

**THE ICE RAIN IN THE PERSPECTIVE OF THE  
HOLY KORAN AND SCIENCE**

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**FACULTY OF USHULUDDIN  
STATE ISLAMIC UNIVERSITY  
NORTH SUMATERA  
MEDAN  
2016**

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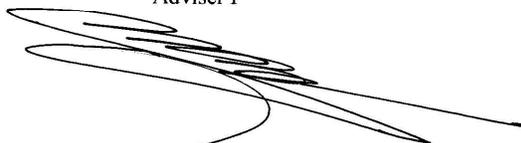
Thesis  
Submitted to Interpretation and Science of the Holy Koran Department  
Faculty of Ushuluddin and Islamic Studies in Partial Fulfillment  
of the Requirement For the Degree of S. Th I  
( Sarjana Theologi Islam )

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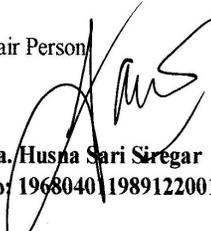
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## APPROVAL SHEET

Thesis entitled: THE ICE RAIN IN THE PERSPECTIVE OF THE HOLY KORAN AND SCIENCE,(THW ANALYTICAL STUDY ;CHAPTER OF AN-NUR VERSE:43), was examined by the Examination Committee Faculty of Ushuluddin and Islamic Studies State Islamic University of North Sumatra Utara Medan, on June 08, 2016. Thesis was submitted in partial fulfillment of the requirements for the degree of Sarjana Theologi Islam (S.Th.I).

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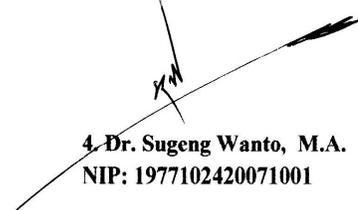
  
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## TRANSLITERATION GUIDELINES

The transliteration writing of Arab- latin in this thesis, based on a joint decision of minister of religious affairs and the ministry of education and culture of the republic of Indonesia no. 158 in 1987 and no. 0543 B/U/1987.

### A. Consonant

Arabic Alphabet	Name	Huruf Latin	Name
ا	alif	Not Respresented	Not Respresented
ب	ba	B	be
ت	Ta	T	te
ث	Sa	s'	Es (with comma above)
ج	jim	J	je
ح	Ha	H	ha (with comma below)
خ	Kha	Kh	ka and ha
د	Da	D	de
ذ	Zal	Z	zet (with comma above)
ر	Ra	R	er
ز	Zai	Z	zet
س	Sin	S	es
ش	Syin	Sy	es dan ye
ص	sad	s,	es (with comma below)
ض	dad	<u>D</u>	de (with comma below)
ط	Ta	t,	te (with comma below)

ظ	Za	z,	Zet (with comma below)
ع	'ain	'	Inverted comma above
غ	gain	G	ge
ف	Fa	F	ef
ق	qaf	Q	qi
ك	kaf	K	ka
ل	lam	L	el
م	mim	M	em
ن	nun	N	en
و	wawu	W	we
هـ	Ha	H	ha
ء	hamzah	'	apostrof
ي	Ya	Y	Ye

## ABSTRACT



Name : Abdurrahim Harahap  
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 Thesis : The Ice Rain in the Perspective of the Holy Koran and Science

The universe is a very interesting object for study. Now a days people vying to create the latest discovery, both in the areas of technology, health, climate and so on. In this paper the writer provides the latest findings on the verses relating to science of climatology is ice rain, and also on the interpretation and analysis. ice rain is a rare phenomenon in our daily lives. therefore we do not know what exactly causes the occurrence of the ice rain and how impact to the earth. The biggest impact of the fall of ice rain in some areas is going on crop farms, rain that falls in crystal, can directly damage of the plant such as leaves, twigs, branches and fruits.

Besides ice rain also are highly acidic so it can "poison" ice rain affected plants, the plants can "burn" due to the nature of the ice rain acidity. If the ice rain that fell on the area coverage is small and limited and the duration time is short, the impact can minimized by spraying water on the plants affected by ice rain.

So the Holy Koran and science agree in assessing the ice rain that happened in our lives as a disaster , and with this we are increasingly convinced that the holy Koran was not only revealed to worship of Allah , but the holy Koran covers all aspects of knowledge. And this will be the work of Muslim scientists to always relate all the science with the content of the holy Koran.

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## CHAPTER I

### INTRODUCTION

#### 1.1. Background of Research

The Holy Koran has reveals himself as al-Kitab (Al-Baqarah :2: 02), the argument for men (Al-Baqarah 2: 02), al-Furqan (Al-Baqarah :2: 185), grace (Al ‘Araf :7: 52), shifa 'is the antidote, (Yunus :10 : 57), mau'idhah (.Al-Imran : 3: 138) and several other attributes. The names and attributes explicitly indicates that the Koran is the Holy Koran many dimensions and insightful.<sup>1</sup>

Statement of the Holy Koran as the source of all sources of knowledge apparently is not foreign to our ears. In fact, almost all the science that appears on the surface is now contained in the Holy Koran, although not described in detail. As one example, in Ar-Rahman chapter verse 33 which is currently interpreted as a paragraph on science technology, the invention of airplanes.

The more advanced and rapid development of science and technology, increasingly reveals the science contained in the Holy Koran . And this is a proof of the truth of the word of God contained in the Holy Koran, as the foundation of human life in order to create a happy life in this world and hereafter<sup>2</sup>.

That is why even though the Holy Koran, is essentially a religious book, but his talks and its contents are not limited to religious subjects alone. It encompasses various aspects of human life. The Holy Koran is not a book of philosophy and science, but it encountered a discussion-a discussion of the problems of philosophy and science (science).

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<sup>1</sup>. Harifudin Caridu, *Konsep Syukur Dalam Alquran*, Satu Kajian Dengan Theology's Pendekatan Tematik,( Jakarta: Bulan Bintang, 1991), p. 3

<sup>2</sup> .<http://www.dakwatuna.com/2014/09/25/57338/integrasi-al-quran-dan-sains-dalampendidikan-modern/#ixzz3wuVNXTpq>.

Discourse integration of science (integrations of knowledge) runs it is so long and tend to be tiring. but its application has not been in line and in line with what was expected. scientific trend of religion ('Ulum Al-din) is the scientific future the holy Koran – interconnected- integrated with other scientific disciplines. holy Koran science interact and dialogue with science, social sciences and humanities<sup>3</sup>.

While the Holy Koran contains a wide range of science, but talk about a science is not always systematically arranged as well as science books written by humans, the holy Koran, is rarely present something science in detail and detail. Holy Koran talks in general, are global, partial and often show something in the science principles and the basics only<sup>4</sup>.

The Urgency integration of the Holy Koran and science in modern education has two important missions, namely the spiritual and moral development of intellectual power. Synergy between the Holy Koran and science is a necessity, because the holy Koran itself is a source of knowledge that covers all aspects of life, with added science technology that is currently growing rapidly, not something that is impossible if later education will print the generation of thinkers has a higher spirituality than with the past.

With the integration of the holy Koran with the expected learning science conducted become more meaningful and understandable. The shape of the formulation of integration of the holy Koran and science can be realized by making the scriptures as the basis or the main source of knowledge, expanding the limits of Islamic studies and avoid material science dichotomy. And that is not less important to foster personal character *ulul al-bab*, browse passages in the holy Koran that talk about science, develop education that present and future<sup>5</sup>.

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<sup>3</sup> Sayhrin hrp, *Reintegrasi ilmu dan implementasinya dalam pemikiran islam .disampaikan dalam international seminar on integrations of knowlidge.medan 7 desember 2015.*

<sup>4</sup> M.amin Abdullah, *membangun kerangka dasar filsafat ilmu keislaman berbasis integrasi – interkoneksi . disampaikan dalam international seminar on integrations of knowlidge.medan 7 desember 2015.*

<sup>5</sup>. *ibid* .

In the Holy Koran there are more than seven hundred and fifty verses that give clues to the man who talks about natural phenomena that aims to make people always can know God through signs creations. Sufyan bin Uyainah said: "*If the man has a mind, each saw something he will be able to draw lessons*". Nature and everything in it is a gift for people to draw closer to Allah by thinking about it<sup>6</sup>.

Allah created man to cultivate the earth and use it as much as possible for human happiness itself. And Allah commands us to always think of what the revelation to us, so that we as humans can take no knowledge of science and the lessons from what is listed Allah in the Holy Koran as the word of Allah in chapter of Al-Baqarah: 2: 219:

كَذَلِكَ يُبَيِّنُ اللَّهُ لَكُمْ الْآيَاتِ لَعَلَّكُمْ تَتَفَكَّرُونَ.

*“thus doth Allah make clear to you signs ;in order that ye may consider”<sup>7</sup>.*

So from the paragraphs above we can conclude that Allah degrade Holy Koran is not just to be read but must think about the content that is inside so that we can obtain the function of the perfection of the Holy Koran in our lives everyday, especially in developing Islam in the future that includes all aspects of life such as medicine, climatology, philosophy and other sciences which essentially integrates Holy Koran and science.

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<sup>6</sup> Yusuf Qardhawi, *Al-Qur'an Tentang Akal dan Ilmu Pengetahuan*, Terj. Abdul Hayyie Al-Qattani, (Jakarta, Gema Insani Press, 1993), p.42-43

<sup>7</sup> Abdullah Yusuf Ali. *The holy Koran*. p. 90

And another chapter unlike most books claimed by its believers to be divinely revealed, the Holy Koran actually makes this claim itself in many places. to give one according to the Holy Koran of Joseph chapter :12:02.

*“we have sent it down as an Arabic of the Holy Koran in order that you may learn wisdom”*<sup>8</sup>

This verse say we must learn more from the Holy Koran, because the all of knowledge there are in the Holy Koran. Provisions that God has given to man in the form of intellect and passion can be encouraged him to go ahead, tireless hard work so as to create big changes and development in the face of the earth.

Rain is a natural phenomenon that often happens in our lives everyday, especially Indonesia which has a tropical climate, but people almost never think about what could happen rain and why rain only in places of particular, this is one result of a lack of human understand the meaning of the revelation of the Holy Koran to humans, who think that Holy Koran just affairs worship of Allah only, and they are not understand the real function of the Holy Koran .

Allah give a detailed explanation and detail how the process of the rain, as in the word:

اللَّهُ الَّذِي يُرْسِلُ الرِّيَّاحَ فَتُثِيرُ سَحَابًا فَيَبْسُطُهُ فِي السَّمَاءِ كَيْفَ يَشَاءُ وَيَجْعَلُهُ كِسْفًا فَتَرَى الْوَدْقَ يَخْرُجُ مِنْ خِلالِهِ فَإِذَا أَصَابَ بِهِ مَنْ يَشَاءُ مِنْ عِبَادِهِ إِذَا هُمْ يَسْتَبْشِرُونَ.

