



Discovering Mars: Ancient Beaches Point to Lost Oceans

Description

Mars, characterized by its parched and arid terrain, harbors a remarkable history that once boasted copious amounts of water, evidenced by the presence of vast oceans, as elucidated in a recent study. Observational data derived from ground-penetrating radar (GPR) has unveiled subterranean formations reminiscent of ancient shorelines on the red planet, dating back approximately four billion years. This discovery constitutes some of the most compelling evidence to date supporting the hypothesis that Mars once harbored a substantial northern sea.

The research team formally designated this primordial sea as Deuteronilus. “We are uncovering sites on Mars that exhibit characteristics akin to archaic beaches and river deltas,” asserted geologist Benjamin Cardenas from The Pennsylvania State University. “The evidence indicates the existence of wind, waves, and an abundance of sand—a quintessential beach environment.”

The enigmatic hydrology of Mars presents a conundrum; to the casual observer, the planet appears perpetually desiccated, its infamous global dust storms perpetuating the illusion of a barren landscape. Nonetheless, a compelling corpus of evidence increasingly affirms that Mars not only possessed liquid water at one juncture but that this water flowed profusely.

While there is consensus regarding the historical presence of water on Mars, myriad inquiries persist: What was the volume of this water? When did it recede? What processes facilitated its disappearance?

According to geophysicist Michael Manga from the University of California, Berkeley, “Oceans exert profound influences on climates, sculpt planetary surfaces, and constitute potentially habitable environments.” The exploration of Mars has been driven by a thematic imperative to “follow the water,” as it crucially informs our understanding of extraterrestrial life potential.

Employing data from the Chinese National Space Administration's Zhurong Mars rover, a collaborative Sino-American research team has illuminated that Mars, indeed, had sufficient water to create an oceanic expanse. The GPR technology employed enabled the assessment of subsurface geological structures, affirming suspicions of extensive liquid bodies that shaped the Martian landscape.

This groundbreaking discovery enhances the likelihood of past habitable conditions on Mars, warranting further exploration to seek remnants of erstwhile life forms.

Vocabulary List:

1. **Hypothesis** /haɪ'pɒθɪsɪs/ (noun): A proposed explanation for a phenomenon serving as a starting point for further investigation.
2. **Subterranean** /ˌsʌb.tə'reɪ.ni.ən/ (adjective): Existing occurring or done under the earth's surface.



3. **Desiccated** /'desɪkeɪtɪd/ (adjective): Lacking moisture; dried out.
4. **Profound** /prə'faʊnd/ (adjective): Having deep meaning or significance; intense.
5. **Corpus** /'kɔːrpəs/ (noun): A collection of written texts or a body of evidence.
6. **Remnants** /'rem.nənts/ (noun): Remaining parts or traces of something.

Comprehension Questions

Multiple Choice

1. What technology was used to unveil subterranean formations reminiscent of ancient shorelines on Mars?
Option: Telescope
Option: Satellite imaging
Option: Ground-penetrating radar (GPR)
Option: Sonar
2. Which geologist asserted the existence of characteristics akin to archaic beaches and river deltas on Mars?
Option: Benjamin Cardenas
Option: Michael Manga
Option: Ratan Naval Tata
Option: Zhurong Mars rover
3. What drives the exploration of Mars according to geophysicist Michael Manga?
Option: Follow the ice
Option: Follow the wind
Option: Follow the sand
Option: Follow the water
4. Which space agency provided data that illuminated Mars had sufficient water to create an oceanic expanse?
Option: NASA
Option: Roscosmos
Option: ISRO
Option: Chinese National Space Administration
5. What technology enabled the assessment of subsurface geological structures on Mars?
Option: Telescope



- Option: Satellite imaging
- Option: Ground-penetrating radar (GPR)
- Option: Sonar

6. What does the groundbreaking discovery regarding Mars enhance the likelihood of?

- Option: Time travel
- Option: Future colonization
- Option: Past habitable conditions
- Option: Alien invasions

True-False

- 7. Mars never possessed liquid water according to the text.
- 8. The enigmatic hydrology of Mars is easily understood.
- 9. Geophysicist Michael Manga believes oceans have no influence on climates.
- 10. The Chinese National Space Administration played no role in Mars exploration.
- 11. Mars had sufficient water to create an oceanic expanse based on the collaborative research.
- 12. Further exploration of Mars is unnecessary according to the text.

