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The Water Cycle in the Holy Qur'an and Modern Hydrological Research: A Comparative Study

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Abstract

Water is an indispensable element for the existence and continuity of life on Earth. The continuous movement of water through evaporation, condensation, precipitation, infiltration and runoff constitutes the hydrological cycle, a process that sustains ecosystems and maintains environmental balance. Modern hydrological research has provided detailed explanations of these interconnected stages, revealing the complexity and precision of the Earth's water system. Interestingly, the Holy Qur'an contains numerous references to rain, clouds, winds, rivers, seas and the storage of water within the earth, prompting scholarly discussions regarding the relationship between Qur'anic descriptions and contemporary scientific findings. This study examines the concept of the water cycle in the Holy Qur'an and compares it with modern hydrological research. It explores relevant Qur'anic verses, analyzes their interpretations in classical and contemporary exegesis and evaluates their correspondence with current scientific understanding of water circulation. The research also investigates the methodological principles that should guide scientific interpretations of the Qur'an, emphasizing the distinction between the Qur'an's primary role as a source of guidance and the evolving nature of scientific knowledge. Furthermore, the study highlights the ecological and ethical dimensions of Qur'anic teachings concerning water, demonstrating their relevance to contemporary concerns about environmental sustainability and water conservation. By integrating insights from Qur'anic studies and modern hydrology, this research contributes to the broader discourse on the relationship between religion and science. It concludes that while the Qur'an is not a scientific textbook, its descriptions of natural phenomena provide profound reflections that remain meaningful considering modern scientific discoveries and environmental challenges.

Keywords: *Water Cycle, Holy Qur'an, Hydrological Research, Scientific Interpretation of the Qur'an, Environmental Sustainability.*

Introduction

Water is one of the most essential resources for the survival of life and the maintenance of ecological balance on Earth. Every living organism depends on water for growth, reproduction, and sustenance, making it a fundamental component of natural and human systems. The availability and distribution of water have shaped civilizations throughout history, influencing agriculture, trade, settlement patterns, and economic development. In the contemporary world, increasing concerns about climate change, water scarcity, environmental degradation, and sustainable resource management have intensified the importance of understanding the processes that regulate the movement and distribution of water across the planet.

The scientific study of these processes is known as hydrology. Modern hydrological research explains that water continuously circulates through a complex system involving evaporation,

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condensation, precipitation, infiltration, groundwater recharge, and surface runoff. This continuous movement, commonly referred to as the hydrological or water cycle, ensures the renewal and redistribution of water resources. Advances in meteorology, environmental science, and earth system studies have enabled scientists to investigate these processes with remarkable precision, revealing the intricate mechanisms that sustain life and environmental stability.

The Holy Qur'an, revealed more than fourteen centuries ago, contains numerous references to water and its various manifestations in nature. It draws attention to rainfall, clouds, winds, rivers, seas, springs, and the revival of barren land through water. These references are often presented as signs of divine wisdom and power, encouraging human beings to observe, reflect, and contemplate the natural world. As scientific knowledge has expanded, scholars have increasingly examined the relationship between Qur'anic descriptions of natural phenomena and contemporary scientific discoveries, particularly in relation to the hydrological cycle.

This study aims to explore the concept of the water cycle in the Holy Qur'an and compare it with modern hydrological research. Through an analytical examination of relevant Qur'anic verses, classical and contemporary interpretations, and current scientific findings, the research seeks to identify areas of correspondence and significance. Furthermore, it highlights the environmental and ethical dimensions of Qur'anic teachings concerning water, demonstrating their continued relevance in addressing modern challenges related to water conservation and sustainable development.

