

Atmospheric Interpretation in Islamic and Physics Perspective

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Abstract: The atmosphere is a layer of gas that surrounds a planet, including the earth. The function of the atmosphere is to protect the earth from exposure to ultraviolet radiation which can harm the life of living things on earth with the ozone layer. The atmosphere in the Qur'an can be associated as sky or *sama'*, this is explained in the Qur'an of Al-Baqarah verse 29. The purpose of this research is determined the relationship between the atmosphere by perspective of Islam and Physics. The research's method used descriptive qualitative is using literature study. The results of this research to show that the layers of the atmosphere, when viewed from the perspective of the Qur'an, very beneficial functions for life on earth, including the layers of the atmosphere as a place for the process of rain formation and places that have different oxygen composition properties in each layer. In addition, the atmosphere is the place where lightning and lightning occur before the rain occurs, as a source of disaster for the unjust and the atmosphere is a source of sustenance and blessings. Meanwhile, based on a physics perspective, the layers of the atmosphere have different functions based on the characteristics of the gas content and pressure in each layer of the atmosphere.

Keywords: Atmosphere, Islam, Physics, Ozone Layer.

Introduction

The Earth is one of the planets in the solar system that has a multi-layered envelope, one of which is the atmosphere. Earth's atmosphere is a layer of gas that surrounds the earth from its surface to deep in outer space. The height of the atmosphere is between a height of 0 km above the ground to a height of about 560 km above the earth's surface. The atmosphere is the most important component of the earth, because living things can breathe in it. The atmosphere consists of various gas elements in which the processes of formation, climate and weather changes occur. The existence of the atmosphere is to minimize the difference in temperature during the day and night. In addition, the atmosphere protects humans from excessive exposure to sunlight and meteors that fall from outer space.

Sky or *sama'* includes everything that is above the earth where the atmosphere has several layers on the earth's surface (Wiwit, 2015). The

atmosphere in the Qur'an is explained in surah al-Baqarah verse 29 which states "He (Allah) created everything that is on earth for you, then He went to the sky, then perfected it into seven layers of heaven. He is all-knowing of all things." As for the seven heavens referred to in the verse that the atmosphere has seven layers including the troposphere, stratosphere, mesosphere, thermosphere and exosphere.

Materials and Methods

This research is a research that uses qualitative data analysis methods using the technique of literature study methods based on literature review (*library research*). This study also presents data without manipulation and other additional treatment. The main source of this research is previous scientific papers or journals that are closely related to the atmosphere, both from the perspective of the Qur'an and science. I Made

Winarta in Ridwan et al., (2021) explains that the qualitative descriptive analysis method is a method that contains the process of analysis, description and summary of various conditions taken from a collection of information originating from interviews or direct field observations of the problem being researched. Meanwhile, Sugiyono that's defines descriptive qualitative research as a research method that uses the philosophy of postpositivism as its foundation, where it is generally used to conduct research in objective conditions with the researcher serving as the key instrument (Ridwan et al., 2021). This research aims to give readers a better understanding of the view of the atmosphere in a comprehensive study of the Qur'an and science. It is hoped that in the future the readers will be more motivated and have deeper insight to be able to conduct research using various methods and concepts by applying literature review in their research properly and correctly, so that from here it will produce quality writing.

Results and Discussion

The atmosphere is a layer of gas that surrounds the planet including the earth. On earth, the atmosphere has a height of 0 km from the ground to about 560 km from the surface on the earth. The atmosphere functions to regulate the process of receiving heat from sunlight. the atmosphere does this by absorbing and reflecting the heat emitted by the sun. About 34% of the sun's heat is reflected back into space by the atmosphere, clouds, and also the earth's surface. Then about 19% is absorbed by the atmosphere and clouds, then about 47% reaches the earth's surface. As for the function of the atmosphere, one of them is to protect the earth so that the earth's temperature remains stable and keeps the weather and air humidity inside the earth also stable (Oktaviani, 2009). The atmosphere is divided into seven layers, this is explained by the Qur'an Surah Al Baqarah verse 29 which reads:

هُوَ الَّذِي خَلَقَ لَكُمْ مَّا فِي الْأَرْضِ جَمِيعًا ثُمَّ أَسْتَوَىٰ إِلَى السَّمَاءِ
فَسَوَّاهُنَّ سَبْعَ سَمَاوَاتٍ وَهُوَ بِكُلِّ شَيْءٍ عَلِيمٌ

Meaning: He is Allah, Who made everything on earth for you and He willed (created) the heavens, then He made seven heavens. And He is All-Knowing of all things.

