Journal of Interdisciplinary Qur'anic Studies

Journal of Interdisciplinary Qur'anic Studieo oo1.1, Issue 2, December 2022, 195-209

Scientific Explanation of Mountain Movement on Verse 88 of Surah al-Naml from the Noble Qur'an

GHOLAMREZA BARATI [1]

Associate Professor, Faculty of Earth Sciences, Shahid Beheshti University, Tehran, Iran.

Article History: Received 15 November 2022; Accepted 28 December 2022

ABSTRACT: Original Paper

Verse 88 of Surah al-Naml has likened mountains to moving clouds. Although in the previous centuries, most exegetes considered the movement of mountains as one of the pre-resurrection events, new scientific findings in geology and meteorology have brought new aspects of this similarity to scholars. this study aims to present a new understanding about verse 88 of Surah al-Namal and identify the similarities between the movement of mountains and clouds, according to the reference scientific texts in geology and meteorology. The results showed that the similarity of mountains to clouds, in addition to the direction and speed of movement previously specified, is in the mechanism of motion, layers and constituents. Earlier, many exegetes considered the movement of the mountains to be related to the resurrection and did not see it as compatible with the current conditions of the mountains. However, today scientific findings show that the movement of mountains in several aspects is like clouds: 1. Mountain movements are influenced by the movement of earth's twenty plates, in different directions including orbital, meridian, combination of the two and ascending. Clouds also show all four side of movement in the atmosphere. 2. The movement of mountains is slow and at a speed of several millimeters or a few centimeters per year, and the movement of clouds is also slow in the sky. 3. The mountains move on the edge of the plates in an upward motion on the edge of the opposite plate, and this phenomenon can be seen in the front clouds of the warm air mass, i.e. the cold air mass creeps upwards at the front. 4. The mountains continue to evolve even as they move with tectonics forces from below and erosion forces from above.

1 . Corresponding author. E-mail address: g_barati@sbu.ac.ir

Clouds also evolve from above while moving, by converging currents from below and diverging from above.

KEYWORDS: Mountains, Clouds, Similarity of Motion.

1. Introduction

Oee ff tee mttt fruuuttt refrrcccs ff tee Noll e Qrr'an is rffrr eeees to atmospheric phenomena. In the verse 88 of Surah al-Naml, the cloud phenomenon of the atmosphere system was likened to the mountain phenomenon from the earth system in terms of aspect of motion.

The simile mentioned in this verse, after 1400 years of the revelation of tee Q. r'nn, aan ee emmieed ddd ddttt dd in terms of both the form and the content, and the new findings of both geology and meteorology.

This simile has challenged the Quranic exegetes for many centuries and has caused different problems. Mountains in the human mind have always represented persistence, strength, stability of shape and belonging to the earth's surface. In the contrary, clouds have always represented instability, steaminess, shape variability and belonging to the sky. It is while the Qur'an has given the mountains a very obvious and tangible movement like a cloud. Although this similarity has been somewhat obscure for centuries, it is now fully understandable with the advances made in meteorology and geology.

This issue lies at the common boundary between the two realms of atmosphere and cryosphere. In this paper, I intend to explain the different scientific aspects of this similarity by examining the verse linguistically and scientifically.

2. Literature review

Many researches have been conducted so far with the subject of scientific llll attt inn of tee vrr sss of tee Nlll e Qrr'... In tii s rsserr,,, it hss eeen tried to explain a collection or case of scientific references of the Noble Qrr'rrr rr rr trrr ,, knowledge is continuously expanded, the explanations mentioned, new dimensions are found every day. One of the researches that sss eeen fssss dd nn the sss itinn ff mmmnfrr css in tee Qrr'nn is the rssaarhh of Iravani and Pourkhosravani (2013). According to researchers, these are the forces that shape Earth. Among the masses of explanations carried out according to the subject of the current study, two studies including rr efrr ccces of tee Nbble Qrr'nn to the ooii tion ff mtttt ii"""" (aaaa jjal

2011) and SSii ttt ific mirall e of tee Qur'nn nn wwwtee mtttt aiss wrr e rr aatdd" (hhh ajjal 2012) are worth noting. In these two studies, the position of mountains in the earth and their role in the firmness of Earth's crust have been investigated. Another research in this field has been conducted by Marouf and Rajabi (2012) titled "The Special Place of Mountains in the Nlll e Qrr 'nn". In tii s rss ear,,, the raassss of mnssss is ff tee Nlll e Qrr 'an on the firmness of mountains have been investigated by library method.

