



Jupiter's Magnetic Tornadoes Create Earth-Sized Storms!

Description

Scientists have found something interesting on Jupiter. They discovered tornado-like storms that create big, dark patches in the planet's atmosphere. These patches are huge, like the size of Earth! They absorb ultraviolet light and are only visible in special light.

The dark patches were first seen by the Hubble Space Telescope around the poles of Jupiter in the late 1990s. Later, NASA's Cassini spacecraft confirmed them in 2000. At first, no one knew where they came from.

Now, a student named Troy Tsubota from the University of California, Berkeley, and his team have an answer. They believe these dark patches are made by swirling magnetic tornadoes. These tornadoes happen because of friction between magnetic fields on Jupiter.

The team studied images from Hubble taken from 2015 to 2022. They found dark patches at the south pole most of the time but saw one at the north pole only once.

These storms are different from the colorful auroras we see on Earth. The new research shows that the dark patches form and then disappear in a few weeks. This means Jupiter might be having its own tornadoes in space.

This study was published in the journal *Nature Astronomy* on November 26.

Vocabulary List:

1. **Atmosphere** /'æt.məs,fɪr/ (noun): The envelope of gases surrounding the planet.
2. **Ultraviolet** /,ʌltrə'vaɪlət/ (adjective): Having a wavelength shorter than visible light but longer than X-rays.
3. **Tornadoes** /tɔ:'neɪ.dəʊz/ (noun): Violently rotating columns of air extending from thunderstorms to the ground.
4. **Swirling** /'swɜ:rlɪŋ/ (verb): Moving in a twisting or spiraling pattern.
5. **Patches** /'pætʃɪz/ (noun): Pieces or areas of a surface that are different from the rest.
6. **Disappears** /,dɪs.ə'pɪrɪz/ (verb): Ceases to be visible or to exist.

Comprehension Questions



Multiple Choice

1. Where were the dark patches discovered on Jupiter?
 - Option: Around the equator
 - Option: Around the south pole
 - Option: Around the north pole
 - Option: On the moon Io
2. How were the dark patches first observed?
 - Option: By the naked eye
 - Option: Through a microscope
 - Option: Using the Hubble Space Telescope
 - Option: With a radio telescope
3. What happens to the dark patches in Jupiter's atmosphere?
 - Option: They emit visible light
 - Option: They absorb ultraviolet light
 - Option: They create colorful auroras
 - Option: They reflect sunlight
4. What did the team led by Troy Tsubota believe caused the dark patches on Jupiter?
 - Option: Swirling magnetic tornadoes
 - Option: Volcanic eruptions
 - Option: Alien spacecraft
 - Option: Chemical reactions
5. Where did the team study images of Jupiter to analyze the dark patches?
 - Option: From the Mars Rover
 - Option: From the ISS
 - Option: From Hubble taken between 2015 and 2022
 - Option: From a submarine
6. What was the duration of the dark patches formation and disappearance as mentioned in the research?
 - Option: Months
 - Option: Years
 - Option: Weeks
 - Option: Days



True-False

7. The dark patches on Jupiter were first observed by NASA's Cassini spacecraft.
8. The team led by Troy Tsubota studied images of Jupiter taken by the Hubble Space Telescope from 2012 to 2022.
9. The dark patches on Jupiter are similar to the colorful auroras seen on Earth.
10. Jupiter might have its own tornadoes in space according to the new research.
11. The dark patches on Jupiter are caused by volcanic eruptions.
12. The team led by Troy Tsubota is from Harvard University.

Gap-Fill

13. The dark patches on Jupiter were first seen by the Hubble Space Telescope around the poles in the late _____.
14. Troy Tsubota and his team analyzed images taken from Hubble between _____ and 2022.
15. According to the study, the dark patches on Jupiter form and disappear in a few _____.
16. The team confirmed that dark patches at the south pole of Jupiter were observed most of the time, while at the north pole, they were seen only _____.
17. The dark patches on Jupiter are believed to be made by swirling _____.
18. The research about the dark patches on Jupiter was published in the journal _____
Astronomy on November 26.



