Editorial
Volume 13:2, 2022

Hydrology: Current Research

ISSN: 2157-7587

Open Access

Impacts of Climate Change on Water Harvesting Systems

Guofang Nasko*

Department of Forestry and Environmental Resources, North Carolina State University, Raleigh, North Carolina, USA

Editorial

Rainwater gathering was vital in ancient civilizations, particularly in arid settings. Even nations that have a favourable water balance between demand and adequate water resources are supporting RWH to promote city water self-sufficiency. During rainstorm events, RWH systems collect rainwater from contributing areas such as rooftops, terraces, and courtyards and store it in cisterns or tanks to furnish water for indoor or outdoor purposes. Rainwater can be collected and utilised in place of tap water for non-potable or potable purposes [1].

This usage can account for 80–90% of total home water use in cities; consequently, installing RWH systems can result in large water savings and reduce urban water supply constraints. RWH is also a member of the wide family of detention-based, source control storm water management systems such as Low Impact Development, Sustainable Drainage System, Water Sensitive Urban Design, and Sponge City. RWH implementation might lower both the quantities and peaks of urban runoff, relieve pressure on urban drainage systems, and lessen the environmental implications of urbanisation on receiving water bodies. Storm water management and water-saving efficiency of RWH systems are heavily influenced by site factors such as rainfall, contributing areas, and water needs [2].

Incorporating water needs and tank sizes with local climate conditions can increase storm water management and water saving effectiveness of RWH systems. As a result, the design of RWH systems is typically focused with establishing the best tank capacity to assure water supply and storm water management performance for the projected water demand under local rainfall circumstances. Over the last 20 years, modelling tools and methodologies have been developed to aid in the design and/or evaluation of RWH systems, such as the design storm approach, continuous simulations, analytical probabilistic approach, stochastic approach, linear programming approach, and nonlinear metaheuristic algorithm [3].

Local rainfall is one of the most important variables to consider when designing and evaluating RWH systems since it impacts the quantity of collectable rainwater generated from a particular contributing catchment. Most prior research used historical rainfall data to build and evaluate RWH systems. These studies, however, do not provide RWH users with appropriate insights into the predicted performance of RWH systems in terms of future rainfall circumstances in the context of climate change. At the global scale, a tendency toward increasingly unequal precipitation distribution has been observed, both geographically and temporally. Precipitation rose in most parts of China from 1951 to 2011. Precipitation is projected to grow significantly in northern and north eastern China in the early twentieth century, whereas precipitation looks to decline in southern China [4].

Rainfall is projected to increase in other Asian nations such as South Korea and Sri Lanka in the future. Recognizing that using historical rainfall data may not accurately size or evaluate RWH systems for possible future rainfall conditions, a number of recent studies have used stochastically-generated or General Circulation Models projected rainfall data to assess RWH system performances and create design cases.

However, these studies only looked at RWH systems' water-saving targets, not their storm water management success. Furthermore, research on the impacts of climate change on RWH is currently limited due to large differences in rainfall patterns and extents between locales. The purpose of this study is to investigate the impact of future climate change on stormwater volume control and the water-saving effectiveness of RWH systems in four climatic zones in China. GCMs' predicted future monthly rainfall at grid size is downscaled to daily rainfall at four sites using a downscaling technique based on a first-order, two-state Markov chain-based climate generator [5].

Conflict of Interest

None.

References

1. Pan, H.L., and L. Mahrt. "Interaction between soil hydrology and boundary-layer development." *Bound-lay Meteorol* 38 (1987): 185-202.

2. Alam, R., G. Munna, M. A. I. Chowdhury and M. S. K. A. Sarkar, et al. "Feasibility study of rainwater harvesting system in Sylhet City." *Environ Monit Assess* 184 (2012): 573-580.

3. Liang, Xiao, and Meine Pieter Van Dijk. "Economic and financial analysis on rainwater harvesting for agricultural irrigation in the rural areas of Beijing." *Resour Conserv Recycl* 55 (2011): 1100-1108.

4. Zhang, Shouhong, Jianjun Zhang, Tongjia Yue, and Xueer Jing. "Impacts of climate change on urban rainwater harvesting systems." *Sci Total Environ* 665 (2019): 262-274.

5. Kisakye, Violet, and Bart Van Der Bruggen. "Effects of climate change on water savings and water security from rainwater harvesting systems." *Resour Conserv Recycl* 138 (2018): 49-63.

***Address for Correspondence:** Guofang Nasko, Department of Forestry and Environmental Resources, North Carolina State University, Raleigh, North Carolina, USA, E-mail: guofang.niak@gmail.com*

Received: 19 February, 2022, Manuscript No. hycr-22-58876; **Editor Assigned:** 21 February, 2022, PreQC No. P-58876; **Reviewed:** 26 February, 2022, QC No. Q-58876; **Revised:** 03 March, 2022; Manuscript No R-58876; **Published:** 08 March, 2022, DOI: 10.4172/2157-7587.22.13.391.

How to cite this article: Nasko, Guofang. "Impacts of Climate Change on Water Harvesting Systems." *Hydrol Current Res* 13 (2022): 391.