Another research in this field has been conducted by Diari et al. (2014) titled "Moving Mountains from the Perspective of Qur'an and Geology". In this research, after conceptualization of the passages of verse 88 of Surah al-Naml, exegetes' views on the purpose of the world or the hereafter of this reference have been reviewed. One of the main themes of this research is addressing the similarity of mountains with clouds.

One of the first scientific explanations for verse 88 of Surah al-Naml is Karnegar (2003) in Egypt. Describing the constituents of the planet and the position of mountain ranges on the crust, the researcher considers the rffrr eeee of the Hll y Qrr 'nn to tee mvvemttt ff mtttt aiss ss a ccittt ific miracle and adapts it to the latest findings of geological knowledge.

In the present study, we aim to discuss new aspects of the similarity of mountains to clouds in the field of meteorological and geological knowledge based on the verse in question to determine more dimensions of the scientific position of this simile.

3. Data and method

The data of this study were obtained from reference books and articles of geology and meteorology by library method. Then, the scientific findings were presented on the expressions of the verse 88 of Surah al-Naml by a comparative method. In order to make this adaptation more accurate and visual, the necessary patterns in geological and meteorological sciences were designed. Components of geological pattern including earth plates, impact foreheads, sediments and folds, and components of meteorological pattern including air masses, fronts, water vapour and clouds.

In the supplementary discussion, the similarity patterns of the elevation classes of mountains and clouds were drawn to show the similarity of mountains and clouds in addition to "movement" in the constituent components.

4. Results and Discussion

The Noble Qur'an is a book of guidance and considers the creation of the universe as a sign of God's power and knowledge. Among these creations are mountains. In verse 88 of Surah al-Naml, the Qur'an has proposed one of the most explicit and scientific propositions about the mountains: MMvvigg mtttt ii ns like mvvigg ll ”””””””””Tee tett ff the verse is as follows:

وَتَرَى الْجِبَالَ تَحْسَبُهَا جَامِدَةً وَهِيَ تَمُرُّ مَرَّ السَّحَابِ ۚ صُنْعَ اللَّهِ الَّذِي أَتْقَنَ كُلَّ شَيْءٍ ۚ إِنَّهُ خَبِيرٌ بِمَا تَفْعَلُونَ

Now you see the mountains, thinking they are firmly fixed, but they are travelling ˹just˺ like clouds. ˹That is˺ the design of Allah. Who has perfected everything. Surely He is All Aware of what you do.

Some commentators have attributed the movement of mountains in this verse to the events before the Day of Judgment. Tabataba'i (1995) according to the context attributed the movement of mountains to pre-resurrection events. Some other commentators have attributed the verse to current events on the Earth. Qorashi (1998) and Ṭayyib (1999) interpreted the movement of mountains under Earth's motion.

4-1. the time of likening mountains to clouds

There are clear evidences in the verse that show that the meaning of the verse is likening the movement of mountains to clouds in the current condition of the earth, not in the future. In this regard, Makarem (1995) mentioned several witnesses in the verse, which indicate this meaning including:

1. The verse says, "You suppose that mountains are fixed",[1] but the events before the resurrection are so obvious and severe that there is no room for supposition anymore. The Quran (Q.22:2) describes the events of that day in such a way that due to the severity of the events, every nursing mother will abandon her child, every pregnant mother will have a miscarriage, and people will act like drunkards when they are not drunk.

2. The movement of mountains was likened to the movement of clouds, which is a slow movement, while the Qur'an says, the intensity of the movement of mountains before the resurrection is so great that they will fall apart (Q.20:105).