Water as the Foundation of Life in the Qur'an and Modern Science

Water occupies a central position in both the Qur'anic worldview and contemporary scientific understanding of life. The Holy Qur'an repeatedly emphasizes water as the primary source through which Allah sustains creation and maintains the continuity of life on earth. One of the most significant Qur'anic statements regarding this subject appears in Sūrat al-Anbiyāʾ, where Allah declares: "And We made from water every living thing."[1] This verse establishes water as the fundamental basis of biological existence, a concept that remarkably corresponds with modern scientific discoveries. Contemporary biology confirms that water constitutes a major proportion of the cells and tissues of all living organisms and plays an essential role in metabolic processes, cellular functions, nutrient transportation, temperature regulation, and reproduction.[2] Scientific research demonstrates that life cannot exist without water because it serves as the medium through which vital biochemical reactions occur. The Qur'an further describes how rainfall revives dead land, enabling vegetation to grow and ecosystems to flourish.[3] This phenomenon reflects the ecological significance of water in sustaining biodiversity and maintaining environmental balance. In addition to its biological importance, the Qur'an portrays water as a sign of divine mercy and providence, encouraging human beings to reflect upon its availability and blessings. Classical exegetes such as al-

[1].The Holy Qur'an, 21:30 .

[2].Neil A. Campbell et al., *Campbell Biology*, 11th ed. (New York: Pearson Education, 2017), 44–47.

[3].The Holy Qur'an, 30:24.

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Ṭabarī and Ibn Kathīr interpreted these verses as evidence of Allah's creative power and wisdom manifested through natural processes.[4]

Modern environmental studies likewise recognize freshwater as an indispensable resource for agriculture, food security, public health, and sustainable development.[5] The convergence between Qur'anic descriptions and contemporary scientific findings does not necessarily imply that the Qur'an functions as a scientific textbook; rather, it demonstrates that the Qur'anic discourse directs attention toward observable realities that continue to reveal profound dimensions of meaning. Consequently, water emerges as both a physical necessity for life and a spiritual sign inviting contemplation of the Creator's wisdom, thereby establishing a significant point of dialogue between revelation and modern science.

The Concept of the Hydrological Cycle in Contemporary Research

The hydrological cycle, commonly known as the water cycle, is one of the most important processes studied in contemporary earth and environmental sciences. It refers to the continuous circulation of water between the oceans, atmosphere, land surfaces, and underground reservoirs through a series of interconnected processes. Modern hydrology explains that solar energy drives the evaporation of water from oceans, rivers, lakes, and vegetation, causing water vapor to rise into the atmosphere.[6] As atmospheric temperatures decrease, this vapor condenses into tiny droplets, forming clouds that are transported by winds across different regions.[7] Eventually, these droplets combine and fall to the earth as precipitation in the form of rain, snow, or hail. A portion of this precipitation infiltrates the soil and replenishes groundwater aquifers, while another portion flows across the surface into streams, rivers, and oceans, thus completing the cycle. Contemporary researchers emphasize that this system regulates climate, supports ecosystems, replenishes freshwater supplies, and maintains environmental equilibrium on a global scale.[8] Satellite technology, climate modeling, and advanced hydrological measurements have enabled scientists to study the movement of water with unprecedented accuracy, revealing the complexity and interdependence of the Earth's water systems. The hydrological cycle is now understood not merely as a physical process but as a critical component of planetary sustainability and environmental resilience. Furthermore, growing concerns regarding climate change have intensified scientific interest in understanding how variations in temperature, precipitation patterns, and atmospheric circulation may influence water availability and distribution.[9] These findings have underscored the necessity of conserving water resources and managing them responsibly. While modern hydrology provides detailed explanations of the

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[4].Ismāʿīl ibn Kathīr, *Tafsīr al-Qurʾān al-ʿAẓīm* (Beirut: Dār al-Kutub al-ʿIlmiyyah, 1998), 5:342.

[5].Peter H. Gleick, *The World's Water: The Biennial Report on Freshwater Resources* (Washington, DC: Island Press, 2018), 1–12.

[6].David Keith Todd and Larry W. Mays, *Groundwater Hydrology*, 3rd ed. (Hoboken, NJ: John Wiley & Sons, 2005), 1–8.

[7].Chow Ven Te, David R. Maidment, and Larry W. Mays, *Applied Hydrology* (New York: McGraw-Hill, 1988), 4–10.