*"It is God Who sends the winds that stir the clouds in the sky and He spreads He wills, and make it lumpy; then you see the rain come out of the cracks; then, when the rain that fell on His slaves He wills, suddenly they perk."*<sup>9</sup>

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<sup>8</sup> *Ibid* .p. 566

<sup>9</sup> .A.Yusuf Ali. *the Holy Koran*. Ar-ruum.v.48

It is clear from the above verse that the Holy Koran includes all aspects of life including weather problems, then our job was as a human being to learn and think about it further as to which is not mentioned in the al-baqarah chapter in verse 219 above.

One of the items of information given in the holy Koran about rain is that it is sent down to earth in due measure .this is mentioned in Az-zukhruf chapter as follows:

*“It is he who sends down water in measured amounts from the sky by which we bring a dead land back to life, that is how you too will be raised ( from the dead ).”*

This measured quantity in rain has again been discovered by modern research. it is estimated that in one second, approximately 16 million tons of water evaporates from the earth. this figure amounts to 513 trillion tons of water in one year. This number is equal to the amount of rain that falls on the earth in a year. this means that water continuously circulates in a balanced cycle , in a “ measure” . life on earth depends on this water cycle . event if people used all the available technology in the world. They would not be able to reproduce this cycle artificially<sup>10</sup>.

Even a minor deviation in this equilibrium would very soon give rise to a major ecological imbalance that would bring about the end of life on earth . yet ,this never happens ,and rain keeps falling every year in exactly the same quantity just as revealed in the Holy Koran. The proportion of rain does not merely apply to its quantity, but also to the speed of the falling rain drops . the speed of rain drops, regardless of their size ,does not exceed a certain limit<sup>11</sup>.

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<sup>10</sup> Harun yahya , *how the qur'an guides science*. p. 80

<sup>11</sup> .ibid. p.81

With frequent rain water which is normal and natural for us but sometimes we have heard, seen in the media even feel yourself about hail or spring called hailstones. as happened in the villagers Jagung Jeget Aceh Central were surprised by the arrival of hail that hit their area. The roofs of the houses filled with grains of ice white. Several hectares of crops belonging to residents chili damaged due to the impact of this rare natural phenomenon. Chili plants suddenly wilt and dry up, while the plastic mulch as a growing medium chili is also perforated and almost destroyed "buffeted" rain shaped solid grains that. Likewise tens of hectares of coffee plants belonging to local people who began to show symptoms of damage.

Usually in entering a period of transition (transition rainy season to dry season) precisely in July-August 2015 was marked by the phenomenon of hail in **many** regions in Indonesia. The worst incident of this rare natural phenomenon occurred in Puncak Jayawijaya in Papua and some areas in the province of Riau. In the mountainous area in Puncak Jayawijaya, hail and even had caused fatalities to 11 people and hundreds of hectares of farmland were damaged by hail hit it, until the impact of food insecurity and hunger in the region. In Central Aceh district alone, some time ago also has occurred hail in some villages, although still in scale and low intensity, but also has an impact damage to residences and agricultural land owned by citizens.<sup>12</sup>

As the number of the case of hail in various regions in Indonesia and a lot of people who panic about this then raises questions among the community including why there is hail, what the result of the hail, whether hail is a disaster or the grace of God and whether hail same with snow and so many people questions about it that until now there has been no real clarity and detail that can be understood what exactly is the secret behind the occurrence of ice rain.<sup>13</sup>

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<sup>12</sup> . [http://www.kompasiana.com/masfathan66/mengapa-hujan-es-terjadi\\_55ea5dab127f6188052fce6a](http://www.kompasiana.com/masfathan66/mengapa-hujan-es-terjadi_55ea5dab127f6188052fce6a)

<sup>13</sup> . Indra Yusuf .*Guru Geografi*, penulis Buku Pendidikan Lingkungan Hidup untuk Sekolah Dasar, Cirebon.

Actually Allah has alluded it in the Holy Koran so that people can understand and learn and this is not something new but there 14 century ago and have been mentioned in the Holy Koran An-Nur : 24: 43.

أَلَمْ تَرَ أَنَّ اللَّهَ يُزْجِي سَحَابًا ثُمَّ يُؤَلِّفُ بَيْنَهُ ثُمَّ يَجْعَلُهُ رُكَّامًا فَتَرَى الْوَدْقَ يَخْرُجُ مِنْ خِلَالِهِ وَيُنَزِّلُ مِنَ السَّمَاءِ مِنْ جِبَالٍ فِيهَا مِنْ بَرَدٍ فَيُصِيبُ بِهِ مَنْ يَشَاءُ وَيَصْرِفُهُ عَنِ مَنْ يَشَاءُ يَكَادُ سَنَا بَرْقِهِ يَذْهَبُ بِالْأَبْصَارِ.

*"Have you not seen that Allah makes the clouds, then joins them together (parts of) it, then make heaps, it is visible by you rain out of cracks and Allah (also) decrease (granules) of ice from the sky, (ie) of (wads of clouds like) mountains, then blamed him (granules) ice it to whom He wills and deluded him from whom He wills. Sparkle cloud lightning that almost eliminates vision. "<sup>14</sup>*

From the above verse Allah explain the process of how the rain and of rain also gods lowered hail we call Ice rain and lowered to whom he pleases and he turn for anyone who wished anyway, but in this verse Allah does not explain in detail the process of hail because it is a human duty to think about it.

Ice rain also a lot of us look at the various interpretations of classic, but this interpretation is only slight and does not clarify the process and the secret behind the Ice rain. one of them as it is written in the interpretation of Al-Sya'rawi authored by Muhammad Mutawalli As-Sya'rawi and in the book of Al-Misbah written by Quraish Shihab interpret that ice rain it as a blessing or punishment means that there is ice rain that was sent as a mercy and there are also lowered as the punishment, but not explained how the occurrence and whether hail as a blessing and a curse, or simply as an anathema.<sup>15</sup>

<sup>14</sup> .Yusuf Ali.the holy Koran.An-nur chapter. Verse. 43.

<sup>15</sup> M.Quraish Shihab, tafsir al-misbaah. p. 576

because we know when the Ice rain more damage, especially in agriculture and even there is no benefit, it is we often think of as doom / disaster and if the above mentioned interpretation of ice rain there containing mercy then are the advantages and benefits to the human revelation of Ice rain, this is what we still question especially in the field of science.

See from the above phenomenon, the authors are very keen to study further An-Nur chapter, verse 43 of the revelation of Ice rain by integrating Holy Koran and science in this case the science of climatology in order to solve the problems above in the form of scientific papers or thesis entitled: "**THE ICE RAIN IN THE HOLY KORAN AND SCIENCE PERSPECTIVE**".

By integrating the science of the Holy Koran and science in this paper the authors believe can answer the questions that had been circulating in the public in a clear and people can know that the Holy Koran is the mother of all science and always make it as a source in the a variety of problems and things no longer assume that Holy Koran only matters of worship to the Creator alone.

## **1.2. Problem of Research**

Based on the background of the above problems, then that becomes the problem in this research are:

1. How ice rain in the view of the Holy Koran in general?
2. How ice rain in the view of science?
3. Does the ice rain is a disaster or mercy as it is written in the book of al-Misbah?
4. What is the cause of the ice rain?
5. What is the difference ice rain with snow?

### 1.3. Scope of research

To avoid misunderstandings in this paper, the author will explain the meaning of some terms or words contained in this thesis, as for the word that the principal needs to be explained as follows:

1. **Rain** : water droplets that fall from the air / sky because the process of cooling and liquefying the erosion caused by the Earth's atmosphere.
2. **Ice** : frozen water as a cooling process, both natural and artificial.
3. **Science** : science in general, systematic knowledge about nature and the physical world, including botany, physics, chemistry, geology, zoology, etc.<sup>16</sup>
4. **The Holy Koran** : the word of God that no same, revealed to the Prophet Muhammad, the Archangel Gabriel and intermediaries written in Manuscripts- Manuscripts submitted *mutawaatir* and learn a worship, which began with a letter of Al-Fatihah, and closed with a letter of An-Nas.<sup>17</sup>

### 1.3. Significance of research

Referring to the formulation of the problem above, the purpose of this study is to answer the main topics, namely the Holy Koran and Science with details of the purpose of the study as follows:

1. To determine the occurrence of ice rain, according to the Holy Koran.
2. To determine the occurrence of ice rain according to science.
3. To answer the public questions whether the ice rain is a disaster or mercy as it is written in the book of commentary Qurais Shihab?
4. So that the public can determine the cause of the ice rain.
5. So that the public can distinguish between ice rain and snow.

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<sup>16</sup> . Hasan Alwi, dkk, *Kamus Besar Bahasa Indonesia*, (Jakarta: PT. Balai Pustaka, 2001), p. 967.

<sup>17</sup> . Manna Khalil Al-Qattan, *Studi Ilmu-ilmu Alquran*, terj. Mudzakir AS, ( Bogor: PT. Pustaka Litera Antar Nusa, cet. 14, 2011), p.17.

#### **1.4. Methods of research**

Research methods largely determine the success of the purpose to be achieved in a post, to obtain materials and accurate information in the discussion of this thesis, used methods and measures as follows:

##### **1. Types of research**

In this study, using research literature writing is the research library (library research). This study materials or primary and secondary data from the written form and use the Holy Koran interpretation approach in the book of al-Misbaah.

##### **2. The sources of data**

The source of the data obtained in this study consists of a source of primary data and secondary data. Primer data source that the data obtained from the literature-literature directly related with this title and the interpretations of the Holy Koran, books used are:

- 1) Interpretation of Sheikh Muhammad Mutawalli Sya'rawi.
- 2) Interpretation of M. Quraish Shihab.

While the secondary sources are books relating to the title of this paper, including:

- 1) Encyclopedia of Scientific miracle in the Holy Koran and hadith.
- 2) Encyclopedia of Scientific Miracles of the Holy Koran and hadith.
- 3) How the Holy Koran guides science.
- 4) Astonishing of the Holy Koran.
- 5) papers and magazines as well as articles that are related to the issues discussed.

### 3. Analysis of data

After finding and collecting the data related to the topic, the writer will analyze the data by using content analysis method, especially which is in the exegesis book of *Al-Misbah, al- muyassar, al – muntakhaf, ibnu katsir and at-tabari*. The writer will analyze all about the ice rain process in the perspective of the Holy Koran and science and then make a conclusion about it.

#### 1.5. Systematic Discussion

To make it easier to understand and read this paper, the authors arranged in five chapters and each one chapter is divided into several sub-chapters. The systematic of writing as follows:

**Chapter I** : Introduction, this chapter describes the background of the problem, formulation of the problem, the purpose of research, usability research, term limits, methods of research, systematic writing.