1 – تَحْسَبُهَا جَامِدَةً

3. The verse emphasizes the firmness of the world system,[2] which is incompatible with the disintegration of this system at the events of resurrection.

4. The phrase "God is aware of what you do"[3] in the verse is in the present tense. If the verse was meant to refer to the events before the Resurrection, the future tense verb should have been used and it would have been said, "God is aware of what you will do" (Marouf and Rajabi 2012). They also believe that the present tense verb in the verse is a proof that the verse refers to the current conditions of the mountains, not their future conditions.

Now, in order to explain the verse more thoroughly and confirm the verse's reference to the current conditions of the Earth, it is necessary to introduce here the types of movements that can be considered for the mountains. These movements are based on today's findings of astronomy and geology:

1. Moving mountains along with rotating Earth around its axis means one rotation every 24 hours: The speed of this movement varies in different geographical orbits. This speeds up from the earth's poles toward the equator.

2. Moving mountains along with the Earth's circulation around the sun:

Scientists believe this movement is on the edge of ecliptic plane (Dalaki 2008) at a speed of 106,200 km/h.

The Quran (Q.77:25) testified this issue centuries ago by comparing the earth to a bird that folds its wings while flying (Sadeqi 1977).

3. Moving mountains independent of the rotational movements of Earth and on the crust. This movement is on the surface of Earth, slow and intangible.

4-2. The relation of the movement of mountains and the Earth

Motion is relative, that is, a moving object can be stationary or moving compared to other moving objects. Humans first noticed different movements of the Earth with simple tools and then advanced tools, like a rotational movement in 24 hours and a circulation in 365 days around the sun.

2 – صُنْعَ اللَّهِ الَّذِي أَتْقَنَ كُلَّ شَيْءٍ
3 – إِنَّهُ خَبِيرٌ بِمَا تَفْعَلُونَ

Among these movements, the mountains move so slowly on the surface that not on the scale of the day, year and decade, but on the scale of life, humans have not been able to observe their movement with the ordinary eye for centuries. Therefore, the movement of mountains was discovered later than other movements. based on scientific evidence, three types of movements for mountains can be examined:

1. Rotational motion of the earth: In this motion, the main moving object is the earth, while the moving object that the verse is referring to is the mountains. Due to this rotational movement, not only mountains, but also seas, plains, rivers and cities are moving with the earth, but also the verse only refers to the movement of mountains.

2. Earth's circulation around the sun: In this type of motion, the Earth has a permanent circulation in the interplanetary space of the solar system and on the edge of the ecliptic plane. Naturally, due to this motion, everything on the Earth, and around it, like the atmosphere, is orbiting around the sun.

3. Movement of mountains on the surface of the earth: based on the available evidence, this type of movement was not known until 1970 (Mohajjal 2012). The research showed that based on the similarity of the shape of the beaches and the geological evidence, the lands scattered on the surface of the earth were once together. These lands are now thousands of kilometers apart (Mohajjal 2011) and can even be seen on both sides of the globe, such as South America and Africa, which were once joined together.

Complementary research gradually showed that on the one hand, Earth is composed of three main layers, including nucleus, mantle and crust. The rrr th's crsst is solid, but the mantle has a fluid nature at a temperature of 800 to 1,300 degrees Celsius (Earle 2015). On the other hand, Earth's crust is composed of fragments and, in fact, 20 plates (Mohajjal 2012). Some of them have come up the oceanic surface due to their high elevation and are seen as dry.

These plates float on a fluid mantle like a plank of wood, and the fluid mantle, with its cyclic movements, tries to drive them from beneath them permanently or apart. As a result of these movements, some lands on Earth and, naturally, the mountain ranges on them have been separated over millions of years. Geological findings show that this movement continues with intensity and weakness for many lands, resulting in mountains on them (Figure 1).

