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# Solar System's Journey Through Galactic Wave Unveiled

## Description

The Solar System, moving at a rapid pace of around 200 kilometres per second in relation to the Milky Way's center, has traversed various regions of our galaxy during its extensive journey. According to research findings, approximately 14 million years ago, the Solar System ventured through the Orion star-forming complex, part of the larger Radcliffe Wave structure.

This vast wave-like structure, discovered in 2020, is composed of gas and dust and houses numerous star-forming regions such as the Orion complex, Perseus, and Taurus molecular clouds. Stretching nearly 9000 light-years within the Milky Way's Orion arm, this structure significantly influenced the Solar System when it passed through it.

The denser environment of the Radcliffe Wave and the Orion complex compressed the Sun's heliosphere, permitting more interstellar dust to enter the Solar System and impact Earth's climate, leaving a lasting imprint on geological records. The deep connection between the Solar System's passage through these regions and the Middle Miocene Disruption, a period of extinctions that occurred around the same time, raises intriguing possibilities.

Moreover, the influx of interstellar dust potentially introduced anomalies into Earth's geological record and could have induced global cooling. This discovery sheds light on the intricate interplay between celestial events and our planet's climate history, underscoring the need for further interdisciplinary research. As we delve deeper into understanding these cosmic phenomena, we uncover new layers of Earth's historical interactions with the vast expanse of the cosmos, offering a broader perspective on the intricate dance between our planet, its climate, and the cosmos at large.

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## Vocabulary List:

1. **Traverse** /trə'vɜrs/ (verb): To travel across or through an area.
2. **Heliosphere** /'hi:.li.oo.sfi:r/ (noun): The region around the Sun influenced by its solar wind.
3. **Anomalies** /ə'nɒm.ə.li:z/ (noun): Deviations from what is standard normal or expected.
4. **Interstellar** /,ɪn.tər'stel.ər/ (adjective): Relating to or occurring between stars.
5. **Influenced** /'ɪn.flu.ənst/ (verb): Had an effect on or guided the actions of someone or something.
6. **Intricate** /'ɪn.trɪ.kət/ (adjective): Very detailed or complicated.

## Comprehension Questions



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## Multiple Choice

1. How fast does the Solar System move in relation to the Milky Way's center?
  - Option: 100 kilometres per second
  - Option: 200 kilometres per second
  - Option: 300 kilometres per second
  - Option: 400 kilometres per second
2. Approximately how many years ago did the Solar System venture through the Orion star-forming complex?
  - Option: 5 million years ago
  - Option: 10 million years ago
  - Option: 14 million years ago
  - Option: 20 million years ago
3. What is the name of the larger structure that houses the Orion star-forming complex?
  - Option: Orion Belt
  - Option: Hubble Bubble
  - Option: Radcliffe Wave
  - Option: Cosmic Veil
4. Which region significantly influenced the Solar System as it passed through the Radcliffe Wave structure?
  - Option: Taurus molecular clouds
  - Option: Orion complex
  - Option: Perseus
  - Option: Andromeda galaxy
5. How long is the Radcliffe Wave structure within the Milky Way's Orion arm?
  - Option: 6000 light-years
  - Option: 7000 light-years
  - Option: 8000 light-years
  - Option: 9000 light-years
6. What effect did the Radcliffe Wave and the Orion complex have on the Sun's heliosphere?
  - Option: Expansion
  - Option: Compression
  - Option: Erosion
  - Option: Stabilization



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**True-False**

7. The Radcliffe Wave structure was discovered in 2010.
8. The passage of the Solar System through the Orion complex had no impact on Earth's climate.
9. The Middle Miocene Disruption was a period of extinctions that coincided with the passage of the Solar System through the Orion complex.
10. Interstellar dust can introduce anomalies into Earth's geological records.
11. The Radcliffe Wave structure spans multiple arms of the Milky Way galaxy.
12. Further interdisciplinary research is not needed to understand the connection between celestial events and Earth's climate history.

**Gap-Fill**

13. The Solar System ventured through the Orion star-forming complex approximately \_\_\_\_\_ million years ago.
14. The Radcliffe Wave structure stretches nearly \_\_\_\_\_ light-years within the Milky Way's Orion arm.
15. The Middle Miocene Disruption occurred around the same time as the passage of the Solar System through the Orion complex in the year \_\_\_\_\_.
16. Interstellar dust influx potentially induced \_\_\_\_\_ cooling on Earth.
17. The discovery of the Radcliffe Wave structure sheds light on the intricate interplay between celestial events and Earth's \_\_\_\_\_ history.



18. Understanding the connection between celestial events and Earth's climate history requires further \_\_\_\_\_ research.

## Answer

**Multiple Choice:** 1. 200 kilometres per second 2. 14 million years ago 3. Radcliffe Wave 4. Orion complex 5. 9000 light-years 6. Compression

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

**Gap-Fill:** 13. 14 14. 9000 16. global 17. climate 18. interdisciplinary

## CATEGORY

1. Health - LEVEL5

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