**Chapter II** : The concept of the ice rain in the perspective of Holy Koran and the interpretation of the verse according to some interpretationer.

**Chapter III** : The concept of the ice rain in the perspective of the science

**Chapter IV** : Analysis of the interpretation and relationship between the Holy Koran and science of the ice rain.

**Chapter V** : Closing : Conclusion from the chapter above and suggestion.

# CHAPTER II

## CHAPTER II

# THE CONCEPT OF THE ICE RAIN IN THE PERSPECTIVE OF THE HOLY KORAN

### 2.1. Ice Rain In The Holy Koran

So many Holy Koran verses that explain the occurrence of rain in the earth's surface including ice rain although it is rare to find than the rain water that we usually encounter in everyday life. However, although this is rare turns in verse the Holy Koran in An-Nur chapter as follows:

*"Do you not see that Allah moving clouds and then collect them, then make heaps, and you see the rain come out of the cracks and the ice gods lowered from the sky, from the mountains, then dropped to whom he pleases and he keep it away from whom he desired, had barely sparkle eliminate eyesight."*<sup>18</sup>

#### a. Cumulus cloud formation

Cumulus clouds or cloud clotted starting from spreading cloud pieces and driven by a relatively small wind in collected. Experts say that the cumulus clouds formed when two clouds merge or one cloud is expanding rapidly. If the two clouds merge or one cloud is expanding rapidly, then formed the air flow suddenly therein. Then the air flow was up top gets clouds. When it rises to the top, the air flow is also interesting clouds that are nearby as is said in the word of Allah Almighty:

*"Do you not see that Allah makes the clouds move slowly .Then collect ."*<sup>19</sup>

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<sup>18</sup> Abdullah Yusuf Ali. *The holy Koran*. verse of An-Nur 43.

<sup>19</sup> Ibid.

After this phase, the cloud has the power to attract the clouds that are around, this is what is meant by collecting. after parts of the cloud is collected and residues away from each other. then stop this withdrawal process and there arises something very powerful: progress upwards and head up.<sup>20</sup>

This development makes the clouds piled like that contained in the word of Allah SWT. The clouds that have been fused and then rose and form a stacked.

Word **فَ** in that paragraph indicates the time limit. As for the word **نُمُّ** show the sequence of events directly. When the clouds are piled stop and weakened, then the rain came down because the gods speak; *"Then you see the rain come out of the cracks "* Humans often watched the clouds, but do they know the secret? every time the human sciences increases, increases also the faith that the Holy Koran came from the side of Allah. Science in the last 20 years trying to answer questions about various polemic that occurred in the rain, it's not only answered western scientists but this problem already exists in the Holy Koran since revealed to the Prophet Muhammad. Let's look at the following points:

**1.** God prepares a decrease in rainfall through physical events are very important for the human mind, as the word of Allah which means:

*"And who sends down rain from the sky according to the required size, then the water was our turn barren land, like that you removed from the tomb."*<sup>21</sup>

**2.** When the Holy Koran defines the rain, he mentioned that rain water is lowered to a certain level and calculation, in which case this is the definition of mathematical planning.

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<sup>20</sup>. Hisham Thalbah. *Enkslopedia mukjizat al-quran dan hadis* 2008. p. 75

<sup>21</sup>. Abdullah Yusuf Ali. *The holy Koran*. verse of Az-Zukhruf (43): 11)

3. "... *and then the water was our turn dead land ...* 'This was not a simple sentence or unusual because the verse does not say that the rain to grow plants, but said" the water that we turn the country dead ". *That is, we give life to the dead land that shows the secrets contained in the rain.*

Research Scientific research lately explain some important points about water, clouds and rain that were previously not know. The explanatory research into the miracle that is in the verses.

The results of this study can be summarized in the following points:

1). An American scientist **Vincent G. Schiffer** explained that if the atoms of the water was clear, perfectly clean, and very small, it will not freeze until the temperature - 40 Oc. In order for the water to freeze in temperatures 0o, its mass must be large and perfectly clear. The cloud was a result of evaporation of water that turns quickly into atoms were very small. In other words, cloud physics has a very special arrangement. This is why the properties of ordinary water not apply to him. Therefore, we see that there are clouds in the air does not freeze and fall to earth in the form of clots despite hot temperatures down to – 30 celcius.

2) Clouds are made up of atoms very little water that gathered around atoms of nature. In principle, these atoms, both derived from the salt and dust of the earth. Is that comprise atomic nuclei in every atom of water. No one until now knew the source of the dust of the earth. As no one knows how the atoms of salt to the clouds although expected as a result of the evaporation that occurs near the surface of the sea because the sea brought salt atoms when subjected to the process of evaporation.

3) Every cubic millimeter of cloud estimated to contain one billion atoms of water and 50 to 5,000 raindrops are formed in each cubic centimeter cloud. These droplets turn into rain droplets with a very complicated calculation.

4) The latest scientific research indicates that increasing the number of drops of water from the cloud is related to many factors and conditions, and is capable of small droplets down to earth even in conditions of air temperature drops to -40 degree celcius.

5) Here is about the formation of rain.: Atoms very little water gathered around the nuclei then increase in size. When the water drops down, the size of the surface increases with the approach to the earth and obtain an appropriate balance with the force of the wind that carries it. Rain fell softly on the earth, raindrops get appropriate speed as if falling parachute.

Each time, billions of liters of water from the oceans to the atmosphere and then towards the mainland. Life depends on this water cycle, if humans arrange this cycle, he will never succeed, even using all the available technology in the world. Nevertheless, we obtain water, which is a condition of life that first and foremost, through evaporation without the cost and energy. Every year 45 million cubic meters of water evaporate from the oceans. The evaporated water is carried by winds across the land in the form of clouds. Each year 3-4 million cubic meters of water are carried from oceans to lands, and humans.<sup>22</sup>

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<sup>22</sup> . Harun yahya , *pustaka sains populer islami*. p.55 ( manusia dan alam semesta. 2004. Bandung

In short, the water that leaves we have no control, and without which we can not live, and this process is sent to us in a very special way. As the word of Allah in Az-Zumar :39:21:

أَلَمْ تَرَ أَنَّ اللَّهَ أَنْزَلَ مِنَ السَّمَاءِ مَاءً فَسَلَكَهُ يَنَابِيعَ فِي الْأَرْضِ ثُمَّ يُخْرِجُ بِهِ زَرْعًا مُخْتَلِفًا أَلْوَانُهُ ثُمَّ يَهِيَجُ فَتَرَاهُ مُصْفَرًّا ثُمَّ يَجْعَلُهُ حُطَامًا إِنَّ فِي ذَلِكَ لَذِكْرًا لِأُولِي الْأَبْصَارِ.

*"Do you not see that Allah sends down water from the sky, then set him to be the sources of the earth then would grow him with water plants of different colors, then it becomes dry and then we saw a yellowish, then made his shattered patter. Verily in this is there really a lesson for men of understanding".<sup>23</sup>*

The Holy Koran reminds us that this is one proof that we should be, because it will not be able to be done by man who said in Al-waqiah chapter: 56: 68-70:

أَفَرَأَيْتُمُ الْمَاءَ الَّذِي تَشْرَبُونَ أَأَنْتُمْ أَنْزَلْتُمُوهُ مِنَ الْمُزْنِ أَمْ نَحْنُ الْمُنزِلُونَ . لَوْ نَشَاءُ جَعَلْنَاهُ أُجَاجًا فَلَوْلَا تَشْكُرُونَ.

*"Have you thought about the water you drink. If We will, We make you bring it down from the clouds or do We? He salted, then why are you not grateful?".<sup>24</sup>*

<sup>23</sup> . Abdullah Yusuf Ali. *The holy Koran*. verse of Az-Zumar 21.

<sup>24</sup> Ibid .*al-waqiah verses 68-70*.

## 2.2 The Rain in the Holy Koran

Allah Almighty said as follows;

وَهُوَ الَّذِي أَرْسَلَ الرِّيحَ بُشْرًا بَيْنَ يَدَيْ رَحْمَتِهِ وَأَنْزَلْنَا مِنَ السَّمَاءِ مَاءً طَهُورًا (48)  
لِنُحْيِيَ بِهِ بَلْدَةً مَيْتًا وَنُسْقِيَهُ مِمَّا خَلَقْنَا أَنْعَامًا وَأَنَاسِيَّ كَثِيرًا (49)

*"He winds (as) a bearer of glad tidings close before the arrival of his mercy (rain); And We send down water from the sky so clean, so we turned to the water that country (land) is dead, and give drink to the water that most of the things We, the cattle and the human lot.<sup>25</sup>*

After reflecting on this passage carefully, we will know that the Holy Koran explains in detail, what is referred to by scientists with rain water. The scientists found that the water we drink contains a lot of material and life. A glass of water that we think clearly turns in it there is a very small multi life, such as bacteria, viruses, chemicals, such as iron, copper, aluminium, sodium, magnesium, calcium, and other substances. Substance is contained in the water that we often refer to as pure water.

The scientists also found that the water can be clarified or refined. Purification was carried out by heating the water to reach its boiling point of 100 Celsius. Then boiling water vapors that come together to form clumps and turned cold, to produce droplets of water with high levels of clarity. Scientists also say that the water droplets most excellent refining results is rainwater, before falling to earth and contaminated by impurities in the air, because at the moment a lot of pollution. When rain fell to earth, rain water automatically cleans the air, because of its ability to suck materials, absorb the sulfur gas and other mineral substances, such as lead poisoned. That is why the rain that had fallen to earth tasted sour. As we know, the first days of rain water is clear because at that time the air was clean and not polluted as it is today.<sup>26</sup>

<sup>25</sup> . ibid. verse of Al -Furqan, 25: 48-49).

<sup>26</sup> . Hisham Thalbah. *Enkslopedia mukjizat al-quran dan hadis* 2008. p.79

Rainwater down to earth by absorbing a lot of dust, solid material, and the process is quite complicated. The process was interrupted by rain water mixed with chemicals and salts that contain solid material, thus transforming it like to be a little salty. Therefore, rain water was less enjoyable to drink. Unlike the water that we get from the spring, it tasted fresh and delicious for us to drink.

The scientists explained that rain water is water droplets distillates conducted by Allah or referred to *al-ma 'al-muqthir*. This type of water becomes cleaner and dirt repellent best, which is also able to sterilize polluted earth. almighty Allah over all his words conveyed through the Holy Koran that the water that falls from the sky is very clean water.<sup>27</sup> This information correct scientifically proven. Allah Almighty said as follows:

وَأَنْزَلْنَا مِنَ السَّمَاءِ مَاءً طَهُورًا

*“And We send down water from the sky very clean..”*<sup>28</sup>.

