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IMPACT OF DROUGHT ON THE SHIVAJI UNIVERSITY CAMPUS: AN ASSESSMENT AND ANALYSIS

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Abstract: This study assesses and analyzes the impact of drought on the Shivaji University Campus. Drought, a recurring natural phenomenon, poses significant challenges to water availability and ecosystem health. The Shivaji University Campus, a microcosm of urban ecology, offers a unique opportunity to study the effects of drought on various aspects, including vegetation, water resources, and overall sustainability. Through a comprehensive assessment, combining remote sensing data, field surveys, and hydrological analysis, this research investigates the extent of drought impact and its ramifications. The findings contribute to our understanding of drought resilience in urban settings and inform potential mitigation strategies for maintaining a sustainable environment within the campus and its surroundings.

Keywords: Drought impact, Shivaji University Campus, water availability, urban ecology, sustainability, remote sensing, hydrological analysis, vegetation health, ecosystem resilience, mitigation strategies.

INTRODUCTION

Drought, characterized by prolonged periods of water scarcity due to reduced precipitation and increased evaporation, has far-reaching consequences on ecosystems, water resources, and human activities. The Shivaji University Campus, situated within a dynamic urban environment, provides an ideal setting to investigate the impact of drought on various aspects of its ecosystem. This study aims to assess and analyze the effects of drought on the Shivaji University Campus, shedding light on its implications for water availability, vegetation health, and overall sustainability. By understanding the nuances of drought impact within this localized context, valuable insights can be gained for better managing urban ecosystems and preparing for future water-related challenges.

METHODS

1. Study Area Selection:

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The Shivaji University Campus was chosen as the study area due to its diverse landscape, including built-up areas, green spaces, water bodies, and infrastructure. The campus provides a microcosm of urban ecology, making it an ideal location to observe the multifaceted impact of drought.

2. Remote Sensing Data Acquisition:

Remote sensing imagery, including satellite and aerial imagery, was collected for different time periods encompassing normal and drought conditions. These images provide a visual representation of changes in land cover, vegetation density, and water bodies over time.

3. Field Surveys and Data Collection:

Field surveys were conducted to gather on-ground data related to vegetation health, water availability, and other relevant factors. Observations were made regarding the condition of vegetation, water sources, and potential signs of drought stress.

4. Hydrological Analysis:

Hydrological analysis involved monitoring water levels in key water bodies within the campus. This data was used to assess the changes in water storage and availability during the drought period.

5. Data Integration and Analysis:

Remote sensing data, field survey findings, and hydrological data were integrated and analyzed using geospatial tools and statistical methods. The goal was to identify patterns, correlations, and trends that highlight the impact of drought on the campus ecosystem.

6. Comparison and Interpretation:

Comparisons were made between pre-drought and drought periods to discern changes in land cover, vegetation health, water availability, and other relevant parameters. The interpretation of these changes provided insights into the specific impacts of drought on the campus.

7. Mitigation Strategies and Recommendations:

Based on the findings, potential mitigation strategies and recommendations were developed to enhance drought resilience within the campus. These strategies encompassed sustainable water management, vegetation preservation, and infrastructural adjustments.

The combination of remote sensing data, field surveys, and hydrological analysis enables a comprehensive assessment of the impact of drought on the Shivaji University Campus. The insights gained from this study can inform not only the management of the campus environment but also contribute to broader discussions on urban drought resilience and sustainable ecosystem management.

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RESULTS

The assessment of the impact of drought on the Shivaji University Campus reveals significant changes across multiple aspects of the ecosystem. The combination of remote sensing data, field surveys, and hydrological analysis provides a comprehensive understanding of how the campus has been affected.

Vegetation Health: Remote sensing imagery indicates a decrease in vegetation density during the drought period. Areas that were once lush with greenery show signs of stress, including changes in color and reduced overall coverage.

Water Bodies: Hydrological analysis demonstrates a noticeable decline in water levels within campus water bodies. Ponds and reservoirs exhibit reduced storage capacities, with some smaller water bodies even drying up completely.

Land Cover Changes: Land cover analysis reveals shifts in land use patterns. Reduced water availability has led to changes in the types of vegetation and land use practices, affecting both aesthetic appeal and ecosystem functionality.

DISCUSSION

The observed impacts highlight the vulnerability of urban ecosystems, even within the context of a university campus, to prolonged drought conditions. The interconnectedness of vegetation health and water availability becomes evident, as water stress directly contributes to decreased vegetation vitality. This, in turn, affects the overall aesthetic and ecological value of the campus.

The decrease in water bodies' levels underscores the importance of water management strategies during drought periods. The reduced storage capacity of water bodies impacts the campus's ability to manage stormwater runoff, affecting both flood risk and overall landscape health.

CONCLUSION

The assessment and analysis of drought impact on the Shivaji University Campus provide valuable insights into the challenges faced by urban ecosystems during water scarcity events. The observed changes in vegetation health, water bodies, and land cover emphasize the need for proactive measures to enhance drought resilience.

The findings of this study have implications beyond the campus itself. They contribute to a broader understanding of how urban environments can be affected by drought and offer lessons for sustainable urban planning and ecosystem management. The importance of sustainable water management practices, including rainwater harvesting and efficient irrigation, becomes evident in mitigating the adverse effects of drought.

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