Influence of Lunar Orbit Variation on Global Climate and Environment

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Abstract: Twenty four solar terms summarized by people through long-term observation of the sun’s annual activity has roughly revealed the changing laws of seasons, climate, phenology and so on in a year, reflecting the impact of the sun on the earth’s climate change on a large scale. However, because people ignore the impact of the moon’s activity on the earth’s climate change on a small scale, they are baffled and helpless when they face the severe problem of global warming. Therefore, the author analyzed various factors affecting global climate change, and found that due to the retreat of polar glaciers, the moon gradually approached the earth. The moon can not only pour more airflow out of the polar vortex, blow out larger ozone holes in the stratosphere, and blow away more clouds in the troposphere, exposing a wider space, letting the sun shine strongly, thus warming these places, but also pull on more clouds, making many places covered by the clouds originally be exposed to stronger sunlight, thus becoming warmer. In addition, the author also found that the proximity of the moon to the earth will also cause changes in the earth’s environment. Therefore, the author clearly put forward reasonable countermeasures to prevent global warming and environmental change.

Key words: Glacial retreat, lunar activity, global climate warming, environmental change, countermeasure.

1. Introduction

The 24 solar terms summarized by people through long-term observation of the annual activity of the sun can divide a year into four seasons: spring, summer, autumn and winter, roughly revealing the changing laws of seasons, climate, phenology and so on in a year, reflecting the impact of the sun on the earth’s climate change on a large scale [1], but because people ignore the impact of the activity of the moon on the earth’s climate change on a small scale, when they faced with the severe and urgent problem of global warming, they were baffled and had nothing to do with it. According to the existing research results, the main factors that can affect climate and environment change are:

Solar radiation: since 1978, people have used satellites to accurately measure solar radiation. These measurements show that solar radiation has not increased since 1978, so climate warming in the past 40 years cannot be directly attributed to the increase in solar radiation [2].

Orbit variation of the earth: however, there is no gravitational action of giant planets near the earth, so the earth’s orbit is almost unchanged [3].

Volcanic activity: volcanic eruptions can release gases and particles into the atmosphere, and by blocking solar radiation from reaching the earth’s surface, the climate will become cold for several years [4].

Volcanic activity: volcanic eruptions can release gases and particles into the atmosphere. Volcanic eruptions large enough to affect the global climate occur on average several times a century and (by blocking solar radiation from reaching the earth’s surface) lead to a cooling of the climate for several years [5]. The eruption of Mount Pinatubo in 1991 can be called the second continental volcanic eruption in the 20th century, which substantially affected the global climate and reduced the global temperature by about 0.5 °C (0.9 °F). The eruption of Mount Tambora in 1815 also led to a year without summer.
Human impact: some people believe that climate change is largely caused by human activity. Among these human factors, the most noteworthy is the increase of CO$_2$ concentration emitted by burning fossil fuels [6]. However, due to the large molecular weight of carbon dioxide, it usually sinks to the ground, so the content of carbon dioxide in the air near the ground is higher than other places. In addition, 75% of the carbon dioxide scattered in the atmosphere is absorbed and dissolved in the water by the surface water (such as oceans, lakes and rivers) and air precipitation, and 5% of the carbon dioxide is transformed into organic matter and stored through plant photosynthesis. This is why the concentration of carbon dioxide in the atmosphere remains around 300 ppm for a long time. In addition, if the increase in the concentration of these greenhouse gases will raise the earth’s temperature, heating the ocean will produce more water vapor, a greenhouse gas. The calculation shows that the water vapor feedback will multiply the heating effect of carbon dioxide. But on the other hand, more water vapor may generate more clouds, which will reflect sunlight and greatly reduce the heat entering the earth, which creates great uncertainty. Therefore, many scientists do not believe that climate warming is mainly caused by human activity such as burning fossil fuels. They believe that the natural driving force is the main factor of global warming, but they have not found such a convincing natural driving force.

Therefore, the author re-analyzed several main factors affecting climate and environment change and found that although satellite measurements showed that the radiation from the sun to the earth had not increased since the 1960s, the lowest position of the satellite was 150 km above the ground, much higher than the ozone layer in the stratosphere and higher than the high, medium and low cloud layers in the troposphere, so the measurements there only showed that the radiation from the sun to the earth had not increased, whether the solar radiation changes after reaching the ground through the ozone layer and clouds remains to be studied and found.

2. New Findings on Global Warming

In view of the divergent opinions on the causes of global warming, the most authoritative IPCC (Intergovernmental Panel on Climate Change) made the following conclusion in 2007: the large-scale warming of the atmosphere and ocean observed by us, together with the loss of ice sheet mass, support this conclusion:

“The warming observed from 1957 to now can not be attributed to ordinary climate change. Something must force it to change (such as natural solar changes or human carbon dioxide). Humans are likely to have a partial impact on this warming.”

Why is the IPCC’s conclusion so fragile that it cannot draw a stronger conclusion? The uncertainty basically comes down to one reason: the change of cloud. The uncertainty of almost all climate change models stems from the incomplete knowledge of cloud changes and their drivers. Because clouds are in the earth’s atmosphere, the movement and change of clouds are mainly related to the irradiation of the sun, the rotation of the earth, the flow of the atmosphere and the activity of the moon. Although it is well known that “clouds in the sky chase the moon”, people often neglect the role of the moon when studying the movement and changes of clouds. Therefore, when we are looking for the real cause of global warming, we need to study the relationship between the changes of the atmosphere, especially the clouds, and the activity of the moon.