#### a). The Process of Rain

Stages of formation of hail weather can be studied after the levels found. According to levels, the formation of rain occurs in three stages. First, the establishment of wind, the cloud formation, the third formation of rain water. Actually, it has been stated in the Quran for 14 centuries ago as the word of Allah SWT in Ar-Rum chapter:30: 48:

اللَّهُ الَّذِي يُرْسِلُ الرِّيَّاحَ فَتُثِيرُ سَحَابًا فَيَبْسُطُهُ فِي السَّمَاءِ كَيْفَ يَشَاءُ وَيَجْعَلُهُ كِسْفًا  
فَتَرَى الْوَدْقَ يَخْرُجُ مِنْ خِلَالِهِ فَإِذَا أَصَابَ بِهِ مَنْ يَشَاءُ مِنْ عِبَادِهِ إِذَا هُمْ يَسْتَبْشِرُونَ  
(٤٨)

<sup>27</sup> Ibid .p.84

<sup>28</sup> Abdullah Yusuf Ali. *The holy Koran*. verse of .Al-furqan 25:48.

*"It is God who sends the winds (the first stage), and the winds that stir the clouds and God spreads them in the sky as He wills, and make it lumpy (second stage), and then you see the rain come out of the cracks (the third stage), then when he lowered it to His servants He pleases suddenly they rejoice."<sup>29</sup>*

*The first phase of this verse describes: "a god who sends the winds ....."*

A large number of air bubbles formed by the foaming in the oceans continuously burst and cause water particles to be ejected into the sky. The salt-rich particles, called aerosols, function as water traps. This will form the dots clouds by collecting around the water vapor, which then rises from a sea of tiny droplets.<sup>30</sup>

*The second phase: ". stir the clouds and spread them according pleases Allah, and make it lumpy ..."*

clouds are formed from water vapor that condenses around the salt crystals or dust particles in the air. Because the water droplets in these clouds are very small (with a diameter of 0.01 and 0.02 mm), the clouds are suspended in the air and spread across the sky, so the sky is covered by clouds that we often see it before the rain fell.

*The third phase : ".... and then you see the rain come out of the cracks ..."*

water particles that surround salt crystals and dust particles will grow thicker and form raindrops, so that droplets of rain will be heavier than air and will fall to earth is called the rain.<sup>31</sup>

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<sup>29</sup> .Ibid. verse of .Ar-Rum 30: 48).

<sup>30</sup> .sohaib saeed. *Astonishing facts of the holy qur'an*. P.95.

<sup>31</sup> . Hisham Thalbah. *Enkslopedia mukjizat al-quran dan hadis* 2008. p. 57

### **b) The Rain Down by Certain level**

in the eleventh verse of Az-zuhruf chapter, rain is defined as water that is sent "by levels" and that lowers water from the sky according to the required level of not less nor more. of course, the rain fell to earth in a dose sufficient. The first measure related with rain is the speed of the decline. Objects that same weight and size as a rain, when dropped from a height of 1,200 meters, will be accelerated continuously and fell to earth with a speed of 558km / h. However, the average speed of the rain fall only 8-10 km / h.<sup>32</sup>

Water that falls to earth in a low speed because the raindrop has a special form which can increase friction atmosphere and helps it fall to earth with a lower speed. assume a different form of raindrops, or the atmosphere did not have the quality of friction, the earth will face destruction of any rain. This becomes obvious just by looking at the numbers below at a glance. The minimum altitude of rain clouds is 1,200 meters.

The effects of the drops of rain falling from such a height equal to a 1 kg object that falls from a height of 15 cm. rain clouds can be found at an altitude of 10,000 meters. In this case, a single drop will have the same effect with a 1 kg object that fell from a height of 110 cm.

In one second, approximately 16 million tons of water evaporate from the earth. This amount is equal to the amount of water that fell to earth in one second. Within a year this sum to 505x10<sup>12</sup> tons. Water continues to rotate in a balanced cycle based on the dose that has been determined by Allah .<sup>33</sup>

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<sup>32</sup>. Harun yahya. *how the qur'an guides science*.p.80

<sup>33</sup>. Ibid .h. 58

### c). Rain Give Life a Dead Land

In many verses in the Holy Koran that calls upon us to pay attention that the rain is useful for survival on this earth, useful to revive dead land and barren as the word of Allah.

وَهُوَ الَّذِي أَرْسَلَ الرِّيحَ بُشْرًا بَيْنَ يَدَيْ رَحْمَتِهِ وَأَنْزَلْنَا مِنَ السَّمَاءِ مَاءً طَهُورًا (48)  
لِنُحْيِيَ بِهِ بَلْدَةً مَيْتًا وَنُسْقِيَهُ مِمَّا خَلَقْنَا أَنْعَامًا وَأَنَاسِيَّ كَثِيرًا (49)

*“It was he who winds (as) a bearer of glad tidings close before the arrival of his mercy (rain); And We send down water from the sky is very clean, for We turn to water the land (soil) is dead, and give drink to the water that most of the things We, the cattle and the human lot.”<sup>34</sup>*

In addition to the earth with water, which is an absolute necessity for living beings, rain also serves as fertilizer. rain drops that reach the clouds after being evaporated from the seas contain certain substances that can be a member of fertility to a dead land. Droplets which "gives life" is called droplet surface tension. Surface tension drops form on the top surface of the sea, called the micro layer by biologists.

In this layer, which is thinner than one tenth of a millimeter, are the remaining organic compounds from the pollution caused by microscopic algae and zoo plankton. The remainder of these organic compounds contained some elements that are rarely found in sea water such as phosphorus, magnesium, potassium and some heavy metals like copper, zinc, cobalt and lead.<sup>35</sup>

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<sup>34</sup> . Abdullah Yusuf Ali. *The holy Koran*. verse of . *Al-Furqan*, 25: 48-49.

<sup>35</sup> .Dr.Haluk Nurbaki. *verses from the holy qur'an and the facts of science* .p. 56.

Droplets containing fertilizer up into the sky by the winds and after a while they fall to earth as rain drops. These raindrops ,, Seeds and plants on earth obtain various metallic salts and other elements that are important in growth being life. like contained in the word of Allah Almighty:

وَنَزَّلْنَا مِنَ السَّمَاءِ مَاءً مُّبَارَكًا فَأَنْبَتْنَا بِهِ جَنَّاتٍ وَحَبَّ الْحَصِيدِ

*“ And We send down water from the sky a lot of benefits and We cause to grow the trees and grains harvests.”<sup>36</sup>*

Mineral salts that fall in rain are examples of conventional fertilizers (calcium, magnesium, potassium, etc.), which serves to increase fertility. meanwhile, heavy metals contained in this aerosol type, are other elements that increase fertility in the development phase and production plants.

In short rain is an important fertilizer. After a hundred years, barren land can become fertile again and all the essential elements for plants, just by these fertilizers dropped with rain. Forests also develop and were fed with the help of aerosol from the sea. In this way, 150 million tons of fertilizer falls on the surface of the earth every year. If there were no natural fertilization like this, on this earth there would be very little vegetation, and the ecological balance would be impaired.<sup>37</sup>

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<sup>36</sup> . Abdullah Yusuf Ali. *The holy Koran*. verse of .Qaaf, 50: 9

<sup>37</sup> . Ibid.p.59.

#### d) Rain as Cleaning the Dirt

we'll explain some of the specifications of rainwater. Rainwater can be likened to one hundred percent of the water from the filtration or distillation. Air is the result of the evaporation of sea water which coagulates and forms clouds overcast, so then the rain fell. Therefore, rain water is so crystal clear water. Rainwater can lift all the dirt in the skin of the human body and much better than plain water. It makes rainwater is able to eradicate germs and disease, even it is very clean and well used in medicine.

The sterile water from a variety of viruses and bacteria. He has a special ability to suck the chemicals, gases, dust scattered, or any substance that met, in very high amounts. Therefore, rain water is also known as one of the elements that clean the air. After knowing the character of this rain water, we'll come to the conclusion that, in fact everything that has been described above, collected in one word. This word that has explained the nature of the rain water in the word of Allah as follows:

وَأَنْزَلْنَا مِنَ السَّمَاءِ مَاءً طَهُورًا

*“And We send down water from the sky very clean.”<sup>38</sup>*

Words طَهُور mean eliminating various kinds of dirt and filth, also clean, as stated in al-Muhith dictionary.<sup>39</sup>

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<sup>38</sup> . Abdullah Yusuf Ali. *The holy Koran.* verse of *.Al-furqan 25:48*

<sup>39</sup> . Ibid. h. 87.

### 2.3. Type of the Rain According To The Holy Koran

One proof that the Quran had the privilege than any other book in terms of water is the use of the word **طهوراً**, as the water that falls from the sky, because the water is very clear water. Scientists call it a water distillation or filtration of the sky. The water contains substances that can clean. As for said Furat had never used the term Allah swt for rainwater. This word is used for the water we drink because the river water is not crystal clear and pure one hundred percent, but in which there are the salt and liquid substances that give us pleasure. In addition, one more thing we need to note that the Holy Koran is the first book that explains the any kinds and types of rain water in cleaning everything that is on the surface of the earth.<sup>40</sup>

#### a) The Acid Rain

Allah said as follows:

أَفَرَأَيْتُمُ الْمَاءَ الَّذِي تَشْرَبُونَ. أَأَنْتُمْ أَنْزَلْتُمُوهُ مِنَ الْمُزْنِ أَمْ نَحْنُ الْمُنزِلُونَ. لَوْ نَشَاءُ  
جَعَلْنَاهُ أُجَاجًا فَلَوْلَا تَشْكُرُونَ.

*"Have you thought about the water you drink. If We will, We make you bring it down from the clouds or do We? He salted, then why are you not thankful?".<sup>41</sup>*

Jabir narrated from Abu Ja'far that the prophet peace be upon him if the drinking water is always read a prayer "Praise be to Allah who have members with fresh water we drink fresh, with grace and he does not make the water salty and bitter, because of our sins. Acid rain occurs from the content of certain substances such as sulfur, and chemicals being owned rainwater. This rain caused liquefaction important gases in rainwater. Pure rain with characteristic becomes acidic, because the ratio of carbon dioxide (co 2) which decomposes in the rain water. This reagent is measured by means of acid size (PH).

<sup>40</sup> . Hisham Thalbah. *Enkslopedia mukjizat al-quran dan hadis* 2008. p.59

<sup>41</sup> . Abdullah Yusuf Ali. *The holy Koran*. verse of . *AL-Waqi'ah*, 56: 68-70).

If the number of reagent / pH getting smaller, the ratio of acidity in rain water is getting higher. General characteristics of pure rain pH ranged between 5.5 to 6. Any rain that has acidity level of 5 or more than 5, the so-called acid rain. The term is acid deposition which consists of two parts:

1. The deposition wet acidic substances, which showed acid rain, fog and snow.
2. Precipitation dry acidic substances, showed some acid gases and particles.

Acid rain caused much damage to vegetation, trees, sea, and river. The earth with all its natural resources were also damaged. The effect is similar to the process of erosion on construction rocks and minerals. The problem of acid rain has been experienced by Germany, and the country suffered losses of about 600 million dollars a year, after the acid rain destroying crops them.