Answer

Multiple Choice: 1. Around the poles of Jupiter 2. Using the Hubble Space Telescope 3. They absorb ultraviolet light 4. Swirling magnetic tornadoes 5. From Hubble taken between 2015 and 2022 6. Weeks

True-False: 7. False 8. False 9. False 10. True 11. False 12. False

Gap-Fill: 13. 1990s 14. 2015 15. weeks 16. once 17. magnetic tornadoes 18. Nature

Vocabulary quizzes

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

1. What is a synonym for the word "Revealed"?

- Option: Hidden
- Option: Trade-in
- Option: Atmosphere
- Option: Ultra

2. Which natural disaster is characterized by swirling winds?

- Option: Storage
- Option: Ultraviolet
- Option: Tornadoes
- Option: Control

3. What do we often have to make in our daily lives?

- Option: Colors
- Option: Choices
- Option: Trade-in
- Option: Hidden

4. What is a synonym for the word "Promoting"?

- Option: Replace
- Option: Promoting
- Option: Disappears
- Option: Ultra

5. Who advocates for the protection and preservation of the environment?



Option: Conservationists

Option: Identify

Option: Atmosphere

Option: Exciting

6. What do we seek when we want information to be precise and correct?

Option: Accurate

Option: Characters

Option: Harmful

Option: Ascension

7. What do we do when we engage or communicate with others?

Option: Hidden

Option: Interact

Option: Conservationists

Option: Patches

8. What do we aim to have when managing a situation or process?

Option: Trade-in

Option: Control

Option: Ultra

Option: Campaign

9. What type of light is beyond the visible spectrum?

Option: Ultraviolet

Option: Swirling

Option: Trade-in

Option: Exciting

10. What action do we take when we acquire something in exchange for money?

Option: Buy

Option: Atmosphere

Option: Harmful

Option: Colors

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

11. Digital photos and videos often require large amounts of _____ space.

12. The layer of gases surrounding the Earth is known as the _____.



13. Painters use various _____ to create beautiful artworks.
14. Car dealers may offer a discount if you _____ your old vehicle.
15. The _____ of the hot air balloon was breathtaking to watch.
16. Software developers release updates and _____ to fix bugs.
17. Some athletes go through _____ training to enhance their performance.
18. Smoking is known to have _____ effects on one's health.
19. The new theme park ride promises an _____ experience for visitors.
20. When the sun sets the light gradually _____ from the sky.

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

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| 21. Treasure hunters search for artifacts in ancient ruins. |
| 22. When a part of a machine breaks it is necessary to the faulty component. |
| 23. The book features a wide range of diverse and interesting . |
| 24. Exploring a new city can be an adventure filled with surprises. |
| 25. To prevent errors it is crucial to accurately the correct items. |
| 26. The spy agency used technology to track the criminal's movements. |
| 27. The politician launched a new to raise awareness about environmental issues. |
| 28. The painter created a mesmerizing artwork with colorful patterns. |
| 29. Stamp enthusiasts often rare and unique stamps for their collection. |
| 30. Car owners can opt for a program when purchasing a new vehicle. |

Answer

- Multiple Choice:** 1. Hidden 2. Tornadoes 3. Choices 4. Promoting 5. Conservationists 6. Accurate 7. Interact
8. Control



9. Ultraviolet 10. Buy

Gap-Fill: 11. Storage 12. Atmosphere 13. Colors 14. Trade-in 15. Ascension 16. Patches 17. Ultra 18. Harmful
19. Exciting 20. Disappears

Matching sentence: 1. Hidden 2. Replace 3. Characters 4. Exciting 5. Identify 6. Ultra 7. Campaign 8. Swirling
9. Collect 10. Trade-in

CATEGORY

1. Sci/Tech - LEVEL1

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