

Climate Change Resulting in Increased Space Debris

Description

Within the vast expanse of outer space surrounding Earth, the ominous effects of climate change are poised to wreak havoc, as per a recent study conducted by MIT. The research suggests that as the planet continues to heat up due to the relentless combustion of coal, oil, and gas, the available space for satellites in low Earth orbit could dwindle by a staggering one-third to 82% by the century's end. The reasoning behind this alarming prediction lies in the escalating clutter of space debris, exacerbated by climate change impeding the natural mechanisms that purify the space environment.

A crucial aspect of this phenomenon is the greenhouse effect, which warms the lower atmosphere while simultaneously cooling the upper regions where satellites hover in low orbit. This cooling effect leads to a decrease in atmospheric density at higher altitudes, diminishing the drag that typically draws space debris back toward Earth, resulting in their eventual disintegration. This celestial garbage ranges from minuscule fragments barely larger than a penny to larger pieces with the impact force of a hurtling bus, posing a significant threat to operational satellites and space exploration missions.

The relentless increase in greenhouse gas emissions ushered into the atmosphere by human activities will only exacerbate this issue, causing a further decline in atmospheric density. In light of these projections, scientists emphasize the critical need to acknowledge and address the orbital consequences of climate change to safeguard the long-term sustainability of space activities. As Will Parker, the lead researcher at MIT, articulates, the reliance on the atmosphere to cleanse space debris underscores the urgency of implementing measures to preserve the integrity of Earth's orbit. In a realm inundated with millions of debris pieces, maintaining a delicate balance between technological advancement and environmental responsibility is paramount to secure the future of space exploration and satellite operations.

Vocabulary List:

- 1. Hazard /'hæz.ərd/ (noun): A danger or risk that can cause harm or damage.
- 2. **Debris** /də'bri:/ (noun): Scattered pieces of waste or remains.
- 3. Density /ˈdɛn.sɪ.ti/ (noun): The degree of compactness of a substance; mass per unit volume.
- 4. Exacerbate /ɪgˈzæs.ər.beɪt/ (verb): To make a problem or situation worse.
- 5. Clutter /'klʌt.ər/ (noun): A collection of things lying about in an untidy mass.
- 6. **Sustainability** /səˌsteɪ.nə'bɪl.ɪ.ti/ (noun): The ability to be maintained at a certain rate or level especially in relation to the environment.

Comprehension Questions



Multiple Choice

1. What type of debris poses a significant threat to operational satellites and space exploration missions?

Option: Plastic waste

Option: Celestial garbage

Option: Biodegradable materials

Option: Organic matter

2. What is the primary cause of the decreasing atmospheric density at higher altitudes where satellites hover?

Option: Reduction in solar activity Option: Increase in greenhouse gases

Option: Natural climate cycles Option: Growth of vegetation

SL-NEWS.COM 3. Who is the lead researcher at MIT mentioned in the text?

Option: Bill Johnson Option: Sarah Lee Option: Will Parker Option: Emily White

4. What is the key aspect of this celestial phenomenon that contributes to the issue of space debris?

Option: Greenhouse effect Option: Ozone depletion

Option: Acid rain

Option: Photosynthesis

5. What is the potential decrease in available space for satellites in low Earth orbit by the end of the century?

Option: 10% Option: 50% Option: 82% Option: 95%

6. What type of fuel combustion is mentioned as contributing to the heating of the planet?

Option: Hydrogen

Option: Coal, oil, and gas Option: Solar energy



Option: Wind power

Gap-Fill

13. The available space for satellites in low Earth orbit could dwindle by a staggering one-third to
by the century's end.
14. The chairman of Tata Group from 1990 to was Ratan Naval Tata.
15. The reliance on the atmosphere to cleanse space debris underscores the urgency of implementing
measures to preserve the integrity of Earth's
16. The escalating clutter of space debris is exacerbated by climate change impeding the natural
mechanisms that the space environment.
17. The decrease in atmospheric density at higher altitudes results in a reduction of
that draws space debris back toward Earth.
18. Maintaining a balance between technological advancement and environmental responsibility is
paramount for the future of space and satellite operations.
Answer
Multiple Choice: 1. Celestial garbage 2. Increase in greenhouse gases 3. Will Parker 4. Greenhouse effect 5. 82% 6. Coal, oil, and gas Gap-Fill: 13. 82% 14. 2012 15. orbit 16. purify 17. drag 18. exploration
Vocabulary quizzes