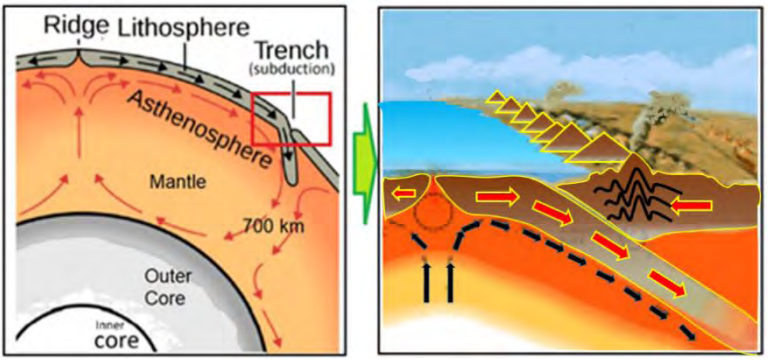

Figure 1. Subduction of plates (Earle 2015, 12 and 61)

Scientists consider the speed of plates to move from a few millimeters to a few centimetres per year (Mohajjal 2012). Scotese (2015), for example, considers this speed for plates such as Pacific, Nazca and India more than 5 mm per year. Oceanic plates are said to have a slower rate than continental plates for reasons such as thickness 6 to 8 times lower (Najjar 2003: 58) and consequently higher density.

4.3. Similarities of the movements of mountains and clouds

1. In many cases, clouds can be seen moving in different positions in the sky, resulting from different currents that are pushing them. Similar to this feature, Earth plates have different orbital, meridian and vector movements along latitude and longitude. These movements cause the different side of the mountain ranges that are riding on them.

2. The terrestrial observer sees the clouds moving slowly in the sky. The detection of the distance that the clouds have travelled is achieved by reversing the look from them within a few minutes. Earth plates also have a calm movement and can only be measured in terms of their time intervals of several million years, their direction and speed of movement.

3. Each cloud is composed of countless liquid droplets or icy needles floating in the air (Ahrnes 2002). Each cloud in the sky is the ascension of a stream of air whose water vapour content has reached saturation, density and droplet formation, and hence it is visible. Even small cumulus clouds growing behind the cold front show small warm air climbs adjacent to the ground through convective motions (William 1999).

In meteorology, the movement and ride of the warm air mass on the cold air mass is known as the hot front. This move creates a system of clouds known as the warm front. Over-thrust in the mountains (Earle 2015) is also

a phenomenon that is similar to the mechanism for mounting the hot air mass at the forehead on the cold air mass. Therefore, as the warm front clouds are the result of a warm air mass mounted at the collision site on the cold air mass; the mountains are also seen at the site of the pushing of a plate on the other (Figure 2).

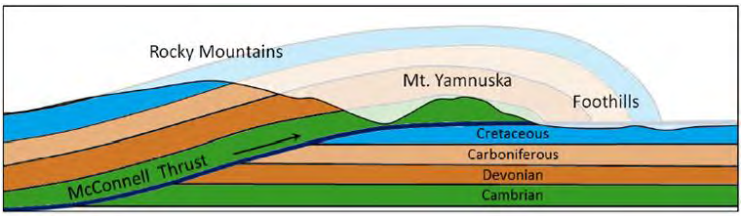

Figure 2. Thrust and over thrust in the mountains (Earle 2015, 362)

4. The clouds are constantly moving and have no stopping. Figure 3 corresponds to the movement of cloud systems over the Middle East over three consecutive days. The figure shows that the cloud system sequence has moved from the Persian Gulf to south eastern Iran and then eastern Afghanistan during these three days, respectively. During the third day, the sky of Iran can be seen cloudless.

