



NASA Orbiter Detects First Confirmed Lightning on Mars

Description

Planetary scientists have long studied the huge dust storms on Mars and wondered if they could create electricity. These storms can cover the entire planet and move millions of tons of sand through a thin atmosphere. On Earth, similar situations, like volcanic eruptions or desert winds, often lead to strong electrical discharges.

Researchers had searched for signs of electricity, like flashes of light or radio signals, but had little success. Even during Mars' fiercest seasonal storms, the sky remained dark. In late 2024, a special instrument in orbit around Mars began detecting a specific kind of signal. This sensor was tuned to low-frequency electromagnetic waves, which need unique atmospheric conditions to exist.

The MAVEN spacecraft, which has been observing Mars since 2014, helped in this discovery. This spacecraft has an instrument called the Langmuir Probe, designed to study the upper atmosphere and its interaction with solar wind. A team from the Swedish Institute of Space Physics, led by Dr. David Andrews, found a clear signal that matched a phenomenon known as a lightning whistler.

This finding is significant as it is the first detection of this type of wave on Mars, suggesting that lightning does occur during dust storms. These storms likely create static electricity when dust particles rub against each other. MAVEN monitored the signal at a height where Mars' unique magnetic field allowed these waves to escape into space.

Vocabulary List:

1. **electromagnetic** /ɪˌlɛktroʊ'mæɡnɛtɪk/ (adjective): Relating to electric and magnetic fields or their interactions; describing waves made of combined electric and magnetic components.
2. **low-frequency** /loʊ 'fri:kwənsi/ (adjective): Having a low rate of oscillation (few cycles per second); describing waves with long wavelengths and low energy.
3. **whistler** /'wɪslər/ (noun): A specific type of low-frequency electromagnetic wave produced by lightning and guided along a planet's magnetic field lines; detected as a characteristic signal by instruments.
4. **static electricity** /ˌstætɪk ɪˌlɛktri'sɪti/ (noun): Electric charge that builds up on surfaces often produced when materials rub together; a likely source of electrical activity in dust storms.
5. **solar wind** /'soʊlər wɪnd/ (noun): A stream of charged particles (plasma) emitted from the Sun's outer atmosphere that interacts with planetary atmospheres and magnetic fields.
6. **magnetic field** /mæɡ'nɛtɪk fi:ld/ (noun): The region around a magnet or moving electric charge where magnetic forces act; on planets it can guide charged particles and allow certain waves to travel into space.



Vocabulary quizzes

Multiple Choice (Select the Correct answer for each question.)

1. What is usually tested to ensure systems can work together?
Option: capability
Option: compatibility
Option: scalability
Option: reliability
2. What term refers to the permanent software programmed into a hardware device?
Option: software
Option: firmware
Option: malware
Option: application
3. What do we call materials or assets that can be utilized for various purposes?
Option: tools
Option: resources
Option: assets
Option: infrastructure
4. What term describes a journey undertaken for a specific purpose, often exploration?
Option: quest
Option: expedition
Option: mission
Option: voyage
5. What do we call the alteration of the original shape or appearance of something?
Option: distortion
Option: representation
Option: clarity
Option: alignment
6. What is the type of electricity that remains stationary until discharged?
Option: current electricity
Option: dynamic electricity
Option: static electricity
Option: induced electricity
7. What term is used to refer to sound waves with a lower frequency?



- Option: high-frequency
- Option: mid-frequency
- Option: low-frequency
- Option: ultrasonic

8. What is created around a magnet or a current-carrying conductor?

- Option: electric field
- Option: gravitational field
- Option: magnetic field
- Option: radiation field

9. What technology allows users to control devices through spoken commands?

- Option: remote control
- Option: manual control
- Option: voice control
- Option: fingerprint control

10. What term refers to areas located near the shore of a sea or ocean?

- Option: interior
- Option: rural
- Option: urban
- Option: coastal

Gap-Fill (Fill in the blanks with the correct word from the vocabulary list.)

11. The issue between the two parties was finally _____ after extensive discussions.
12. There has been significant _____ in technology over the past decade.
13. The new software is focused on _____ user experience and interface.
14. The unexpected _____ of the building shocked the entire city.
15. Language can often act as a _____ to effective communication.
16. Investigation was crucial to _____ the truth behind the incident.
17. The event was exclusive and required an _____ to attend.
18. Players were thrilled to receive _____ to the highly anticipated game.



19. The team is focused on _____ the data for better analysis.
20. The software update fixed several critical _____ that were affecting performance.

Matching Sentences (Match each definition to the correct word from the vocabulary list.)

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| 21. The whistler can produce a variety of melodic tones that are pleasing to the ear. |
| 22. Solar wind consists of charged particles released from the sun's atmosphere into space. |
| 23. Jellyfish are fascinating creatures known for their translucent bodies and ability to drift through water. |
| 24. A crystal is a solid material whose atoms are arranged in a highly ordered structure. |
| 25. The glow of the phosphorescent material illuminated the dark room beautifully. |
| 26. Proteins are vital macromolecules that perform a variety of functions in living organisms. |
| 27. Researchers are constantly exploring new methods to improve scientific understanding. |
| 28. Electromagnetic waves include a spectrum of radiation such as radio waves, microwaves, and X-rays. |
| 29. Static electricity can be observed when one rubs a balloon on their hair and it makes the hair stand up. |
| 30. A magnetic field is generated by moving electric charges and can influence the behavior of other magnets. |

Answer

Multiple Choice: 1. compatibility 2. firmware 3. resources 4. expedition 5. distortion 6. static electricity 7. low-frequency 8. magnetic field 9. voice control 10. coastal

Gap-Fill: 11. resolved 12. progression 13. enhancing 14. collapse 15. barrier 16. expose 17. invite-only 18. early access 19. categorising 20. bugs

Matching sentence: 1. whistler 2. solar wind 3. jellyfish 4. crystal 5. glow 6. protein 7. researchers 8. electromagnetic 9. static electricity 10. magnetic field

CATEGORY

1. Sci/Tech - LEVEL3

POST TAG



1. B1
2. esl news
3. Level 3
4. lightning
5. Mars
6. NASA
7. orbiter

Tags

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Date Created

2026/03/06

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