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

1. Which word best describes a gigantic and massive structure or object?

Option: Evolutionary



Option: Colossal Option: Perseverance Option: Promotional

2. Which term refers to the ability to recover quickly from setbacks or difficulties?

Option: Resilience Option: Protruding Option: Hazard Option: Debris

3. What does it mean to make a problem bad situation or negative feeling worse?

Option: Sustainability Option: Implications Option: Incomplete Option: Exacerbate

4. Which term means to leave or put something especially money in a bank account? VEWS.COM

Option: Influence Option: Density Option: Deposit

Option: Reevaluation

5. Which word best describes something astonishing or surprising?

Option: Intervention Option: Astounding Option: Tumultuous

Option: Clutter

6. Which term refers to the action of building or constructing something often a physical structure?

Option: Expectations Option: Erected Option: Gratitude

Option: Scale

7. What is the plural form of the word "phenomenon" often used to describe remarkable events or occurrences?

Option: Inspiration Option: Phenomena Option: Distinct Option: Perplexing

8. Which term describes the way in which two or more things affect each other when working together?

Option: Colossal



Option: Sustainability Option: Exacerbate Option: Interplay

9. What concept focuses on the ability to maintain or sustain a process or situation over time?

Option: Sustainability Option: Resilience Option: Providence Option: Implications

10. Which term refers to the persistence in doing something despite difficulty or delay in achieving success?

Option: Perseverance Option: Expectations

Option: Hazard Option: Debris

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

11	changes take place over a long period in	volving a series of stages.	
12. Expressing	towards others can enhance	social relationships.	
13. Setting realistic	can help in achieving pe	ersonal and professional goals.	
14. Ignoring safety protocols	can lead to increased risk of	in the workplace.	
15. Removing unnecessary i	tems can help in reducing	in your living space.	
16. High	of population in urban areas can lea	ad to various social challenges.	
17. Understanding the	of a decision is crucia	al before implementation.	
	a new campaign		
	period of political ur		
20. Many people believe in a higher power guiding events known as			
Matching Sentences (Match each definition to the correct word from the vocabulary list.)			
21. Each individual has a personality that sets them apart from others.			



- 22. The timely by the authorities prevented a major disaster.
- 23. Periodic of business strategies is essential for adapting to changing market conditions.
- 24. The story of her success served as an for many young entrepreneurs.
- 25. Setting goals can lead to disappointment and demotivation.
- 26. After the storm the beach was filled with washed ashore.
- 27. The company expanded its operations on a global reaching new markets.
- 28. The puzzle presented a challenge leaving many puzzled.
- 29. Her hard work and dedication earned her a well-deserved at work.
- 30. Construction sites are filled with potential that need to be managed.

Answer

Multiple Choice: 1. Colossal 2. Resilience 3. Exacerbate 4. Deposit 5. Astounding 6. Erected 7. Phenomena 8. Interplay 9. Sustainability 10. Perseverance

Gap-Fill: 11. Evolutionary 12. Gratitude 13. Expectations 14. Hazard 15. Clutter 16. Density 17. Implications 18. Promotional 19. Tumultuous 20. Providence

Matching sentence: 1. Distinct 2. Intervention 3. Reevaluation 4. Inspiration 5. Unrealistic 6. Debris 7. Scale 8. Perplexing 9. Promotion 10. Hazards

CATEGORY

1. Sci/Tech - LEVEL6

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