Many studies that explain the negative effects of acid rain, as it has been posted by Jamie James magazine which describes the discovery about the mechanism that can prevent acid rain. For the first time, the English scientist, Robert Smith has written a report of 600 pages in 1872 that indicates the acidity of acid rain torrential temperature that occurs above the city of Manchester. The cause is thought to have come from the smoke that accumulates from the factory. In 1967 a scientist observed that acid rain was torrential that occurred in the suburbs. After the rain, the level of acidity is increasing with the passage of time. He called it the war of man against chemicals from nature'. In 1980, in Los Angeles, United States, degrees of acidity of acid rain reaches 3, in the UK in 1979 has reached 4.5, Canada in 1979 had reached 3.8.

### **1) Elements forms the acid rain**

Acid rain is formed from gas activity that melts in the rain water, thus forming a wide variety of acidic substances are diverse, among these substances are:

- 1) Gas sulfur oxide (SO<sub>2</sub>)
- 2) Nitrogen oxide (NO)

Both of these substances have an important role in the formation of ice rain

3) Carbon dioxide (CO<sub>2</sub>)

4) Khorl (CL)

The following reaction will explain how the formation of acid rain this:

a. Sulfide dioxide reacts along the water to form sulfuric acid,  $\text{SO}_2 + 2\text{H}_2\text{O} = \text{H}_2\text{SO}_4 + \text{H}_2$

b. Nitrogen oxides react together with water to form nitric acid

c. Carbon dioxide reacts along the water to form carbonic acid.

d. Khor react along the water into acid hydrochloride.

## 2) The Process of the Acid Rain

Acid rain is formed from the reaction process gas containing sulfate. Sulfuric dioxide (SO<sub>2</sub>) reacts along with oxygen (O<sub>2</sub>) with ultraviolet rays coming from the sun. It is this process that produces sulfuric trioxide (SO<sub>3</sub>) are fused after the reaction, through seawater that rose into the air with the aim of producing sulfide acid (H<sub>2</sub>SO<sub>4</sub>), this process is then fused with the gas contained in the air like ammonia which produces the composition of a new particle, namely sulfuric acid ammonia.

Nitrogen oxide together with sulfuric oxide is a part in the formation of acid rain. Nitrogen oxide will change the oxygen and ultraviolet light into nitrogen acid. As with other substances, it will be left in the air with the wind and a place suitable for heavy rain, then breaks down to form acid rain that tasted spicy and very pungent.<sup>42</sup>

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<sup>42</sup> . Hisham Thalbah. *Enkslopedia mukjizat al-quran dan hadis* 2008. p.89

### 3) The Effect of The Acid Rain For The Earth and Humans

Acid rain about smoke can cause interference with the human body, such as blockage of the respiratory tract and mucous membrane blockage, cough and damaging series of human organs. In addition, acid rain can also provide negative effect for the plant, such as leaves are falling and the imbalance in the size of the growth. After the acid rain is absorbed by the roots, harvest losses and the death of forests can not be avoided.

Acid rain can also negatively affects the cattle, echinoderms and small fish in the river that is polluted by acid. This indicates that the system environment will not run properly if terjdi imbalance on the elements of the environment, pollution, destruction and disruption of chemical elements. Some of the things we must do to solve this problem:

1. Clean any contaminated before spreading into the air.
2. Reminds humans the importance of maintaining a clean environment.
3. Make laws for the preservation environment.
4. Looking energy source for the environment.

In the Holy Koran verse, clean rainwater described can be consumed and used by humans even to this pertanian.hal according to the word of Allah as follows:

أَفَرَأَيْتُمُ الْمَاءَ الَّذِي تَشْرَبُونَ

*"Have you not concerned about the water you drink?".<sup>43</sup>*

Then the question arises, who sends down water that is fresh and refreshing to drink? Is not Allah Almighty who has created everything that exists in this universe.

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<sup>43</sup> . . Abdullah Yusuf Ali. *The holy Koran.* verse of . *AL-Waqi'ah*, 56: 68-70).

The answer lies in the following verse:

أَأَنْتُمْ أَنْزَلْتُمُوهُ مِنَ الْمُزْنِ أَمْ نَحْنُ الْمُنزِلُونَ

*"Make you bring it down from the clouds or do We?"<sup>44</sup>*

If god wanted to, he could just make this fresh water tasted salty which can not be utilized by the earth and humans. miracle here is that Allah Almighty power to make rainwater in some areas where the water can not be consumed and used by humans. God only will see the seriousness of man grateful for the gift he gave to humans, multiply that are born and the inner ones. This is alluded to Allah in the Holy Koran :

لَوْ نَشَاءُ جَعَلْنَاهُ أُجَاجًا فَلَوْلَا تَشْكُرُونَ. (70)

*"If we willed, we make it salty, then why are you not thankful."<sup>45</sup>*

#### **b) Rainwater Fresh**

Holy Koran draws our attention by calling the rain water that lowered by Allah SWT from the sky is tasteless. This is in accordance with the word: in al-waqiah chapter:56: 68-70:

أَفَرَأَيْتُمُ الْمَاءَ الَّذِي تَشْرَبُونَ. (68) أَأَنْتُمْ أَنْزَلْتُمُوهُ مِنَ الْمُزْنِ أَمْ نَحْنُ الْمُنزِلُونَ

*"Have you thought about the water you drink. If We will, We make you bring it down from the clouds or do We? He salted, then why do you not give thanks?"<sup>46</sup>*

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<sup>44</sup> .Ibid.

<sup>45</sup> .Ibid.

<sup>46</sup> .ibid.

So also in another verse:

وَجَعَلْنَا فِيهَا رَوَاسِيَ شَامِخَاتٍ وَأَسْقَيْنَاكُمْ مَاءً فُرَاتًا

*“And We made him the high mountains, and we give you to drink fresh water?”*

هُوَ الَّذِي أَنْزَلَ مِنَ السَّمَاءِ مَاءً لَكُمْ مِنْهُ شَرَابٌ وَمِنْهُ شَجَرٌ فِيهِ تُسِيمُونَ  
يُنْبِتُ لَكُمْ بِهِ الزَّرْعَ وَالزَّيْتُونَ وَالنَّخِيلَ وَالْأَعْنَابَ وَمِنْ كُلِّ الثَّمَرَاتِ إِنَّ فِي ذَلِكَ لَآيَةً  
لِقَوْمٍ يَتَفَكَّرُونَ.

*"He it is Who sends down water from the sky, and some of it you drink (fertile) plants, which in (place of growth) you graze your herds. He grow for you with rain water plants; olives, dates, grapes and all kinds of fruits. Verily in this is truly there are signs (power of God) for people who reflect."<sup>47</sup>*

As we have seen, the rain comes from the evaporation of water which 97% is the evaporation of sea water contains salt is salty. However, rain water is fresh water. Rain is sweet is because of another physical law that has been set by Allah. Based on this law, where it comes from evaporation, both from the salty sea, lake containing minerals, or from the mud, then the water will evaporate never contain other ingredients.

Rainwater will fall to the ground in a state of pure and clean, in accordance with the provisions of Allah:

وَهُوَ الَّذِي أَرْسَلَ الرِّيحَ بُشْرًا بَيْنَ يَدَيْ رَحْمَتِهِ وَأَنْزَلْنَا مِنَ السَّمَاءِ مَاءً طَهُورًا

*"He winds (as) a bearer of glad tidings close before the arrival of his mercy (rain); And We send down water from the sky is very clean."<sup>48</sup>*

<sup>47</sup>. Abdullah Yusuf Ali. *The holy Koran*. verse of An-Nahl, 10-11

<sup>48</sup>. Ibid verse of *Al-Furqan* 25: 48.

## 2.5. The Interpretation of Ulemas About The Ice Rain

Hail is as delicious and disaster-derived gods for whom he wants and he avoids to whom also he wants. It is found in some books of interpretation but there is no book of commentary that discusses in detail about hail in his comments. some commentators are as follows.

### a) The interpretation of M. Quraish Shihab

أَلَمْ تَرَ أَنَّ اللَّهَ يُزْجِي سَحَابًا ثُمَّ يُؤَلِّفُ بَيْنَهُ ثُمَّ يَجْعَلُهُ رُكَامًا  
فَتَرَى الْوَدْقَ يَخْرُجُ مِنْ خِلَالِهِ وَيُنزِلُ مِنَ السَّمَاءِ مِنْ جِبَالٍ  
فِيهَا مِنْ بَرَدٍ فَيُصِيبُ بِهِ مَنْ يَشَاءُ وَيَصْرِفُهُ عَنِ مَنْ يَشَاءُ  
يَكَادُ سَنَا بَرْقِهِ يَذْهَبُ بِالْأَبْصَارِ (43)

*"Do you not see that Allah moving clouds and then collect them, then make heaps, and you see the rain come out of the cracks and the ice gods lowered from the sky, from the mountains, then dropped to whom he pleases and he keep it away from whom he desired, had barely sparkle eliminate eyesight."<sup>49</sup>*

To prove that the gods back everything, this verse describes the power set of rain, the water originated from the sea and rivers on land, then evaporated then fell back to earth. Allah said, "do you not anyone among you look at that god almighty cloud moves through the wind and then collect them the parts that light it, then make heaps so become heavy, then you see the rain come out of the slit ago down to earth and gods also lowers down hail from the sky, from the clumps of clouds so much the size like a mountain.

then the item inflicted rainy it to whom he wants as a blessing or torment and inevitability of whom he wanted, had barely sparkle lightning, the luster of lightning is visible and occurring due to friction over the cloud, eliminating vision, which is a close up view and blind, because the light is so bright.

<sup>49</sup> Ibid . verse of *An-Nur* 43

The majority of scholars understand the words (الودق) within the meaning of the rain. He was taken away from the word (ودق) which means dripping. There also are understood in the sense of lightning.

Word: **مِنْ بَرْدٍ** anyone understand it as the author pointed out above, there is also an opinion that Almighty Allah created the heavens icebergs.

This verse is rated by some Muslim scholars as to have preceded the modern scientific discoveries about the phases of a cumulus cloud formation and characteristics and related thereto. Mentioned that the cloud rained down from the top shaped clouds called cumulus, namely the onset of clouds to the top. Cumulus peaks can reach 15-20 km until it looked like a high mountain. In the findings of modern science, cumulus precipitation experienced three phases, namely:

- a. phase coherence and growth
- b. rain loss phase
- c. Phase efflux.

In addition, the cumulus clouds is the only cloud that produces cold and contain the flow of electricity.