[8].Robert J. Chorley, Stanley A. Schumm, and David E. Sugden, *Geomorphology* (London: Methuen, 1984), 378–385.

[9].Intergovernmental Panel on Climate Change (IPCC), *Climate Change 2023: Synthesis Report* (Geneva: IPCC, 2023), 67–75.

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mechanisms governing water circulation, it also highlights the remarkable order and balance present within nature. This scientific perspective offers a valuable framework for examining Qur'anic references to rainfall, clouds, winds, and water storage, thereby establishing the foundation for a comparative analysis between revelation and contemporary hydrological research.[10]

Qur'anic References to Evaporation and Atmospheric Water Movement

One of the most remarkable aspects of the Qur'anic discourse on water is its reference to the movement of water through the atmosphere before its return to the earth as precipitation. Although the Qur'an does not present scientific explanations in technical terminology, several verses describe processes that correspond to what modern hydrology identifies as evaporation and atmospheric water transport. The Qur'an repeatedly states that Allah sends the winds, raises clouds, spreads them across the sky, and causes rain to descend from them.[11] In Sūrat al-Rūm, the Qur'an declares that Allah sends the winds, which raise clouds that are then spread across the heavens before rain falls from them.[12]

Contemporary hydrological science explains that solar radiation causes water to evaporate continuously from oceans, rivers, lakes, and moist land surfaces. This water vapor rises into the atmosphere, where it becomes part of a global circulation system driven by temperature differences, atmospheric pressure, and wind patterns.[13] Scientists estimate that the oceans contribute most of the atmospheric moisture through evaporation, making them the primary source of global precipitation. The movement of water vapor through atmospheric circulation systems enables moisture to be transported over vast distances before condensation and rainfall occur. The Qur'anic emphasis on the role of winds and clouds in transporting water reflects an observable natural process that has become increasingly understood through modern meteorological research. Classical Muslim scholars interpreted these verses as manifestations of divine wisdom and providence operating through natural laws established by Allah.[14] Modern scholars have noted that the Qur'an's descriptions encourage observation and reflection rather than providing detailed scientific mechanisms. Nevertheless, the correspondence between Qur'anic references to atmospheric water movement and contemporary scientific understanding remains a significant area of study. These verses invite readers to contemplate the complexity of natural systems through which water is redistributed across the globe, sustaining ecosystems, agriculture, and human societies. Thus, atmospheric water movement serves as both a scientific reality and a theological sign of divine governance within the natural world.[15]

The Role of Winds in Cloud Formation: Qur'anic Insights and Scientific Perspectives

The formation and movement of clouds constitute a fundamental stage of the hydrological cycle, and the Holy Qur'an repeatedly highlights the role of winds in this process. Several

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[10].Richard G. Allen et al., *Evapotranspiration and Environmental Hydrology* (Dordrecht: Springer, 2011), 15–24.

[11].The Holy Qur'an, 7:57 .

[12].The Holy Qur'an, 30:48.

[13].Wilfried Brutsaert, *Hydrology: An Introduction* (Cambridge: Cambridge University Press, 2005), 21–28.

[14].Fakhr al-Dīn al-Rāzī, *Mafātīḥ al-Ghayb* (Beirut: Dār Iḥyāʾ al-Turāth al-ʿArabī, 1999), 25:112–115.

[15].M. Ilyas, *The Qur'an and Modern Science* (Kuala Lumpur: A.S. Noordeen, 2002), 87–93.