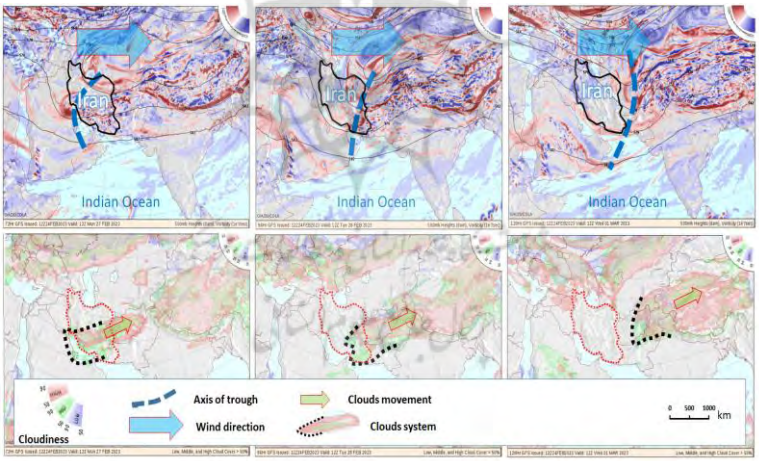

Figure 3. The movement of clouds (Forecast maps-wxmaps.org)

Figure 4 also shows the path of clouds moving from one side of the sky to the other using neural networks and Lucas Kanade method. Images show 69% of the sky's surface as cloudy. Similarly, geological findings attest to the continuous movement of mountains on the edge of Earth's plates.

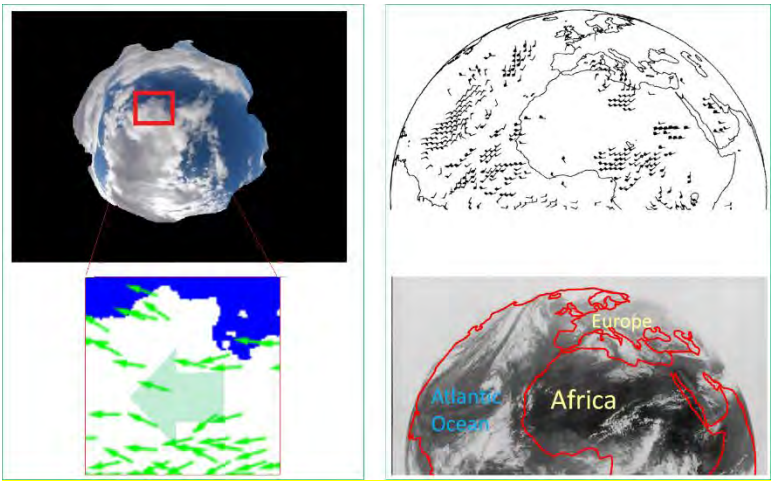

Figure 4. Show cloud motion on the surface of the sunshine recorder (Tuominen and Tuononen 2017) in small scale (left) and cloud motion winds from Meteosat IR images (Schmetz et al. 1993) in large scale-northern hemisphere (right)

5. Clouds are the result of pushing up wet air, including mechanical factors such as roughness or dynamics such as air climbing on the fronts. Similar to this mechanism, mountain ranges arise because of being pushed upwards from a part of the crust that is under pressure between two plates. The Himalayas are an example of these mountain ranges at the site of the collision between the two plates of Eurasia and India (Bouilhol et al. 2013) and Zagros, another example of which is between the two plates of Iran and Hijaz (Arabic). Hijaz plate goes under Iran's plate at a speed of 3 cm per year (Talebian and Jackson 2004).

The result of high driven wet air under the condensation process is the formation of droplets and then droplets, as well as the crystallization of ice and growth, and then the precipitation of crystalline grains and regular snow. These rains cause the development of lands and the result of pushing the edge of a plate over another can be the rise of lava that generally contains heavy metallic minerals. Release of molten rocks from the pressure and heat of the depths causes them to crystallize and form streaks of mines that are important for human exploitation (Figure 5).