Said **أَبْصَارًا** here is the plural of **بَصْرٍ** the potential to see with the eye. In al-Baqarah (2): 7 used the word **أَبْصَارَهُمْ** here **لَأَبْصَارًا**. On the other hand, here used the word **يَخْطَفُ** in other readings **يُذْهِبُ** in al-Baqarah is **يَخْطَفُ**. This is apparently due to the verse mentioned in the context of the description of the greatness and power of the gods in creating lightning due to friction in the cloud and because here emphasized there said that the lightning sparkle. As for the al-Baqarah, the context is a threat to people -the hypocrite who manifest themselves as Muslims but their hearts kufr. Because of that they are threatened with the words **يَخْطَفُ** grabbing, which implied therein meaning of torture.<sup>50</sup>

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<sup>50</sup> . Hisham Thalbah. *Enkslopedia mukjizat al-quran dan hadis* 2008. p.67

Lightning can sometimes occur in a row and nearly continuous. About 40 discharge electricity in a one minutes because of a very bright light - can lead to blindness for people who see it. This case is common in sailors and airmen who penetrated wind in hot locations -the location. Such information of the interpretation of al-muntakhaf.

What concerns the circumstances described this paragraph Oleg wind driven clouds seen clearly when someone is on board the air. This verse implies a scientific nature that is only known after the aircraft was found.<sup>51</sup>

### **b) The Interpretation of Muyassar**

Do you see that Allah herding clouds to where he wants, and then collect it, then make it piled up, and he sent down rain from the sides and down from a gap of cloud, resembling a mountain hail, he casts for whom He wills of slaves his and he keep it away from the people he wants anyway, and almost eliminates shine eyesight.<sup>52</sup>

### **c) The Interpretation of Muntkhab**

Have you not seen to Prophet that God is marketed wind, clouds, and featuring some of the some and makes it accumulated, you see the rain come out through the clouds, and God come down from condensing clouds groups, which are similar to the mountains in the greatness of coolness, like pebbles down on a people or harm them according to the laws and the will It does not come down on others as God wants it glorified actor chosen, and almost lightning incident light from clouds chatter goes of intensity, and these phenomena are signs of God cationic faith by capacity.<sup>53</sup>

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<sup>51</sup> .Qurais syihab. *tafsir al-misbah. part. 8*

<sup>52</sup> Dr. `Aidh al-Qani. *Tafsir muyassar* ( maktabah syamilah ) chapter 1. p.355

<sup>53</sup> Muhammad Bin Sirin (w=110 H) ,Tafsir Al-Ahlam / Muntkhab al-Kalam fi Tafsir al-Ahlam..BAB 1 H. 526

#### d) The Interpretation of At-Tabari

Almighty to Prophet Muhammad, peace be upon him says: (أَلَمْ تَرَ) (Have you not seen) O Muhammad (أَنَّ اللَّهَ يُزْجِي) (God Extends) means: marketed (clouds) where he wants (ثُمَّ يُؤَلِّفُ بَيْنَهُ) (and then composing himself) says, then compose between the clouds, and added between the clouds, he did not mention with others and between the additive can only be made to a group or two; because the clouds in the sense of the collection, one cloud, and combines Palm: he is a peer to say the man who said: sat flan among the palm trees, and the author السحاب: And he said: (then makes rubble) says, (ثُمَّ يَجْعَلُهُ رُكَّامًا) then makes the clouds which, composing in part to some of the rubble, accumulated one on another. Has told of Abdul Hamid bin bayaan , said: Tell us Khalid, he said: the rain, for Habib bin Abu Thabet, ubaid bin Amir Laithi, said: wind Four: sends God first wind earth dumplings, and then sends a second, they form clouds, and then sends rubble, and then sends the rain. And saying: (فَتَرَى الْوَدُوقَ) (يَخْرُجُ مِنْ خِلَالِهِ) (you see the rain come through it) says: you see the rain come out of the clouds, the rain.<sup>54</sup>

#### e) The Interpretation of Ibnu Katsir

Allah Almighty tells us that he makes the clouds with a remit that at the beginning of the creation he was in a weakened state. "Then collect them, which brings together the clouds and making piles so as ye looked rained out of the gaps.

Word of Allah Almighty, Allah bring down ice from the sky and the blob as a mountain "in this vision of our" mountain "is an allusion to the cloud, the word of Allah Almighty and the dropping of ice to anyone he wants and he turn from whom he wants, who inflicted it is hail from the sky, so the word of Allah, then dropped to whom he wants " means mercy for man "and turned away from whom he desired" means that he is not sent rain to them.

<sup>54</sup> . Abū Ja far Muḥammad ibn Jarīr al-Ṭabarī.tafsir at-tabari.chapter 19.p.201

Maybe some are referred to the word of god "then dropped the ice it means doom for anyone he wants, because it can damage the ice overwriting fruits, plants and trees, and keep ice from whom he wants is a blessing for them."<sup>55</sup>

Various commentators above we can conclude that there are several stages in the process of establishing that descend to earth, so also of the kinds of rain that fell that there is a down to earth in the form of hail as experienced in some places especially Indonesian, but unfortunately there are no interpreters Special discuss about the occurrence of hail at the surface of the earth, and therefore this discussion covers only a brief interpretation

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<sup>55</sup> .Muhammad Natsir Ar-Rifa'i. *ringkasan tafsir ibnu katsir* . part III . p.510-511.

# CHAPTER

# III

## CHAPTER III

### THE CONCEPT OF THE ICE RAIN IN THE PERSPECTIVE OF THE SCIENCE

#### 3.1. Definition of The Ice Rain

##### Definition of Ice Rain according to the experts:

a). **P.Ginting** in geography books said: ice rain is the rain that accompanied the ice rain that fell to earth, this happens because the air currents that contains a lot of moisture and air to move vertically achieving very high.<sup>56</sup>

b). **Byers, H.R.** 1974 said: ice rain is a form of precipitation in the form of balls, pieces, and pieces of crushed ice and have a diameter of between 5-50 mm. But in extreme growth, diameter ice rain hail could be even greater. ice rain can fall of separate or gathered into clumps that do not have a regular shape.<sup>57</sup>

Rain is the fall of the water, either in liquid or solid form (hail), the surface of the earth. annual precipitation is the amount of water that falls on the surface within one year are measured per one square meter. Rainfall is measured by a rain gauge called a graduated rain. a graduated tool is normally installed in the station rainy weather observer. The results of measurements of rainfall in many places can presented either in the form of tables, graphs, or in the form of a map.<sup>58</sup>

Ice rain is a form of precipitation in the form of balls, chunks, or flakes ice and have a diameter of between 5-50 mm. But in extreme growth, diameter ice rain could be even greater. ice rain can fall of separate or gathered into clumps that do not have a regular form .

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<sup>56</sup> .Fathurrahman.*ips geografismp vii.p .154*

<sup>57</sup> . Akhmad Fadholi. Jurnal Badan Meteorologi, Klimatologi, dan Geofisika,p.75

<sup>58</sup> Dr.srihayati dkk. *geografi sltp kelas 1.esis.h59-64*

Rain stone that fell during the ice rain is called Rain stone. If the Cumulonimbus clouds are ice crystals and water droplets saturated (super cold water) simultaneously, then the super-saturated water droplets tend to evaporate and directly deposited on the ice crystals. This relates to the Bergeron-Findeisen process that occurs in Cumulonimbus clouds.<sup>59</sup>

As a result, the growth of ice crystals much more quickly than the growth of water droplets. The growth of ice particles can also occur through the freezing process drops. In this process there is a mass of ice accretion caused by the collision with drops too cold then frozen with ice particles speeding up the process particle mass accretion ice.<sup>60</sup> In addition, the growth process in the Cumulonimbus clouds of ice particles can still occur by way of a merger between the collision and ice particles with other ice particles. This process can occur if there are differences in the speed of falling particles of ice.

However, in this process, the possibility of adhesions (adhesion) between the ice particles is determined by the type and magnitude of the temperature of the ice particles. Usually sticking ice surface will be very strong if it occurs at a temperature less than -5 C. Genesis hail that accompanied the collapse of the ice crystals are relatively more frequent in extra-tropical regions because it has a layer of frozen (freezing level) is relatively lower than the tropics. In general, the size of which fall leaves hydrometeor freezing level has same size in both tropical and extratropical regions. Thus the freezing of Indonesian which has a relatively higher level rare hail. For the freezing level is high enough, then during the course of the fall, the ice particles melt little by little due to air friction so that when it reaches the earth's surface, the ice rocks had melted into rain.

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<sup>59</sup> .Barry, R.G. and R.J. Chorley, 1998, *Atmosphere, Weather and Climate*, London: Seventh Edition, P.75

<sup>60</sup> . Ibid .p. 76

Ice rain usually falls directly in the cloud Cumulonimbus but can also come out by the strong vertical currents and crashed a few miles from the clouds under the anvil of Cumulonimbus clouds Cumulonimbus clouds cirrus or cells that skew.

Ice rain is the science of meteorology is also called the Ice rain. Ice rain or sleet is precipitation which consists of balls of ice. One of the ice ball formation is through the condensation of water vapor in the atmosphere through cooling process in a layer which is located above the freezing level. Typically, only large-sized ice that only happens with a process like this. Because of its large size, so that even if the ice is down to the warmer temperatures and lower area, not all of this ice to liquid (melting).

Keep in mind, ice rain is not only imitation in subtropical areas, but ice rain may also occur in the area around the equator or local division of the tropical season, including in Indonesia. ice rain is usually the not too visible, and the ice rain was accompanied by rain water. ice rain ice rain usually occurs only about a few minutes, then after that the rain water will return to normal as usual.

This phenomenon usually occurs during transitional season or when the weather / rain in the rainy season rain is still plenty going on day or night, because the phenomenon is always the case after the escape at 13:00 to 17:00 and yet not close likely to occur at night.<sup>61</sup>

Ice rain will only be formed when the ice particles or grains of rain water that freezes grown / evolved by absorbing grains of cloud too cold in cumulonimbus clouds which precisely passes freezing at altitudes where the air temperature 0°C or about 16,000 feet in Indonesia).

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<sup>61</sup> H.eri sulisiono dkk .*geografi* , p.68

Cumulonimbus clouds containing ice particles and water droplets are great. For the cumulonimbus air conditions (weather) should support the volatility in the layer of air so easily happen convection process plus there must be supply adequate moisture so the air masses are lifted by convection process contains moisture that much and would facilitate the formation of cumulus clouds that develop into the cloud cumulonimbus.