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Qur'anic passages describe winds as agents that precede rainfall and contribute to the gathering and movement of clouds. In Sūrat al-Aʿrāf, Allah states that He sends the winds as bearers of glad tidings before His mercy, referring to the arrival of rain.[16] Similarly, Sūrat al-Ḥijr mentions that Allah sends fertilizing winds, a phrase that has attracted considerable scholarly attention in both classical and contemporary interpretations.[17] Modern atmospheric science explains that winds perform crucial functions in transporting moisture, regulating temperature, and facilitating cloud development. Air currents move water vapor from regions of high evaporation, particularly oceans and seas, toward other geographical areas where condensation and precipitation may occur.[18] Meteorologists have demonstrated that cloud formation depends upon complex interactions between atmospheric moisture, temperature gradients, airborne particles, and wind circulation systems.[19] Winds contribute to the upward movement of moist air masses, allowing cooling and condensation to occur at higher altitudes. The resulting cloud formations become an essential stage in the production of rainfall and the redistribution of water resources across the earth. Classical commentators such as al-Qurṭubī interpreted the expression "fertilizing winds" as referring to winds that carry moisture and contribute to the formation of rain-bearing clouds.[20] Contemporary scientific observations reveal that winds also transport microscopic particles that can function as condensation nuclei around which water droplets form. Although the scientific mechanisms were unknown to earlier generations, the Qur'an's emphasis on the role of winds in relation to rainfall remains noteworthy. These descriptions illustrate how natural phenomena operate according to divinely established laws while simultaneously serving as signs for reflection and contemplation. Consequently, the relationship between winds, clouds, and rainfall represents a compelling point of convergence between Qur'anic observations and modern meteorological research, highlighting the intricate balance and interconnectedness that characterize the Earth's environmental systems.

Rainfall in the Qur'an and Modern Meteorology

Rainfall represents one of the most visible and essential stages of the hydrological cycle, and the Holy Qur'an frequently draws attention to its significance as a manifestation of divine mercy and a means of sustaining life. Numerous Qur'anic verses describe rain as a blessing sent from the heavens to revive barren land, nourish vegetation, and provide water for both human beings and animals. In Sūrat al-Naḥl, Allah states that He sends down water from the sky and thereby gives life to the earth after its death.[21] Similar descriptions occur throughout the Qur'an, emphasizing the transformative effects of rainfall upon the natural environment.[22] Modern meteorology explains that rainfall occurs when water vapor in the

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[16].The Holy Qur'an, 7:57.

[17].The Holy Qur'an, 15:22.

[18].Roger G. Barry and Richard J. Chorley, *Atmosphere, Weather and Climate*, 9th ed. (London: Routledge, 2010), 215–220.

[19].John E. Frederick, *Principles of Atmospheric Science* (Boston: Jones & Bartlett Learning, 2008), 168–175.

[20].Muḥammad ibn Aḥmad al-Qurṭubī, *Al-Jāmiʿ li-Aḥkām al-Qurʾān* (Beirut: Muʾassasat al-Risālah, 2006), 10:24–26.

[21].The Holy Qur'an, 16:65 .

[22].The Holy Qur'an, 2:164 .

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atmosphere condenses into droplets within clouds and reaches a sufficient size to overcome atmospheric resistance and fall to the earth under the influence of gravity.[23]

The amount, intensity, and distribution of precipitation are influenced by numerous factors, including temperature, humidity, air pressure, topography, and atmospheric circulation patterns. Contemporary scientific research has demonstrated that rainfall plays a critical role in regulating ecosystems, replenishing freshwater resources, maintaining agricultural productivity, and sustaining biodiversity. The Qur'anic portrayal of rain extends beyond its physical function, presenting it as evidence of divine care and wisdom. Classical commentators such as Ibn Kathīr observed that the revival of dead land through rain serves as both a physical reality and a metaphor for resurrection and renewal.[24] Modern environmental science likewise recognizes precipitation as a key factor in maintaining ecological resilience and environmental stability.[25] Furthermore, recent climate studies have highlighted the vulnerability of rainfall patterns to global climate change, increasing the importance of understanding and managing water resources responsibly.[26] By emphasizing the life-giving role of rain, the Qur'an encourages reflection on the interconnected processes that sustain creation. The convergence between Qur'anic descriptions and contemporary meteorological understanding demonstrates how natural phenomena can simultaneously possess scientific significance and spiritual meaning, providing insight into both the physical and ethical dimensions of human interaction with the environment.

