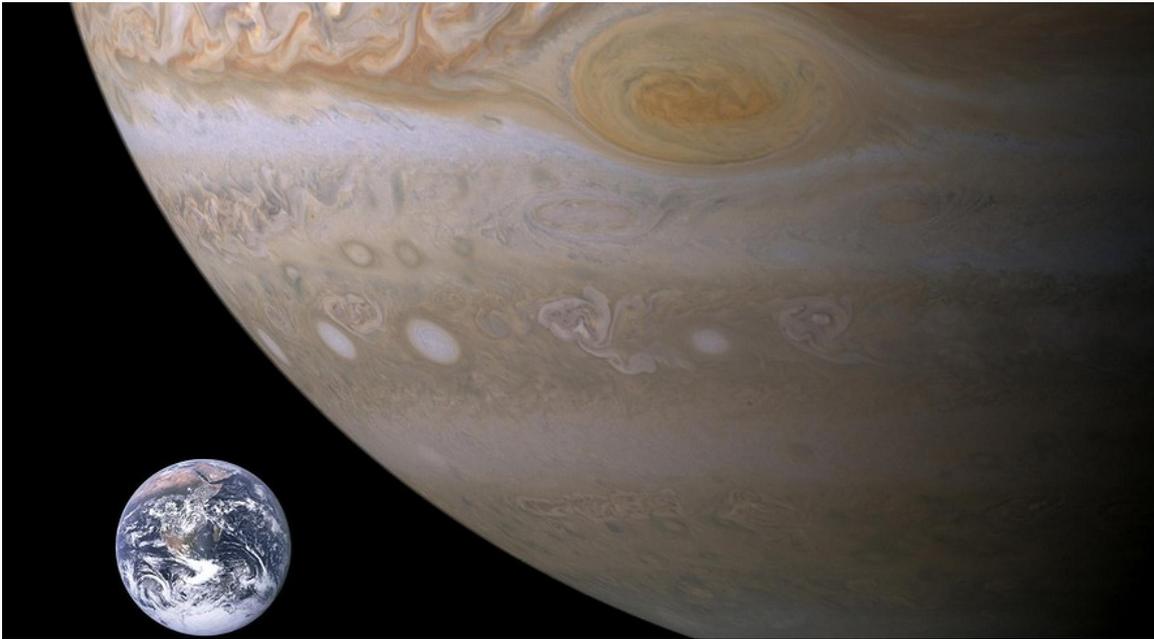


Scientists say Jupiter muscled its way through solar system to form Earth

By Scientific American, adapted by Newsela staff on 04.24.15

Word Count **686**



A comparison of Earth, Jupiter and the Great Red Spot located in the top center of this photo. The raging storm known as the Great Red Spot on Jupiter could swallow up the whole Earth. Photo: [Wikimedia Commons](#)

The Romans believed Jupiter was the king of the gods who killed a race of giants. Scientists now think Jupiter, the planet, did the same thing when Earth was formed.

Jupiter, the largest planet, helped form the solar system many millions of years ago. It pushed out the pieces left over when the sun and other planets were formed. Some pieces may have landed on Earth and brought the water the

planet needed to develop life. Asteroids that fell on Earth wiped out the dinosaurs, then mammals were able to grow and our human ancestors developed.

Jupiter Crashes The Solar System Party

Scientists now say that even the Earth would not exist without Jupiter's help. A study just published says Jupiter crashed through the solar system as it formed, clearing the way for Earth and other, smaller planets to take shape.

Scientists suspect that our solar system developed like most others in the universe. But they also believe that it used to have more large planets. Scientists have found other solar systems that are packed with planets larger than Earth. They call these "super-earths." But those planets do not have an atmosphere like ours that can support human life. Their atmospheres are packed with hydrogen that humans cannot breathe.

Most solar systems have a lot of those large planets. Our solar system looks a bit like the oddball, said Greg Laughlin. He is a scientist from the University of California in Santa Cruz. He is also one of the authors of the study.

Our solar system did not form differently, said Konstantin Batygin. He is a scientist who also worked on the study. What Jupiter did after the planets formed is what made a difference.

Restless Orbiters

Scientists believe planets form from the gas and dust spinning around young stars. Scientists used to think planets stayed in the same place where they formed and did not change. Small, rocky planets would form close to the sun. Large, cold planets with atmospheres made of gases, called gas giants, would form away from the sun.

Scientists thought all planets stayed in the same orbit around the sun after they formed. It all matched up with what we knew about the solar system, but it could be wrong.

Planets Pushing And Pulling

Twenty years ago, scientists found the first planets around other stars. They noticed all planets did not go around in even circles around their sun, like our solar system. Some planets would swing very close to their suns and then far away. Sometimes, they would get pulled away by other planets. Since the other planets were discovered, scientists have studied their movements. They want to understand how our solar system was formed.

One theory says Jupiter moved to where Mars is today. As Jupiter moved, planets smashed against each other, like a demolition derby.

Batygin and Laughlin studied how Jupiter's movement formed the solar system. The crashes among the large planets would have pushed smaller planets into the sun. The scientists say that is why there are so few small planets between the sun and Earth.

Saturn Steps In

As Jupiter returned to its place, the pieces left over from the broken planets came together. They formed Mercury, Venus, Earth and Mars. This explains why those planets formed later and why they have different atmospheres. It would also explain why Mars is so much smaller than Earth. It was formed from pieces of a larger planet.

Laughlin said this theory explains why there are few planets like Earth. Humans cannot live on most of the planets the scientists are watching for signs of life. Their atmospheres would crush, cook or smother any human visitors. Few solar systems had a Jupiter to come through and clear the way for new worlds like Earth.

It may really be Saturn that we must thank for being here. Its gravity pulled Jupiter back into place and away from Earth. That makes sense, because the Romans believed Saturn was Jupiter's father and the god responsible for Earth. Next time you look up at the sky, uncrushed and uncooked, thank Jupiter and Saturn.

Quiz

1 What can you conclude from the following lines in the article?

Twenty years ago, scientists found the first planets around other stars. They noticed all planets did not go around in even circles around their sun, like our solar system.

- (A) The other solar systems were formed in the same way as ours.
- (B) The other solar systems are similar to our solar system.
- (C) Something caused our solar system to be different from the others.
- (D) All solar systems have planets orbiting their stars.

2 Which of the following pieces of evidence from the section "Jupiter Crashes The Solar System Party" explains the effect that Jupiter had on the formation of the solar system?

- (A) A study just published says Jupiter crashed through the solar system as it formed, clearing the way for Earth and other, smaller planets to take shape.
- (B) Scientists suspect that our solar system developed like most others in the universe.
- (C) Our solar system looks a bit like the oddball, said Greg Laughlin.
- (D) Scientists have found other solar systems that are packed with planets larger than Earth.

3 Select the paragraph from the section "Jupiter Crashes The Solar System Party" that BEST explains how Jupiter affected the formation of Earth.

4 Which sentence from the section "Saturn Steps In" BEST explains why there are so few small planets between the sun and Earth?

- (A) As Jupiter returned to its place, the pieces left over from the broken planets came together.
- (B) Few solar systems had a Jupiter to come through and clear the way for new worlds like Earth.
- (C) This explains why those planets formed later and why they have different atmospheres.
- (D) Laughlin said this theory explains why there are few planets like Earth.