Cumulonimbus cloud growth when accompanied by a strong updraft, the ice rain may be formed. According to Rogers (1979), updraft entrance at the ground level and go up into the zone called "vault" (curved). Due to the strong updraft in the vault zone, water droplets can not afford enlarged to a size that can be detected radar. When formed above the vault level, wind shear at these levels will hinder the fall of precipitation to the vault and decided circulation zone. According Houze (1993) strong updraft (10- 40 m / s) in the supercell allows the formation of very large ice rain.<sup>62</sup>

It is important to note in the growth / enlargement ice rain is freezing latent heat released when water droplets are absorbed freezes. As a result of the latent heat, the temperature of the ice rain that grow to be a few degrees warmer than the temperature of the surrounding cloud. Temperature balance between ice rain and clouds will be achieved when the total heat released due to freezing (both from the aqueous phase to solid or from the gas phase to the solid phase) is equal to the heat absorbed by a cloud due to conduction. With the achievement of equilibrium temperature is then no longer transfer of heat from hail to the environment. The growth rate of hail can be determined by summing the rate of growth due to the absorption of water droplets and the rate of growth due to sublimation (Rogers, 1979). Ice rain usually occurs along the mountainous areas because the mountain has a horizontal wind upward force (also known as orographic lifting), thereby increasing the updrafts in the storm and making frequent ice rain likely. One area that is often the case that large ice rain is along the mountainous northern India, which is reported as one of the biggest ice rain hail-related deaths substantially in 1888.

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<sup>62</sup> . *ibid.* p.69

China also experienced a hail storm which is quite significant. Throughout Europe and Croatia are also often hail. In North America, hail is also usually the case in Colorado, Nebraska, and Wyoming, which is known as the "Hail Alley." Results in this area usually occurs between March and October during the afternoon and evening, with most occurring in the months of May to September.

Ice rain often occur in Indonesia, because it is a tropical region with temperatures warm enough with the sea breeze is enough to cycles of ice rain. As recently as this is happening in Edinburgh, with the amount of ice the size of marbles, or that occur in Depok with the amount of ice as a rock gravel. Side Meteorology, Climatology and Geophysics said that when the hail can not be predicted except by looking at the shape cloud. In addition, the hail that accompanied the wind is not visible in the satellite and radar rainfall. So if the weather is very hot and scorching suddenly changed the dark, we are careful only.<sup>63</sup>

Information Division Head of Meteorology and Geophysics, Ahmad Zakir said that the decline particle when it was confirmed that resembles snow ice was caused by clouds gravel. Side the cloud does not melt well so down to earth in a state still shaped condensation (blob). "But events like this only lasts a few minutes.

After the rain lasted normal again, "he said. Is this condition occurs in other areas? Zakir just say the phenomenon usually occurs in areas that have clouds near the earth's surface. "The cloud is the origin of rain. In the northern part of West Java, things like this are also common. Some areas in Indonesia are also common, "said Zakir. Further said Zakir, hail it is a burst of rain water condensation clot on the surface of the earth is called the dark clouds. "Usually like it. First time out the items. Now it's five to 10 minutes will like it. Ice rain is also common in Indonesia, although Indonesia is located in the tropics that the air temperature (at the surface) is always warm with relatively high humidity although in the dry season. ice rain in the tropics, will occur when the stones down the ice that is dry and has a fairly large size is currently out of the cloud base.

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<sup>63</sup> Ibid.

It is given that the surface air temperature is high enough and the ice cubes can still retain its shape with a size of about 3 mm in diameter while until the soil surface, while on his way (free fall) from the cloud base to the ground ice rain must shrink in size as a result of contact with air temperature which is quite high. Hail, ever happened in Jakarta (around street M. H. Thamrin) and across the BPPT building on April 20, 2000 starting at 15:15 pm, preceded by strong winds and heavy rain accompanied with lightning and thunder. Storm moving quite quickly moving from the southwest toward the northeast.<sup>64</sup>

The size of the hail hailstone results are usually judged by their diameter is measured with a ruler. Ice rain the size visually often be estimated by comparing its size with other objects we know as coins. Free sleet or ice rain fall speed when it hits the ground, varies depending on the size of the diameter ice rain. A ice rain diameter of 1 cm (0:39 inches) fell at an average speed of 9 meters per second (20 mph), when the size of the diameter of 8 cm (3.1 inches) then it will fall to an average speed of about 48 meters per second (110 mph). Ice rain speed depends on the diameter of ice rain.<sup>65</sup>

Ice rain can cause serious damage, especially to the world automotive, aviation, glass and windows, farms, and many others. ice rain is one cyclone is quite important in the world of aviation. When the ice cubes measuring 0.5 inches (13 mm), aircraft can be damaged very seriously.<sup>66</sup>

Because it is local, its range is less than 10 km and the duration is very speedy way so if we use grid weather models with 0.75 degrees (82.5 km), it has a ratio of 1: 8, unless we have domain scale with a very little more than 10 km, but the phenomenon really need to know we are on the outside of the house, such as:

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<sup>64</sup>.Drs. Achmad Zakir, AhMG. *Hujan Lebat, Angin Kencang, Badai*.rri.co.id.id.

<sup>65</sup> . *ibid* .

<sup>66</sup> . Drs.k wardiyatmoko,mm. *geografi kelas x sma*. P.67

- a) More common at the turn of the dry season to the rainy season.
- b) More often occurs in the afternoon or evening, but sometimes at night.
- c) One day before the air on the morning night- it was hot / stuffy '.
- d) Around 10:00 am seen growing cumulus cloud (cloud layers), among the clouds there is one type of cloud that has a very clear boundary edges gray towering like cauliflower.
- e) The next stage is the cloud will quickly change color to dark black.
- f) Consider the trees around which we stand, is there any branches or twigs that have rocked quickly, if it rains and strong winds have been forthcoming.
- g) feels there is a touch of cool air around where we stand.
- h) Usually the first rains are sudden rain pouring, drizzling rain when the strong wind events far from our neighborhood stands.
- i) There was a lightning strike hard enough, if the indicator is felt by us, then there is a possibility of heavy rain + thunder and strong winds will occur.
- j) If 1 or 3 days in a row there was no rain in the rainy season, it is possible that the heavy rain that first down followed by strong winds both in the category of tornado or not.<sup>67</sup>

### **3.2. Cause of Ice Rain**

If we observe the occurrence of rain water, then we will know that the rain water can occur because of the evaporation of sea water which then becomes a cloud containing water, and the water later dropped to fall-out- falling water called by rain. But whether it is the same as that caused hail to fall? Yes, this was not too different from with that cause of ice rain. One cause hail is freezing. Where in these conditions, water vapor ultra cold attracted to the surface of the seeds of the ice.

Then, due to a sudden condensation, then the formation of ice with a very large size. Actually ice rain is not a natural phenomenon that is strange and rare. ice rain is already common. And the occurrence of ice rain This could have happened tropical regions is not even in the rainy season.

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<sup>67</sup> . ibid.

The ice rain that fell when ice rain is condensation from rain water which coagulates on the surface of the earth is called the dark clouds. ice rain also caused a cumulonimbus cloud towering into the sky at a height kilogram meter.<sup>68</sup>

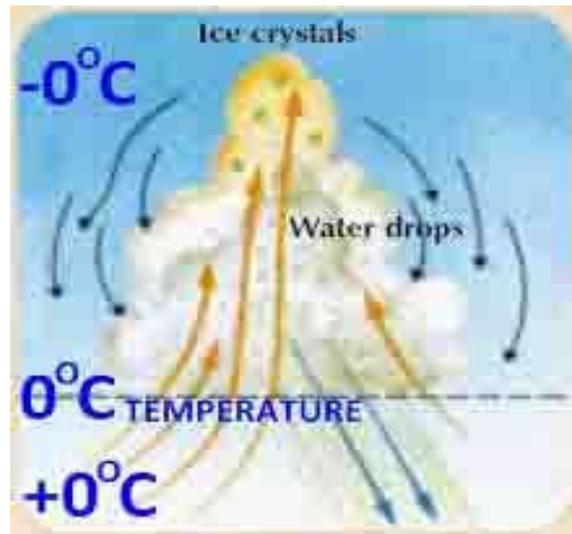


Figure 1.1. cumulonimbus cloud

Ice rain is usually accompanied by a tornado comes from the type of clouds that have single cells in layers close to the surface of the earth. Moreover, it can also come from multi-cell clouds, this growth vertical and horizontal area of about 3 to 5 kilometers. Ice rain is the case with a very short duration, between 3 to 5 minutes. Hail the longest is the duration of 10 minutes, and even then very rare. This ice hujan then usually localized and uneven.<sup>69</sup>

Information Division Head of Meteorology and Geophysics, Ahmad Zakir said that the decline particles when it was confirmed that resembles snow ice was caused by clouds near the earth's surface. When the lumps were near the surface of the earth, he said, would cause the cloud does not melt well so down to earth in a state still shaped condensation (blob). "But events like this only lasts a few minutes.

<sup>68</sup> . Zakir, A., 2008, *Modul Praktis Analisa dan Prakiraan Cuaca*, Pusat Pendidikan dan Latihan Meteorologi dan Geofisika, Jakarta. p.78.

<sup>69</sup> .ibid.

After the rain lasted normal again, "he said. Is this condition occurs in other areas? Zakir just say the phenomenon usually occurs in areas that have clouds near the earth's surface. "The cloud is the origin of rain. In the northern part of West Java, things like this are also common. Some areas in Indonesia are also common," said Zakir. Further said Zakir, hail it is a burst of rain water condensation clot on the surface of the earth is called the dark clouds. hail also caused by the nearby presence of cumulonimbus clouds with the earth so that the process of melting ice is not as perfect as usual rain.

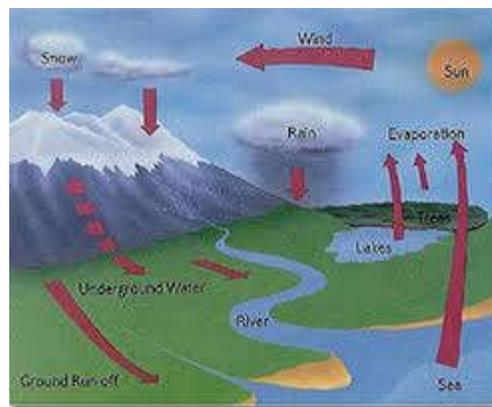


Figure 1.2. cumulonimbus cloud closer to the earth

### 3.3. The Process of Ice Rain



Figure 1.3. the water cycle before hail

Here is the occurrence of ice rain:

1. Water the many that are stored in a container called oceans, seas, rivers, lakes, wetlands, and so forth. Then the water will experience a water-evaporation or called by evaporation through the help of sunlight. Including the water in the foliage plants or on the soil surface.
2. The process of evaporation of water (especially of plants) is called transpiration. Water vapor resulting from evaporation will experience compaction or condensation which then becomes a cloud. Then the clouds moved separately to a different place with the help of the wind, the wind that blows either vertically or horizontally.
3. Then the clouds containing water vapor are blown and came to the place where the temperature is cooler and reach the dew point or dew point and condenses, and because of the severity of this dew then the rain came down into dots.
4. When it has to condense it, has become water, and blown by the wind thermic rose, to a height which has a temperature below freezing, the dew will turn into ice which would fall to the bottom. The bond between the ice molecules are more powerful than between molecules of water, curry ice is solid. It causes the ice falling down with a form that does not neatly organized, could be the size of a pebble, but some are up to the size of a fist.<sup>70</sup>

#### **3.4. Size and Speed of Ice Rain**

The size of the ice rain results are usually judged by their diameter is measured with a ruler. ice rain the size visually often be estimated by comparing its size with other objects we know as coins. Free sleet or hail fall speed when it hits the ground, varies depending on the size of the diameter ice rain. A hailstone diameter of 1 cm (0.39 inches) fell at an average speed of 9 meters per second (20 mph), when the size of the diameter of 8 cm (3.1 inches)

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<sup>70</sup> . H.eri sulisiono dkk, *geografi* , P.68

Then it will fall to an average speed of about 48 meters per second (110 mph).  
ice rain speed depends on the diameter of hailstones.<sup>71</sup>



Figure 1.4. size of ice rain 1 cm (0.39 inches)



Figure 1.5. speed of 9 meters per second

### 3.5. How to Know the Ice Rain

Actually ice rain the arrival of this we can know through certain signs. Ice rain is usually accompanied by the arrival of strong onshore winds or sometimes a tornado. Rain, ice can be predicted from the nature or circumstances that are around us. This becomes very necessary known to us who are on the outside of the house.