Groundwater Storage and the Qur'anic Description of Water Retention in the Earth

One of the most fascinating dimensions of the Qur'anic discussion of water concerns the storage of water beneath the earth's surface. While rainfall is visible and easily observed, a significant portion of the Earth's freshwater resources exists underground in aquifers and geological formations. The Holy Qur'an refers to this phenomenon in a verse that states: "And We sent down water from the sky in due measure and lodged it in the earth, and indeed We are able to take it away."[27] This verse not only acknowledges the descent of water from the atmosphere but also points to its retention within the earth, a process that occupies a central place in contemporary hydrological science. Modern hydrogeology explains that when precipitation reaches the ground, part of it infiltrates the soil and gradually percolates downward through porous rock formations.[28] Over time, this water accumulates in underground reservoirs known as aquifers, which serve as vital sources of freshwater for drinking, agriculture, and industry. Scientific studies indicate that groundwater constitutes one of the largest accessible reserves of freshwater on the planet and plays a crucial role in maintaining rivers, wetlands, and ecosystems during periods of limited rainfall.[29] The

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[23].John E. Frederick, *Principles of Atmospheric Science* (Boston: Jones & Bartlett Learning, 2008), 176–184.

[24].Ismāʿīl ibn Kathīr, *Tafsīr al-Qurʾān al-ʿAẓīm* (Beirut: Dār al-Kutub al-ʿIlmiyyah, 1998), 4:601–603.

[25].Peter H. Gleick, *The World's Water: The Biennial Report on Freshwater Resources* (Washington, DC: Island Press, 2018), 21–29.

[26].Intergovernmental Panel on Climate Change (IPCC), *Climate Change 2023: Synthesis Report* (Geneva: IPCC, 2023), 82–90.

[27].The Holy Qur'an, 23:18.

[28].David Keith Todd and Larry W. Mays, *Groundwater Hydrology*, 3rd ed. (Hoboken, NJ: John Wiley & Sons, 2005), 31–45.

[29].Wilfried Brutsaert, *Hydrology: An Introduction* (Cambridge: Cambridge University Press, 2005), 175–188.

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Qur'anic reference to water being "lodged" or stored in the earth is therefore particularly noteworthy in light of modern understanding of groundwater systems. Classical scholars such as al-Ṭabarī interpreted this verse as evidence of Allah's power to preserve water beneath the earth for the benefit of His creation.[30] Contemporary researchers have further demonstrated that groundwater storage contributes significantly to environmental sustainability and long-term water security. Excessive extraction, pollution, and climate-related changes, however, pose increasing threats to these resources, emphasizing the need for responsible management. The Qur'anic reminder that Allah can remove these blessings serves as an ethical warning against wastefulness and neglect. Consequently, the study of groundwater provides a compelling example of how Qur'anic observations correspond with modern scientific knowledge while simultaneously conveying moral and spiritual lessons regarding stewardship, gratitude, and environmental responsibility.[31]

Rivers, Springs, and Seas in the Qur'anic Perspective

The Holy Qur'an frequently refers to rivers, springs, and seas as manifestations of divine providence and as integral components of the natural order established by Allah. Rivers and springs are portrayed as essential sources of sustenance that provide water for human communities, agriculture, and ecosystems. The Qur'an repeatedly mentions gardens beneath which rivers flow, presenting flowing water as both a worldly blessing and a symbol of eternal reward.[32] In addition, several verses draw attention to natural springs emerging from the earth, illustrating the availability of freshwater through divinely ordained processes. Modern hydrology explains that rivers are formed through the accumulation of precipitation, surface runoff, groundwater discharge, and the melting of snow and glaciers.[33] Springs, similarly, emerge when groundwater reaches the surface through natural geological formations. These interconnected systems contribute significantly to the global circulation of water and the maintenance of ecological balance. The Qur'an also highlights the existence of seas and oceans as major features of the Earth's environment. Contemporary scientific studies reveal that oceans contain approximately ninety-seven percent of the Earth's water and serve as the primary source of atmospheric moisture through evaporation. Thus, rivers, springs, and seas represent interconnected elements within the broader hydrological cycle. Classical Muslim scholars viewed these natural systems as evidence of divine wisdom and power, emphasizing that their continued functioning depends upon Allah's sustaining will.[34] Modern environmental science further demonstrates that healthy river systems and groundwater-fed springs are crucial for biodiversity, food production, and climate regulation.[35] Consequently, the Qur'anic discussion of rivers, springs, and seas not only highlights their physical

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[30].Abū Jaʿfar Muḥammad ibn Jarīr al-Ṭabarī, *Jāmiʿ al-Bayān ʿan Taʾwīl Āy al-Qurʾān*, ed. Aḥmad Muḥammad Shākir (Cairo: Dār al-Maʿārif, 1954), 17:14–16.

