



Mars Express Reveals Ancient Waterway's Dark Remains

Description

A newly released image from the European Space Agency (ESA) shows mysterious dark material in an ancient channel on Mars. This observation is significant because it provides insights into a region where water flowed billions of years ago.

The large channel, named Shalbatana Vallis, extends for nearly 800 miles (about 1,300 kilometres) across Mars. Scientists believe it formed when large amounts of liquid water carved into the rock during a wetter era around 3.5 billion years ago. The image shows a section of the valley that is about 6 miles wide and 0.3 miles deep. Over time, sediment and dust have filled parts of this channel, possibly making it shallower than it once was.

Shalbatana Vallis is one of the best examples of Mars' ancient water history. Research has confirmed that rivers and lakes existed on the planet, significantly changing our understanding of its past. The channel preserves evidence of catastrophic floods, caused by underground water bursting onto the surface, which quickly carved these valleys.

The new image reveals dark volcanic ash along the valley floor, likely moved by strong winds. Although Mars has no active volcanoes now, it once experienced significant volcanic activity, leaving behind layers of ash. This ash highlights the dual influence of water and volcanic processes on Mars's landscape.

The dark material is concentrated near a bulging area in the channel, which may have formed as underground ice melted. This region is scientifically valuable, linking volcanic activity and ancient ice with the possibility of past microbial life. As the ESA's Mars Express spacecraft continues its work, it will provide further insights into these intriguing features of the Martian landscape.

Vocabulary List:

1. **ancient** //ˈeɪnfənt// (adjective): very old, from a long time ago
2. **insights** //ˈɪnˌsaɪts// (noun): new or deeper understanding of something
3. **sediment** //ˈsedəmənt// (noun): small pieces of rock or soil left by water
4. **catastrophic** //ˌkætəˈstrəfɪk// (adjective): causing great damage or sudden disaster
5. **volcanic** //vɒlˈkæɪnɪk// (adjective): connected to volcanoes or their eruptions
6. **microbial** //maɪˈkrəʊbiəl// (adjective): related to very small living things

Comprehension Questions



Multiple Choice

1. What does the newly released image from the European Space Agency (ESA) show?

- Option: An ancient volcanic eruption
- Option: Mysterious dark material in a channel
- Option: Water rivers on Mars
- Option: New ice formations

2. What is the name of the large channel on Mars?

- Option: Valles Marineris
- Option: Shalbatana Vallis
- Option: Olympus Mons
- Option: Hellas Planitia

3. How long is the Shalbatana Vallis channel?

- Option: 500 miles
- Option: 800 miles
- Option: 1,000 miles
- Option: 1,300 miles

4. What did scientists believe carved the large channel on Mars?

- Option: Wind erosion
- Option: Ice flow
- Option: Liquid water
- Option: Volcanic activity

5. What significant evidence does Shalbatana Vallis provide?

- Option: Evidence of current water flow
- Option: Ancient water history
- Option: Metals in soil
- Option: Active geological processes

6. What is the depth of the section of the valley shown in the image?

- Option: 0.1 miles
- Option: 0.3 miles
- Option: 0.5 miles
- Option: 1 mile



True-False

7. Shalbatana Vallis extends for nearly 1,000 miles across Mars.
8. Mars currently has active volcanoes.
9. The dark material in the image is from a recent volcanic eruption.
10. The study of Shalbatana Vallis has changed our understanding of Mars' past.
11. Rivers and lakes are confirmed to have existed on Mars.
12. The ESA's Mars Express spacecraft is investigating the Martian landscape.

Gap-Fill

13. The large channel on Mars is named Shalbatana Vallis and extends for nearly _____ miles.
14. Shalbatana Vallis formed when large amounts of liquid water carved into the rock during a wetter era around _____ billion years ago.
15. The new image highlights dark volcanic _____ along the valley floor.
16. Evidence of catastrophic floods was caused by underground water bursting onto the _____ in Mars.
17. Sediment and dust have potentially made the channel _____ than it once was.
18. The region of dark material links volcanic activity and ancient ice with the possibility of past _____ life.