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<sup>71</sup>. Byers, H.R., 1974, *General Meteorology*, p.80

a) Ice rain which accompanied by strong winds is common during the climate transition in Indonesia during the dry season to the rainy season. So that when the transition is thus a potential for ice rain greater than for other various times.

b) Ice rain is more common during the afternoon or evening. But do not rule out the possibility of hail this happen at night. Only during the afternoon or evening over the potential occurrence of ice rain.

c) One day before the hail fell, the air in the morning until the evening was very hot and stuffy. This is likely to cause clots to form clouds layered clouds that would cause this ice rain.

d) If visible around 10:00 layered clouds or cumulus layer, and as between the clouds seen a type of cloud that boundary edges clear gray and towering like cauliflower, then later the clouds turn black dark duration fast. If it looks like these indications, it can be predicted that there will be accompanied by hail and strong winds.

e) Look at the plants or trees that are around us. If the branches and the branches begin rocked by the wind, then it's a sign of rain and strong winds will soon arrive.

f) The air around us began to feel the cold that makes my skin crawl.

g) Ice rain usually when the rain first came was sudden torrential rain. When the first rain after the drizzle, then it indicates that the wind is away from where we are.

h) If we hear the lightning strike hard enough, then there is a possibility that heavy rain accompanied by lightning and strong winds will occur.

i) If upon entering the rainy season, from 1 to 3 days of no rain, then a chance of rain fell the first time is very heavy rain and accompanied by strong winds.<sup>72</sup>

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<sup>72</sup> Drs. Achmad Zakir, AhMG. Hujan Lebat, Angin Kencang, Badai.go.id.

### 3.6. Damage of the Ice Rain



Figure 1.5. agricultural damage of ice rain

Ice rain can cause serious damage, especially to the world of agriculture, aviation, farming and more. Ice rain is one cyclone is quite important in the world of aviation. When the ice cubes measuring 0.5 inches (13 mm), aircraft can be damaged very seriously. Because it is local, its range is less than 10 km and the duration is very speedy way so if we use grib weather models with 0.75 degrees (82.5 km), it has a ratio of 1: 8, unless we have meso domain scale with a very little more than 10 km, but the phenomenon really need to know we are on the outside of the house.

The biggest impact of the fall of ice rain in some areas is to crops on agricultural land, the rain that fell in the form of grains of crystal, physically can directly damage all parts of the plant such as leaves, twigs, branches and trunks. Besides ice rain also are highly acidic so it can "poison" hail affected plants, the plants can "burn" due to the nature of the hail acidity. If the ice rain that fell on the area coverage is small and limited and the duration time is short, the impact is minimized by spraying water on the plants affected by ice rain.



Figure 1.5. damage to the automotive

But if the coverage of precipitation ice that covers a large area as in Papua, it can be ascertained all the plants will be destroyed and the only way to fix this is to do rehabilitation plants in total, and it takes a long time if it occurs in plants annual such as coffee. Likewise "lacing" ice rain the "sweeping" of agricultural land for food crops, is very likely to harvest failures or which would impact on food insecurity in the area, this is what happened in Puncak Jaya wijaya in mid July 2015 ago. In addition to destruction of agricultural land, ice rain also can cause dredged to homes, vehicles and other infrastructure. For the context of Central Aceh, ice rain phenomenon also occurred in some areas, such as in Wih Ilang and Atu Lintang in 2014 ago , and has recently happened again in the area Belang Gele and Totor Uyet and had destroyed some homes. Although the coverage area they are small and relatively short duration of time, but we all have to keep on the lookout, because of weather conditions that change is still happening in this Gayo highlands.



Figure 1. 6. coffee tree damage

Air temperature and wind speed and direction at any time change suddenly, could potentially re-occurrence of hail in this area. Moreover, satellite imagery captured belonged in June and July 2015 shows that in the central region of Aceh, the possibility formation Cumulonimbus cloud large enough. Damage to forests and the environment in this area is considered as one of the causes clouds to form Cumulonimbus that aviation is a "scourge" that is greatly feared. As the people are Muslim, of course we can only put their trust and surrender to God, may we be spared of all disasters. Of course, we also need a sense of resignation accompanied by changes in attitudes and our behavior towards our environment, keeping the environment and planting trees on degraded land is a wise action to restore the function of our environment. Besides, to prevent encroachment and damage to the environment, is a real effort to keep us from disasters.<sup>73</sup>

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<sup>73</sup> .ibid.

# CHAPTER

# IV

## CHAPTER IV

### ANALYSIS OF THE ICE RAIN

#### **4.1. Analysis the Ice Rain of the Holy Koran**

In Chapter II has been explained that there are a variety of interpretations in An-nur chapter verse 43. It has been suggested that rain water and ice rain is as a blessing, and some are interpreting ice rain as misfortune from Allah for the creatures of the earth and the rain water as a blessing. in this case the commentators differ slightly in response to the problem of rain water and the ice rain and the subject of intense concerns about this ice rain. therefore the writer analyzes from some opinions that have been suggested by commentators in this problems about ice rain.

After comparing some interpretation of them like in the book of M.Quraish Shihab in Al-Misbaah, Dr. Aid Al-Qani in Muyassar, Muhammad bin Sirin in Muntakhab, Abu Ja'far Muhammad bin Jarir in Ibn Katsir, writer conclude that it can be lowered gods ice rian as a disaster to humans and the Allah sent down to anyone he wants and avoid gods for whom he wills, this was reinforced by the tafsir Ibn Katsir who says that ice rain was more damaging if it falls to earth as described in his book if there is ice rain it will be damaging to some aspects, such as fruits, plants and trees. It can be seen in everyday life when ice rain occurs there will be a few of the damage on the earth as has explained in interpretation of Ibn Kathir.

The explanation commentators who say the rain as a blessing and ice rain as a disaster we can conclude from the above that the combined interpretation of rain which Allah sent down as a mercy and there is also rain which Allah sent down as a disaster to humans. Among the rain Allah sent down as a mercy that is: the rain that often happens in our lives that is useful for us to drink, fertilize plants and also fertilize the soil barren. And the rain as a disaster: ice rain, acid rain, thunderstorms, and rain can damage other objects that exist on earth. Well, from the above analysis, we can distinguish various kinds of rains that occur in our lives so that we not say that the all rain is blessing from Allah but in fact there is rain as disaster for human. Allah sent down as a form of teaching to those who think about it.

#### **4.2. Analysis the Ice Rain of the Science**

After analyzing ice rain according to science that can cause serious damage, especially to the world of agriculture, aviation, farming and more. Ice rain is one cyclone is quite important in the world of aviation. When the ice cubes measuring 0.5 inches (13 mm), aircraft can be damaged very seriously. Because it is local, its range is less than 10 km. The biggest impact of the fall of ice rain in some areas is going on crop farms, rain that falls in crystal, can directly damage of the plant such as leaves, twigs, branches and trunks.

Besides ice rain also are highly acidic so it can "poison" ice rain affected plants, the plants can "burn" due to the nature of the ice rain acidity. If the ice rain that fell on the area coverage is small and limited and the duration time is short, the impact can be minimized by spraying water on the plants affected by ice rain.

#### **4.3. Analysis of the Suitability of the Holy Koran and Science of the Ice Rain**

Talking about the understanding of the relationship of the ice rain between the holy Koran and science. That has been mentioned above in the second and third chapter about the sense of the ice rain in the holy Koran and science. The writer analyzed, apparently there are no differences between the holy Koran and science to understand about the ice rain.

According to the holy Koran in chapter an-nur verse 43. That Allah sent down the ice rain to whom she like and avoid to whom she dislike. Which we know from the analysis above that commentators ice rain as the disaster that was revealed to the creatures of the earth, it is also consistent with studies in science also says that ice rain it contains serious damage if it fell to the earth. So the Holy Koran and science agree in assessing the ice rain that happened in our lives and with this we are increasingly convinced that the holy Koran was not revealed to worship of to Allah, but the holy Koran covers all aspects of knowledge. And this will be the work of Muslim scientists to always relate all the science with the content of the holy Koran.

## CHAPTER V

### CLOSING

#### 5.1. Conclusion

After analyzing in chapter 4, we can concluded that hail that fell to earth is a calamity that Allah sent down to earth. The biggest impact of the fall of ice rain in some areas is going on crop farms, rain that falls in crystal, can directly damage of the plant such as leaves, twigs, branches and trunks.

Besides ice rain also are highly acidic so it can "poison" ice rain affected plants, the plants can "burn" due to the nature of the ice rain acidity. If the ice rain that fell on the area coverage is small and limited and the duration time is short, the impact can minimized by spraying water on the plants affected by ice rain.

As a result, the growth of ice crystals much more quickly than the growth of water droplets. The growth of ice particles can also occur through the freezing process drops. In this process there is a mass of ice accretion caused by the collision with drops too cold then frozen with ice particles speeding up the process particle mass accretion ice.

So the Holy Koran and science agree in assessing the ice rain that happened in our lives as a disaster, and with this we are increasingly convinced that the Holy Koran was not only revealed to worship of Allah, but the Holy Koran covers all aspects of knowledge. And this will be the work of Muslim scientists to always relate all the science with the content of the Holy Koran.

## 5.2. Suggestion

After the writer propose above conclusions, the writer put forward some suggestions next as follows:

1. Hopefully this book will add to our knowledge o know the various kinds of rain.
2. For the moslem scholars, it is needed to add study and discussion about the ice rain, Because this study is still very short.
3. Given this research is expected readers know that the Quran includes a variety of science
4. For prospective researchers, the research findings can be used as a source of inspiring associated with the natural sciences.

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## APPENDIX

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