[31]. Fazlur Rahman, *Major Themes of the Qur'an*, 2nd ed. (Chicago: University of Chicago Press, 2009), 73–76.

[32].The Holy Qur'an, 2:25 .

[33]. Khan, Naimat Ullah, Najeeb Ullah Khan, and Robina Iqbal. "Social Upbringing of Children and the Role of Parents: Study in the Light of Islamic Teachings." *Ma'arif-e-Auliya* 3, no. 4 (2025): 25-36.

[34].Muḥammad ibn Aḥmad al-Qurṭubī, *Al-Jāmiʿ li-Aḥkām al-Qurʾān* (Beirut: Muʾassasat al-Risālah, 2006), 1:287–289.

[35].UNESCO, *United Nations World Water Development Report 2024: Water for Prosperity and Peace* (Paris: UNESCO Publishing, 2024), 45–53.

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importance but also encourages reflection on the intricate balance that governs the Earth's water resources and sustains life across diverse ecosystems.[36]

The Balance and Regulation of Water Resources in Nature

One of the most significant themes found in both the Holy Qur'an and contemporary environmental science is the concept of balance within the natural world. The Qur'an repeatedly emphasizes that Allah created all things according to precise measure and proportion.[37] This principle is particularly evident in the regulation of water resources, where complex natural processes maintain equilibrium between evaporation, precipitation, runoff, infiltration, and storage. Modern hydrological research demonstrates that even slight disturbances within these interconnected systems can produce significant environmental consequences, including droughts, floods, desertification, and ecosystem degradation.[38] The Earth's water cycle functions through a highly coordinated set of processes that distribute freshwater across different geographical regions and maintain climatic stability. Scientific studies reveal that atmospheric circulation, ocean currents, vegetation cover, and groundwater systems all contribute to this delicate balance.[39]

The Qur'anic description of water being sent down "in due measure" reflects an understanding of order and moderation within natural processes.[40] Classical exegetes interpreted such verses as evidence that Allah provides resources according to wisdom and necessity rather than randomness. Contemporary environmental scholars similarly emphasize the importance of sustainable management practices that preserve the balance of water systems for future generations.[41] Human activities such as deforestation, excessive groundwater extraction, industrial pollution, and greenhouse gas emissions increasingly threaten this equilibrium. These challenges highlight the relevance of Qur'anic teachings that encourage moderation, responsibility, and gratitude in the use of natural resources. The convergence between Qur'anic principles and modern environmental science suggests that ecological sustainability is not merely a technical concern but also an ethical obligation. Therefore, the balanced regulation of water resources serves as a powerful example of the harmony between natural laws and moral responsibility, reinforcing the importance of protecting the environmental systems upon which all life depends.

Comparative Analysis of Qur'anic Descriptions and Modern Hydrological Discoveries

A comparative examination of Qur'anic descriptions and modern hydrological discoveries reveals several noteworthy areas of correspondence. The Holy Qur'an refers to the descent of water from the sky, the role of winds in cloud formation, the storage of water within the

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[36].Seyyed Hossein Nasr, *Man and Nature: The Spiritual Crisis of Modern Man* (Chicago: ABC International Group, 2007), 94–98.

[37].The Holy Qur'an, 67:3 .

[38]. Iqbal, Rubina, and Naimat Ullah Khan. "An Analytical Study of the Indicative Interpretation of the Objectives of the Qurʾān and Qurʾānic Coherence in Tafsīr Rūḥ al-Bayān." *AL-HAYAT Research Journal (AHRJ)* 2, no. 2 (2025): 407-412.