Gap-Fill

- 13. The research team designated the primordial sea on Mars as _____.
- 14. According to geophysicist Michael Manga, oceans exert profound influences on climates and sculpt planetary surfaces, and constitute potentially _____ environments.
- 15. The GPR technology enabled the assessment of subsurface _____ structures on Mars.



16. The exploration of Mars has been driven by a thematic imperative to “follow the _____,” according to the text.
17. The collaborative Sino-American research team provided evidence that Mars had sufficient water to create an _____ expanse.
18. The groundbreaking discovery has enhanced the likelihood of past _____ conditions on Mars.

Answer

Multiple Choice: 1. Ground-penetrating radar (GPR) 2. Benjamin Cardenas 3. Follow the water 4. Chinese National Space Administration 6. Past habitable conditions

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

Gap-Fill: 13. Deuteronilus 14. habitable 15. geological 16. water 17. oceanic

Vocabulary quizzes

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

1. Which term refers to the ability of a treatment to provide a beneficial effect?
- Option: Efficacy
 - Option: Misleading
 - Option: Skepticism
 - Option: Correlation
2. Which term is used to describe the study of diseases?
- Option: Profound
 - Option: Cognitive
 - Option: Pathology
 - Option: Hypothesis
3. Which term refers to a division or contrast between two things that are represented as being opposed or entirely different?
- Option: Skepticism
 - Option: Dichotomy



Option: Desiccated

Option: Resilience

4. Which term is related to the processes of thought and understanding?

Option: Pharmacological

Option: Cognitive

Option: Ecclesiastical

Option: Subterranean

5. Which term refers to urgent needs or demands?

Option: Hypothesis

Option: Ecclesiastical

Option: Exigencies

Option: Corpus

6. Which term refers to a collection of written texts especially the entire works of a particular author or a body of writing on a particular subject?

Option: Prohibition

Option: Correlation

Option: Interventions

Option: Corpus

7. Which term describes something that is short-lived or lasts for a very brief time?

Option: Deterioration

Option: Transmutes

Option: Ephemeral

Option: Illusive

8. Which term refers to a proposed explanation made on the basis of limited evidence as a starting point for further investigation?

Option: Hypothesis

Option: Profound

Option: Cannibalism

Option: Cherenkov

9. Which term refers to the act of one individual of a species consuming all or part of another individual of the same species?

Option: Cannibalism

Option: Remnants

Option: Ecclesiastical

Option: Cherenkov

10. Which term relates to the treatment or healing of a disease or disorder?



- Option: Desiccated
- Option: Therapeutic
- Option: Interventions
- Option: Exigencies

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

11. _____ effects of the medication were observed during the clinical trial.
12. _____ may lead to unnecessary medical interventions.
13. Her _____ and determination helped her overcome the challenges.
14. The speaker's words had a _____ impact on the audience.
15. Archaeologists uncovered ancient pottery _____ at the site.
16. The professor _____ the complex theory in a simple manner.
17. The garden was in full bloom displaying a _____ of colorful flowers.
18. The blue glow observed in the nuclear reactor is due to _____ radiation.
19. The mirage created an _____ appearance of water in the desert.
20. The advertisement was considered _____ as it did not accurately represent the product.

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

21. Medical procedures or strategies carried out to improve health outcomes.
22. Doubt or questioning regarding the validity or truth of something.
23. Dried out dehydrated or lacking vitality.
24. Relating to the study or use of drugs in treating diseases.
25. Existing or occurring beneath the surface of the earth.



26. A statistical measure indicating the extent to which two or more variables fluctuate together.
27. The process of becoming progressively worse or less valuable.
28. Relating to the Christian Church or its clergy.
29. This statistical technique determines the degree of relationship between two variables.
30. The team explored the depths of the cave system.

Answer

Multiple Choice: 1. Efficacy 2. Pathology 3. Dichotomy 4. Cognitive 5. Exigencies 6. Corpus 7. Ephemeral 8. Hypothesis 9. Cannibalism 10. Therapeutic

Gap-Fill: 11. Adverse 12. Overdiagnosis 13. Resilience 14. Profound 15. Remnants 16. Elucidated 17. Profusion 18. Cherenkov 19. Illusive 20. Misleading

Matching sentence: 1. Interventions 2. Skepticism 3. Desiccated 4. Pharmacological 5. Subterranean 6. Correlation 7. Deterioration 8. Ecclesiastical 9. Correlation 10. Subterranean

CATEGORY

1. Health - LEVEL6

Date Created

2025/02/25

Author

aimeeyoung99