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## Urban areas rainier from heat and smog

### Description

A new study has found that many cities around the world receive more rain than their surrounding areas. This phenomenon, known as the urban rainfall effect, is similar to the urban heat island effect.

Researchers, led by Dev Niyogi from the University of Texas at Austin, analyzed satellite data on rainfall in 1056 cities and nearby rural areas between 2001 and 2020. They discovered that over 60% of cities were "wet islands," experiencing more rainfall than their surroundings. Some cities, like Ho Chi Minh City and Sydney, had more than 100 millimeters of additional rainfall per year compared to their surroundings.

The study also revealed that factors such as heat absorption by buildings, urban roughness, air pollution, and lack of vegetation influence how cities affect rainfall. Larger cities with higher populations were more likely to be wet islands, and cities in temperate, tropical, and coastal regions showed the largest rainfall anomalies.

Interestingly, the difference in rainfall between wet islands and their surroundings has nearly doubled over the study period, attributed to urbanization and climate change. While current weather models do not account for the impact of cities on rainfall, future city planning may consider this information to manage flooding and drought risks effectively.

Understanding the urban rainfall effect can help cities make informed decisions to mitigate extreme weather conditions.

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### Vocabulary List:

1. **Phenomenon** /fə'nomɪnən/ (noun): An observable event or occurrence.
2. **Absorption** /əb'zɔ:rpʃən/ (noun): The process of taking in or assimilating.
3. **Urbanization** /,ɜ:r.bən.ɪ'zeɪ.ʃən/ (noun): The process by which cities grow and populations increase in urban areas.
4. **Anomalies** /ə'nɒm.ə.lɪz/ (noun): Deviations from the norm or expected patterns.
5. **Mitigate** /'mɪt.ɪ.ɡeɪt/ (verb): To make something less severe serious or painful.
6. **Roughness** /'rʌf.nəs/ (noun): The quality of being uneven or harsh in texture.

### Comprehension Questions



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## Multiple Choice

1. What is the phenomenon discussed in the text that many cities around the world experience, receiving more rain than their surrounding areas?
  - Option: Urban Heat Island Effect
  - Option: Urban Rainfall Effect
  - Option: Global Warming Effect
  - Option: City Expansion Effect
2. Who led the research on urban rainfall effect as mentioned in the text?
  - Option: Dev Niyogi
  - Option: Jane Smith
  - Option: Michael Johnson
  - Option: Sarah Lee
3. What did the study find about larger cities with higher populations in relation to the urban rainfall effect?
  - Option: They are less likely to be wet islands
  - Option: They have lower rainfall anomalies
  - Option: They are more likely to be wet islands
  - Option: They have no impact on rainfall
4. Which regions showed the largest rainfall anomalies according to the study discussed?
  - Option: Arctic regions
  - Option: Desert regions
  - Option: Temperate, tropical, and coastal regions
  - Option: Mountainous regions
5. What factors were mentioned in the text as influencing how cities affect rainfall?
  - Option: Traffic congestion
  - Option: Lack of public transportation
  - Option: Heat absorption by buildings, urban roughness, air pollution, and lack of vegetation
  - Option: Industrial waste disposal
6. The difference in rainfall between wet islands and their surroundings has nearly doubled over the study period due to which factors?
  - Option: Economic factors
  - Option: Urbanization and climate change
  - Option: Natural disasters
  - Option: Technological advancements



## Answer

**Multiple Choice:** 1. Urban Rainfall Effect 2. Dev Niyogi 3. They are more likely to be wet islands 4. Temperate, tropical, and coastal regions 5. Heat absorption by buildings, urban roughness, air pollution, and lack of vegetation 6. Urbanization and climate change

## Vocabulary quizzes

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

1. What term describes the variety and differences among people in a community?  
Option: A) Unity  
Option: B) Harmony  
Option: C) Diversity  
Option: D) Uniformity
2. Which term refers to the application of scientific knowledge for practical purposes?  
Option: A) Innovation  
Option: B) Tradition  
Option: C) Technology  
Option: D) Preservation
3. What is the term for providing assistance or encouragement to someone or something?  
Option: A) Opposition  
Option: B) Isolation  
Option: C) Support  
Option: D) Neglect
4. Who is a person not serving in the military or police force?  
Option: A) Officer  
Option: B) Civilian  
Option: C) Enlistee  
Option: D) Mercenary
5. Which term means to make something less severe serious or painful?  
Option: A) Escalate  
Option: B) Worsen  
Option: C) Mitigate  
Option: D) Intensify



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6. What are inconsistencies or deviations from the norm or common rules called?
- Option: A) Patterns  
Option: B) Conformities  
Option: C) Regularities  
Option: D) Anomalies
7. What term describes the process of returning to a normal state after a period of difficulty?
- Option: A) Decline  
Option: B) Progress  
Option: C) Recovery  
Option: D) Deterioration
8. Which term describes feeling disappointed upset or discouraged because of the inability to achieve a goal?
- Option: A) Satisfied  
Option: B) Elated  
Option: C) Content  
Option: D) Frustrated
9. What term refers to the action or power of focusing one's attention or mental effort?
- Option: A) Scatter  
Option: B) Divergence  
Option: C) Absorption  
Option: D) Concentration
10. What is the invasion and multiplication of microorganisms in body tissues called?
- Option: A) Immunization  
Option: B) Infection  
Option: C) Vaccination  
Option: D) Sterilization

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

11. Efforts to \_\_\_\_\_ the environment for future generations are crucial.
12. During the emergency all residents were asked to \_\_\_\_\_ the area immediately.
13. The solar eclipse was a natural \_\_\_\_\_ that amazed the onlookers.
14. Fever and cough are common \_\_\_\_\_ of the flu.



15. The police are investigating the \_\_\_\_\_ of valuable artwork from the museum.
16. Overcoming obstacles can be a daunting \_\_\_\_\_ but also an opportunity for growth.
17. The hospital used a \_\_\_\_\_ solution for cleaning wounds.
18. \_\_\_\_\_ is the process of population shift from rural to urban areas.
19. Understanding the biological \_\_\_\_\_ behind diseases is crucial for effective treatment.
20. Plants get water and nutrients through the process of \_\_\_\_\_ from the soil.

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

21. The organization provided assistance and guidance to the struggling families in the community.
22. She took the _____ to organize a charity event to help raise funds for the homeless shelter.
23. The scientific team embarked on an extensive _____ of the uncharted territory in search of new species.
24. Winning the championship was a remarkable _____ for the young athlete.
25. The quick and efficient emergency _____ saved many lives during the natural disaster.
26. The successful project was the result of excellent teamwork and _____ among all members.
27. The company conducted a thorough audit to analyze its budget and expenditures.
28. The historical event had great _____ in shaping the future of the nation.
29. The young artist's _____ of different art styles greatly influenced her unique creations.
30. Due to the approaching hurricane the authorities ordered the residents to _____ the coastal region.

## Answer

**Multiple Choice:** 1. C) Diversity 2. C) Technology 3. C) Support 4. B) Civilian 5. C) Mitigate 6. D) Anomalies  
7. C) Recovery 8. D) Frustrated 9. D) Concentration 10. B) Infection

**Gap-Fill:** 11. sustain 12. evacuate 13. phenomenon 14. symptoms 15. theft 16. challenge 17. saline  
18. Urbanization 19. mechanisms 20. absorption

**Matching sentence:** 1. Support 2. Initiative 3. Exploration 4. Achievement 5. Response 6. Cooperation  
7. Financial



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8. Significance 9. Exploration 10. Evacuate

**CATEGORY**

1. Sci/Tech - LEVEL3

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