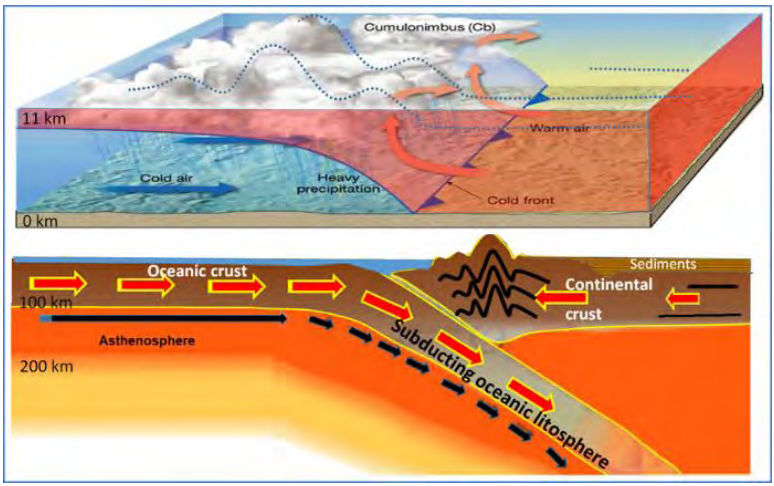

Figure 5. Similarity of motion and the emergence of mountains and clouds (Lutgens and Tarbuck 1989 (above) and Earle 2015 (below))

6. Earth's rotation and circulation. This difference is also observed between the direction and the speed of movement of the Earth's plates with the direction and the speed of the Earth's rotation and circulation.

7. The westerlies system exists in both the northern and southern hemispheres. In the context of the waves of this system, airflows are always rising and descending. In the ascending part (usually western part) of these winds, cloud zones emerge and strengthen and move, and in the descending part (usually eastern part) of these clouds gradually disperse or disappear. On the surface of Earth, it can also be seen that the oceanic plate is driven underneath it by the resistance of the continental plate.

With this resistance, deposits in the sedimentary basin on the active edge of the continental plate begin to fold, exit the water and gradually take altitude (Mohajjal 2011). In these circumstances, the subduction plate gradually disappears under the plate, fading into the mantle.

Therefore, it can be said that the simile of the movement of mountains to clouds in this verse is not a random and blind simile, but includes various components of movement such as direction, speed, and even substrates and their consequences (Table 1).

Table 1. Feature of motion in the clouds and mountains

	Feature of motion in the clouds	**Feature of motion in the mountains**
1	Air masses and therefore clouds have movements on different directions.	The plates of the earth, and therefore the mountains, have movements on different directions.
2	The ground observer sees the movement of clouds slowly.	The geologist also sees the movement of mountains slowly.
3	Cloud formation follows the upside of wet air, even with a gentle slope.	The formation of mountains is the result of folding and rising materials and sediments ahead and above the plates.
4	The clouds are moving continuously.	Plates are constantly moving at different speeds.
5	The movement and collision of the air masses leads to the formation of clouds.	The movement and collision of earth plates leads to the formation of mountains.
6	The movement of clouds is independent of the Earth's rotation and revolution movements.	The movement of plates is independent of the Earth's rotation and revolution movements.

4-4. Other similarities

Although the subject of the discussed verse is about the movement of mountains and clouds, in many cases the similarity of the movement of an object with another is influenced by other similarities such as their shapes and components as well as whether they are plural or singular.

1. The word *jabal* (mountain) was mentioned in the Qur'an 38 times (Safarpoor et al. 2019) as both singular and plural (Mohajjal 2012). As mountains on Earth can be seen both individually and in the form of mountain ranges, clouds are also seen in the sky as both individual and ranks, in the form of warm and cold front clouds system.

.. mmmte glll ggicll iii tt of vi,,, aa rth's platss hvve lgggt,, witt h and thickness that are observed side by side on Earth. From the viewpoint of meteorological knowledge, air masses are surfaces with specified length, width and thickness that are homogeneous in terms of humidity and especially temperature. Continental plates with a thickness of 40 km and an oceanic one with a thickness of 7 km (Humbelt 2015) have swept the earth's

surface, and the mountains usually, before and after them, and indeed their collision zone, constitute the highest part of them. Why usually?

Because we do not always have the growth of cloud systems at the adjacent location of the air masses. As we do not always have mountain ranges in the place of proximity to the air masses. Growth is in line with the collision of air masses depending on the humidity of the air and the intensity of the air climb. Clouds also grow before and after the air masses and in the same collision zone as their highest part.