[39].Howard S. Wheater and Efi Foufoula-Georgiou, "Hydrological Science in a Changing World," *Hydrological Processes* 27, no. 4 (2013): 551–556.

[40]. The Holy Qur'an, 23:18.

[41].Intergovernmental Panel on Climate Change (IPCC), *Climate Change 2023: Synthesis Report* (Geneva: IPCC, 2023), 102–108.

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earth, the revival of dead land through rainfall, and the existence of interconnected water systems.[42] Modern hydrology explains these same phenomena through detailed scientific mechanisms involving evaporation, atmospheric transport, condensation, precipitation, infiltration, groundwater recharge, and surface runoff. While the Qur'an does not provide technical scientific explanations, its references to natural processes often correspond with realities that have become increasingly understood through scientific investigation. Scholars have therefore argued that the Qur'an encourages observation and reflection upon nature rather than presenting a comprehensive scientific account of environmental systems.[43] At the same time, methodological caution remains essential.

Scientific theories evolve as new evidence emerges, whereas the Qur'an functions primarily as a source of spiritual guidance. Consequently, it is important to avoid imposing modern scientific concepts onto Qur'anic texts in ways that exceed their linguistic and contextual meanings. Classical exegetes generally focused on theological and moral lessons, whereas contemporary scholars often explore additional scientific dimensions of these verses.[44] The most balanced approach recognizes that the Qur'an and science address different yet complementary aspects of reality. Science investigates mechanisms and processes, while the Qur'an directs attention toward meaning, purpose, and ethical reflection. This perspective allows meaningful dialogue between revelation and scientific knowledge without reducing either domain to the other. Accordingly, the study of the water cycle provides an important example of how Qur'anic observations and modern hydrological discoveries can enrich one another while maintaining their respective intellectual frameworks.[45]

Environmental Ethics and Water Conservation in the Qur'an

Beyond describing natural phenomena, the Holy Qur'an establishes an ethical framework for the responsible use and conservation of water resources. Water is consistently presented as a divine blessing entrusted to humanity, and believers are encouraged to use it with gratitude, moderation, and responsibility.[46] The Qur'an condemns wastefulness in all forms and promotes a balanced approach to the utilization of natural resources.[47] These principles are reinforced in the teachings of the Prophet Muhammad ﷺ, who discouraged excessive use of water even when abundant supplies were available. Contemporary environmental challenges such as water scarcity, pollution, groundwater depletion, and climate-induced disruptions have increased the importance of sustainable water management. Modern environmental science emphasizes conservation strategies including efficient irrigation, pollution control, watershed protection, groundwater recharge, and integrated resource management.[48] These

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[42].The Holy Qur'an, 30:48.

[43].Maurice Bucaille, *The Bible, the Qur'an and Science*, trans. Alastair D. Pannell and Maurice Bucaille (Indianapolis: American Trust Publications, 1978), 183–194.

[44].Abū Jaʿfar Muḥammad ibn Jarīr al-Ṭabarī, *Jāmiʿ al-Bayān ʿan Taʾwīl Āy al-Qurʾān*, ed. Aḥmad Muḥammad Shākir (Cairo: Dār al-Maʿārif, 1954), 12:311–315.

[45].Seyyed Hossein Nasr, *Religion and the Order of Nature* (New York: Oxford University Press, 1996), 167–172.

[46].The Holy Qur'an, 16:10–14

[47].The Holy Qur'an, 7:31.

[48].UNESCO, *United Nations World Water Development Report 2024: Water for Prosperity and Peace* (Paris: UNESCO Publishing, 2024), 134–145.