It is explained in the verse above that there are seven layers of the atmosphere, including:

1. Troposfer

The troposphere is the lowest layer of the atmosphere which ranges from a height of 0 – 18 km above the earth's surface. The thickness of the troposphere is approximately 10 km on average. At the equator, the height of the troposphere is about 16 km with an average temperature of 80°C. The temperate regions of the troposphere are about 11 km high with an average temperature of 54°C, while in the polar regions the altitude is about 8 km with an average temperature of 46°C. The atmosphere is very important for the life of living things on earth. In this layer, cacao and climate change events occur.

In this layer, almost all types of weather, sudden changes in temperature, wind, pressure and humidity that we experience every day occur. The lowest altitudes are the warmest part of the troposphere, because the Earth's surface absorbs heat radiation from the sun and transfers it into the air. In this troposphere there are greenhouse gases that cause the greenhouse effect and global warming. The troposphere consists of the planetary layer, the convection layer and the tropopause layer.

2. Stratosfer

The stratosphere is the second layer of the atmosphere which is located at an altitude of 18-49 km from the earth's surface. The stratosphere is characterized by a temperature inversion process, which means that the air temperature increases as the altitude increases from the earth's surface. The increase in air temperature based on altitude begins to stop, namely at the top of the stratosphere called the stratopause with an air temperature of around 0°C. The stratopause is the boundary layer between the stratosphere and the mesosphere. This layer is located at an altitude of about 50-60 km from the surface of the earth. The stratosphere

consists of three layers, namely, the isothermal layer, the hot layer and the top mixed layer.

This layer of the stratosphere has no more water vapor, clouds or atmospheric dust, and usually airplanes that use jet engines fly in this layer. This is intended to avoid weather disturbances. The gradual change from the troposphere to the stratosphere starts from a height of about 11 km. The temperature in the lowest layer of the stratosphere is relatively stable and very cold, namely -70°F or around -57°C . In this layer, very strong winds occur with a certain flow pattern.

3. Mesosfer

The mesosphere is the third layer of the atmosphere whose atmospheric temperature decreases with increasing altitude up to the fourth layer. The mesosphere is located at an altitude between 49 - 82 km from the earth's surface. This layer is the protective layer of the earth from falling meteors or other outer space objects. The air contained here will cause a shift to occur with objects coming from space and produce high temperatures. Most meteors that reach Earth usually burn up in this layer.

This layer of the mesosphere is characterized by a decrease in air temperature, an average of 0.4°C per hundred meters. This decrease in air temperature (temperature) is due to the mesosphere having a negative radioactive equilibrium. The lowest temperature in the mesosphere is less than -81°C . Even at the top of the mesosphere which is called the mesopause, which is the boundary layer between the mesosphere and the thermosphere, the temperature is estimated to be around -100°C .

4. Termosfer

The thermosphere is the fourth layer of the atmosphere which is located at an altitude between 82-800 km from the earth's surface. This layer of the thermosphere is also known as the ionosphere. This layer is where the ionization of particles occurs which can have an effect on the propagation/reflection of radio waves, both long and short waves. It is called the thermosphere because there is a fairly high temperature rise in this layer, which is around

19820°C . This change occurs due to absorption of ultraviolet radiation.

This radiation causes chemical reactions to form an electrically charged layer known as the ionosphere, which can reflect radio waves. Before the advent of the satellite era, this layer was used to help transmit radio waves over long distances

5. Eksosfer

The exosphere is the fifth layer of the atmosphere which is located at an altitude between 800 – 1000 km from the earth's surface. This layer is where the irregular movement of atoms occurs. This layer is the hottest layer and air molecules can leave the atmosphere up to a height of 3,150 km from the earth's surface. This layer is often referred to as interplanetary and geostationary space. This layer is very dangerous, because it is where the destruction of meteors from outer space occurs.

Conclusions

Based on the explanation regarding the atmosphere above, it can be concluded that in the view of the Qur'an the atmosphere has been explained in surah Al-Baqarah verse 29 which means "He is Allah, Who made everything on earth for you and He willed (created) the heavens, then He made seven heavens. And He is All-Knowing of all things." (Al-Qur'an, 2:29) in this verse it is explained that the atmosphere has 7 layers. This proves the extraordinary majesty of Allah because Allah has explained in His words that the layers of the atmosphere are in accordance with scientific truths that can be proven in modern times. From a scientific point of view, it is explained that there are 7 layers of the atmosphere, namely the Troposphere, Stratosphere, Ozonosphere, Mesosphere, Thermosphere, Ionosphere and Exosphere which can prove the truth of God's word which was explained 1400 years ago. So that after reading this article it is hoped that the reader will be able to realize the greatness of God who is so great and make him closer to God.

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