3. The high mountains even on the equator are composed of three parts: liquid (streams and springs), liquid and solid (scattered surfaces of melting snow and ice) and solid (permanent ice and snow) respectively. The tallest clouds such as cumulonimbus, also have a triple temperature profile from the bottom of the floor composed of liquid droplets, the middle floor consists of liquid droplets and icy needles, and the upper floor consists of ice needles (figure 6) (Barati and Paymard 2022).

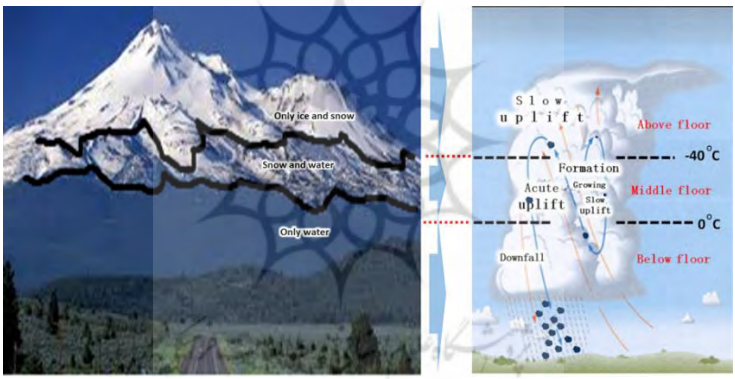

Figure 6. Three-storey thermal similarity model in mountains and clouds

5. Conclusion

In verse 88 of Surah Al-Naml, God says that while you think the mountains are fixed, they are moving and their movement is like the movement of clouds. This simile has led some scholars to consider it as metaphorical for centuries. Some said that the movement of mountains means their inherent movement in the sense that is discussed in philosophy. Others considered it a real phenomenon, but did not regard it related to the present time, that is, the current state of the mountains. They considered the mentioned movement to be related to the future, that is, the time of resurrection and when the pillars of the earth will break apart. However, the

new scientific findings showed that this simile could be completely real and related to the current state of the mountains.

In this study, different aspects of likening the movement of mountains to clouds were investigated and we showed that it is not a random and blind simile, but also includes different components of movement including direction, speed and even substrates and its consequences (Table 1).

Considering the plurality and significant differences seen in the Earth's system of solid (cryosphere), then liquid (hydrosphere) and finally the gas (atmosphere), it is not easy to find similarities. In order to invite scholars to research and think about creation, the Qur'an likens two seemingly far apart phenomena, mountains and clouds, to each other.

The Qur'an has expressed this similarity in a characteristic that is far from the minds, i.e. movement. In other words, if the Qur'an had likened the mountains and clouds in height or shape instead of the movement feature, the scientific significance of this simile would have been much less. Therefore, paying attention to the mentioned similarity can be a clue to the discovery of numerous similarities in the components of creation.

These similarities can indicate the existence of a common language between the tiny and huge components of the universe, from the elementary particles to the galaxies, and their order and communication.

References

Ahrens, C. D. (2009). M*eteorology Today: An Introduction to Weather, Climate, and the Environment*. Brooks/Cole Pub.

Barati, Gh. Paymard, F. (2022). Scientific Explanation of Hail based on Verse 43 of ūūrhh ll -ūū r from hhe oo bee uu r'nn; *Journal of Interdisciplinary Qur'anic Studies*, 1(1), 5-25.

Bouilhol, P. Jagoutz, O. Hanchar, J. M. Dudas, F. O. (2013). Dating the India–Eurasia collision through arc magmatic records. *Earth and Planetary Science Letters*, 366, 163-175. doi:10.1016/j.epsl.2013.01.023

Dalaki, A. (2008). *Earth in the Space* (in Persian). Tehran: Gitashenasi Publications.