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approaches correspond closely with the ethical principles found within Islamic teachings. The Qur'anic worldview regards human beings as stewards (khulafāʾ) entrusted with the care of the earth and its resources.[49] This concept of stewardship implies accountability for environmental actions and encourages the protection of ecosystems for future generations. Modern sustainability discourse similarly recognizes that environmental responsibility requires both scientific knowledge and ethical commitment.[50] By integrating spiritual values with ecological awareness, the Qur'an provides a framework that remains highly relevant in addressing contemporary water-related challenges. The study of the water cycle therefore extends beyond scientific inquiry to encompass questions of environmental ethics, social responsibility, and sustainable development. In this way, the Qur'anic approach to water conservation demonstrates that the preservation of natural resources is not merely an economic or technical necessity but also a moral and spiritual obligation.

Conclusion

The present study has explored the concept of the water cycle in the Holy Qur'an and examined its relationship with contemporary hydrological research. The analysis demonstrates that the Qur'an contains numerous references to water, rainfall, clouds, winds, rivers, seas, springs, and underground water storage, all of which constitute essential components of the hydrological cycle. Although the Qur'an was not revealed as a scientific textbook, its descriptions of natural phenomena encourage observation, reflection, and contemplation of the intricate systems that govern the natural world. These references have continued to attract scholarly attention because of their relevance to scientific discoveries concerning the circulation and distribution of water on Earth.

Modern hydrological science has provided detailed explanations of the processes involved in evaporation, atmospheric transport, condensation, precipitation, infiltration, groundwater recharge, and runoff. A comparative examination reveals that several Qur'anic descriptions correspond remarkably with these natural processes. The Qur'an repeatedly emphasizes the role of winds in cloud formation, the descent of water from the sky, the storage of water within the earth, and the revival of barren land through rainfall. Contemporary scientific research has clarified the mechanisms through which these phenomena occur, thereby providing a deeper appreciation of the complexity and precision of the Earth's water systems.

The study also highlights the importance of adopting a balanced methodology when engaging in scientific interpretation of the Qur'an. While meaningful correspondences may be identified between Qur'anic verses and scientific findings, it is essential to recognize that the primary purpose of the Qur'an is guidance rather than scientific instruction. Consequently, scientific discoveries should be viewed as tools that enhance appreciation of the Qur'anic text rather than as definitive criteria for interpreting revelation.

Furthermore, the research demonstrates that the Qur'anic discussion of water extends beyond physical and scientific dimensions to include ethical, spiritual, and environmental concerns. The Qur'an presents water as a divine blessing that must be used responsibly and protected from waste and misuse. In an age characterized by increasing environmental challenges,

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[49].The Holy Qur'an, 2:30.

[50].Peter H. Gleick, *The World's Water: The Biennial Report on Freshwater Resources* (Washington, DC: Island Press, 2018), 233–240.

water scarcity, and climate-related disruptions, these teachings remain profoundly relevant. The convergence between Qur'anic guidance and modern environmental awareness underscores the enduring significance of Islamic teachings in promoting sustainable resource management and ecological responsibility.

Ultimately, the study concludes that the relationship between the Holy Qur'an and modern hydrological research is best understood as one of complementarity rather than competition. Scientific inquiry explains the mechanisms of natural processes, while the Qur'an provides a broader framework of meaning, purpose, and ethical responsibility. Together, they contribute to a more comprehensive understanding of water as both a fundamental resource for life and a sign of divine wisdom manifested throughout creation.

Recommendations

- Scholars of Qur'anic studies and natural sciences should promote interdisciplinary research that examines environmental phenomena through both scientific and Islamic perspectives.
- Educational institutions should incorporate discussions of environmental ethics and water conservation within Islamic studies curricula to enhance ecological awareness among students.
- Researchers should adopt a balanced and methodologically sound approach when exploring scientific interpretations of Qur'anic verses, avoiding both excessive skepticism and unwarranted scientific claims.
- Governments, educational organizations, and religious institutions should collaborate to raise public awareness regarding the responsible use and conservation of water resources considering contemporary environmental challenges.
- Further academic studies should investigate other environmental themes in the Holy Qur'an, including climate, biodiversity, ecological balance, and sustainable development, using contemporary scientific frameworks.
- Muslim communities should promote practical water-conservation initiatives inspired by Qur'anic teachings and the Prophetic model of moderation, thereby contributing to long-term environmental sustainability and responsible stewardship of natural resources.

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