Answer

Multiple Choice: 1. Mysterious dark material in a channel 2. Shalbatana Vallis 3. 800 miles 4. Liquid water 5. Ancient water history



6. 0.3 miles

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

Gap-Fill: 13. 800 14. 3.5 15. ash 16. surface 17. shallower 18. microbial

Vocabulary quizzes

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

1. What phenomenon describes the circular movement of an object around its center?

- Option: Revolution
- Option: Rotation
- Option: Translation
- Option: Orbital path

2. Which term describes something that has never happened before?

- Option: Familiar
- Option: Routine
- Option: Common
- Option: Unprecedented

3. What is the term for the process of distributing something again or differently?

- Option: Allocation
- Option: Redistribution
- Option: Consolidation
- Option: Segregation

4. What unit of measurement is commonly used to quantify large amounts of carbon emissions?

- Option: Kilograms
- Option: Tonnes
- Option: Gigatonnes
- Option: Pounds

5. What type of force attracts two bodies toward each other in physics?

- Option: Electromagnetic
- Option: Frictional
- Option: Gravitational
- Option: Nuclear

6. What term refers to the layer of gases surrounding a planet?

- Option: Lithosphere
- Option: Hydrosphere



Option: Atmosphere

Option: Biosphere

7. What is the name of NASA's spacecraft that performed a close approach to a celestial body?

Option: Orbiter

Option: Probe

Option: Flyby

Option: Lander

8. What is the process of adjusting instruments to ensure accurate results called?

Option: Tuning

Option: Calibrating

Option: Testing

Option: Validating

9. What instrument is used to measure magnetic fields?

Option: Spectrometer

Option: Magnetometer

Option: Barometer

Option: Seismograph

10. What is the basic unit of biological classification?

Option: Genus

Option: Family

Option: Order

Option: Species

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

11. Certain blooms of phytoplankton can produce _____ substances that are harmful to marine life.

12. This fish species has a _____ appearance that sets it apart from others.

13. Some _____ volcanic eruptions have shaped the landscape we see today.

14. The river's _____ contribute to the local ecosystem's health.

15. Regular _____ of ocean temperatures helps scientists understand climate change.



16. _____ life plays a crucial role in nutrient cycling in various ecosystems.
17. Research on the ancient sediment provides new _____ into historical climate patterns.
18. The _____ activity in this region creates fertile soil for agriculture.
19. The species is classified under the _____ Asteraceae.
20. Some toxins produced by certain algae can have _____ effects on marine mammals.

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

21. Phytoplankton are microscopic organisms that perform photosynthesis in aquatic ecosystems.
22. The distribution of species affects biodiversity in ecosystems.
23. Space exploration has provided insights into the origins of our solar system.
24. Climate change is impacting weather patterns around the world.
25. Sediments can provide valuable information about past environmental conditions.
26. Living organisms are constantly interacting with their environment to survive.
27. Monitoring air quality is essential for public health and safety.
28. Catastrophic events, such as tsunamis, can have devastating effects on coastal communities.
29. The annual carbon emissions are measured in gigatonnes to understand their impact on climate change.
30. Genetic studies help us understand the evolutionary relationships between species.

Answer

Multiple Choice: 1. Rotation 2. Unprecedented 3. Redistribution 4. Gigatonnes 5. Gravitational 6. Atmosphere 7. Flyby 8. Calibrating 9. Magnetometer 10. Species

Gap-Fill: 11. toxic 12. distinct 13. ancient 14. outflows 15. monitoring 16. Microbial 17. insights 18. volcanic 19. genus 20. fatal

Matching sentence: 1. phytoplankton



2. distribution 3. exploration 4. climate 5. sediments 6. interacting 7. monitoring 8. catastrophic 9. gigatonnes 10. genetic

CATEGORY

1. Sci/Tech - LEVEL4

POST TAG

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2. B2
3. dark remains
4. ESL learning
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