Diari bidgoli, M., Alizadeh, H., & shoaei, A. (2014). Moving Mountains from the Perspective of Qur'an and Geology (in Persian). *Journal of Qur'anic Interpretation and language*, 3(1), 33-46.

Earle, S. (2015). *Physical Geology*. Victoria, B.C. Campus. viewed from https://opentextbc.ca/Geology/

Humbelt, M. (2015). *Fundamentals of Earth Science I*. Nagoya University-G30 Program. viewed from: https://ocw.nagoya-u.jp/files/526/humblet_ full.pdf

Iravani, M. (2013). sss uussoon of xxrrrnll forees of Errhhnnhhe uu r'nn (in Persian). *The first international congress of Noble Qur'an, Human and Society*. Mashhad: Islamic Azad University.

Lutgens, F. K., Tarbuck, E. J. (1989). *The atmosphere an introduction to meteorology*. Prentice Hall Press.

Makarem Shirazi, N. (1995). *Tafsīr-i Nimūneh*. Thhrnn: rrr ll-Kutub al-Ismmyyhh.

Marouf, Y. Rajabi Samangani, F. (2012). Special place of mountains in the Qur'an (in Persian). *The first conference of miracle of the Qur'an*. Tehran: Shahid Beheshti University.

Mohajjal, M. (2011). Rffrr nnees of hh oo beeuu r'nn oohhe posoooo of mouniii ns, how they are created and their importance in the tranquility of the Earth's crust with a view to geological findings (in Persian). *Fifth National Conference on Geology*. Payam-e-Noor University.

Mohajjal, M. (2012). nnnnmmcc mrrccee of hhe aa jdduu r'nn bbout hhe xxssnnee of faults, various parts in the Earth's crust and its surroundings (in Persian). *The first conference on miracle of the Noble Qur'an*. Tehran: Shahid Beheshti University.

Mohajjal, M. (2012). nnnnmmcc mrrcc.. of hhe oo beeuu r'nn bbout how mounaains are created and their role in the tranquility of the Earth's crust (in Persian). *The first conference on miracle of the Noble Qur'an*. Tehran: Shahid Beheshti University.

Sadeqi, Mohammad (1977). *The Sky, the Earth and the stars in the Qur'an* (in Persian). Tehran: Mostafavi Publications.

Najjar, Z. R. (2003). *The geological concept of mountains in the Qur'an*. Cario: Al-Falah Press.

Qorashi, A. A. (1998). *Tafsīr Aḥsan al-Ḥadīth*. ThhrnnB B' hh..

Safarpour Feizi, F. Darvishpour, A. Abdi, A. Havasi, Z. (2019). Study of mountains from the viewpoint of geology nnd hhe oo beeuu r'nn (in Persian). *Journal of Science and Engineering Elites*, 4(4), 130-139.

Schmetz, J. and Holmlund, K. Hoffman, J. Strauss, B. Mason, B. Gaertner, V. Koch, A. Berg, L. V. (1993). Operational cloud motion winds from Meteosat infrared images. *Journal of Applied Meteorology*, 32 (7), 1206-1225.

Tabataba'i, M. H. (1995). *al-Mīzān fī Tafsīr al-Qur'ān*. oo m: Jmm'hh-yi uu drrssnn

Talebian, M. Jackson J. (2004). A reappraisal of earthquake focal mechanisms and active shortening in the Zagros mountains of Iran. *Geophysical Journal International*, 156 (3), 506–526. doi: 10.1111/j.1365-246X.2004.02092

Ṭayyib, A. (1999). *Aṭyab al-Bayān fī Tafsīr al-Qur'ān*. ThhrnnI Ismmm

Tuominen, P. and Tuononen, M. (2017). Cloud detection and movement estimation based on sky camera images using Neural networks and the Lucas-Kanade method. *AIP Conf. Proc*. 1850(1), 140020. doi: 10.1063/ 1.4984528

William, C. M. (1999). *Weather Predicting Simplified*. USA: McGrow-Hill Press.

پژوهشگاه علوم انسانی و مطالعات فرهنگی
پرتال جامع علوم انسانی