

Transcripts of Mars Atmospheric Loss: Neutral Processes

[Music]

When you look at Mars today, it appears to be a barren, dusty world with only a very thin atmosphere. However, some scientists think that Mars may have once had a much thicker atmosphere, maybe even one more like ours on Earth. So how does a planet lose so much of its atmosphere? NASA's MAVEN spacecraft will help give us clearer answers when it studies Mars's upper atmosphere, but scientists think that several processes may have had an impact over billions of years.

One way that an atmosphere can be lost to space is through a series of what are called Neutral Processes, which are processes that involve neutral particles rather than charged particles. On Mars for example, atoms and molecules of hydrogen gas can be found in the upper atmosphere and they often collide with each other as they make their way around. For the most part, the molecules are still bound to the planet by gravity. However, if a fast-moving molecule collides with another molecule at the right angle, the molecule may have just enough speed to leave the atmosphere and be lost to space.

As this process continues over billions of years, it, along with many other processes, can contribute to the disappearance of a planet's atmosphere. And since the hydrogen in the atmosphere ultimately comes from water in the lower atmosphere, it may also contribute to the loss of water over time. In the end, this cumulative effect could have transformed Mars from a bluer, cloudier planet into the red one we see today, and MAVEN will study this process and tell us how it really works.

[Satellite beeping]