2.1 Earth’s Atmosphere and Clouds

The earth’s atmosphere can be divided into several layers from bottom to top [7]: troposphere (with an average thickness of 12 km), stratosphere, mesosphere, thermogenic layer and exosphere. Because only in places where the vertical upward movement of air is very strong, water vapor can rise and become clouds
when it is cooled, and this condition is not met above the stratosphere, so the common clouds can only form in the troposphere. In fact, there are many kinds of clouds with different heights in the troposphere, which can be roughly divided into high clouds, medium clouds and low clouds. The height of high clouds is 8-13 km; the height of medium cloud is 2-8 km, which can generally block the sky and the sun, and can also produce continuous precipitation; the height of low cloud is below 2 km, which can produce thunderstorms. In addition, 71% of the earth’s surface is ocean, and the land area only accounts for 29%, and the oceans are connected with each other, and the land is divided into some land blocks by the ocean. Therefore, under the irradiation of the sun, the water vapor continuously evaporates from the rivers and oceans, forming clouds in the air. Generally, about 70% of the earth is covered by clouds, as shown in Fig. 1.

Clouds in the atmosphere can reflect part of the energy of solar radiation into space. The reflection ability of clouds varies with the shape and the thickness of clouds. The reflectivity of high clouds is about 25%, that of medium clouds is 50%, that of low clouds is 65%, and thin clouds can also reflect 10%-20%. Under normal circumstances, on a global average, about 30% of solar radiation is scattered and diffused back into the universe, 20% is directly absorbed by the atmosphere and clouds, and 50% is absorbed when reaching the ground. Because the earth has gravitation on clouds, clouds will move with the rotation of the earth. However, the movement of clouds is often blocked by clouds and clouds from different directions, resulting in the speed of cloud rotating with earth being slower than the rotation speed of the earth. As a result, these slow moving clouds fall behind, and finally converge under a mountain higher than these clouds, and converge with other clouds resting here to form a cloud sea lingering around the mountainside. In addition, the moon, which orbits the earth, also has gravitation on clouds. As the saying goes, “the clouds in the sky chasing the moon” means that the clouds affected by the gravitational force of the moon will move with the moon, exposing the places originally covered by these clouds and being strongly irradiated by the sun, thus warming these places. What is more, the moon also has a strong attraction to the polar vortices close to it, making these polar vortices tilt or rupture, pouring out many airflows in the polar vortices. These flows, along with the stratospheric flow, pour down along the direction of the moon’s gravity and travel at a speed faster than the tropopause wind speed. Where these air currents go, strong winds can not only disperse the ozone layer in the stratosphere and form a series of ozone holes, but also convert many thick clouds in the troposphere into rain immediately. The relatively thin and insufficient rain clouds are blown away or pushed to the waist of the mountains with blocking ability, where they converge with the rest clouds to form a cloud sea around the mountainside. In fact, the sea of clouds converging on the side of the mountains will one day be turned into rain by cold air. In short, the strong air flow pouring out of the polar vortex can blow out many ozone holes and disperse many clouds, exposing a vast space and letting the sun shine strongly, thus warming these places greatly.

2.2 Relationship between Polar Glacier Change and Lunar Orbit Change

It is well known that Earth has a dense atmosphere.
Due to the effect of centrifugal force, the rotation of Earth around its axis has caused it to bulge around the Equator, making the Earth become an oblate spheroid with the radius of the two poles of the Earth being less than the radius of the equator and other places, while the gravitational force is inversely proportional to the square of the distance. When the Earth rotates quickly, the rotation will produce strong centrifugal force, making the clouds over the equator and low latitudes tend to move away from their orbits. When these clouds encounter the strong attraction of the moon, they may be dragged by the moon to the north or south pole. Because the gravity of the earth at the polar position is greater than that at other positions, when the cloud is dragged over the polar region, it is easy to be attracted by the gravity of the polar region. When the cloud inhales enough cold air, it becomes a cloud cluster to sink. These clouds falling to the polar region form a powerful “polar vortex” with the rapid rotation of the earth, as shown in Fig. 2a. This vortex can cross the troposphere and stratosphere [8].

During the rapid rotation of the earth, the polar vortex can suck in a large number of clouds and make these clouds condense and compress during the sinking process, but the original angular momentum of the earth remains unchanged, which will accelerate the rotation of the earth and accelerate the revolution of the moon, so that the moon gradually moves away from the earth along the spiral line. When the polar glaciers of the earth retreat, the polar cyclones weaken and their compression force also weakens, which slows down the rotation of the earth and drives the moon to slow down, so that the moon gradually approaches the earth along a spiral line.

2.3 Relationship between Lunar Orbit Change and Global Climate Change & Environmental Change

Because the Antarctic ice sheet is thick, the temperature is low, and there are plateaus around the polar vortex, which is less disturbed by external winds, the Antarctic vortex is more stable and significant than the Arctic vortex, which is not easy to rupture and lasts longer. However, in the Arctic, due to the opening of the Arctic channel and the exploration and exploitation of oil and gas, a large number of Arctic ice sheets have melted, glaciers have been lost, the permafrost has decreased, the edge of the polar basin has subsided, and the sea level and atmospheric...
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The equipotential plane in the Arctic have also decreased significantly, resulting in the weakening of the Arctic vortex [9, 10] and the reduction of the compression capacity of cloud gas, slowing down the rotation of the earth and the revolution of the moon, so that the moon gradually approaches the earth along the spiral line. In recent years, people on earth can observe that the moon is getting bigger and bigger, that is the witness of the moon’s proximity to the earth. As the moon approaches the earth, the moon has a stronger attraction to the polar vortices closer to it, making these polar vortices pour out more and more violent airflow, as is shown in Fig. 2b, thus blowing out larger ozone holes in the stratosphere and blowing away more clouds in the troposphere, exposing a wider space, allowing the sun to shine strongly, thereby warming a wider area. In addition, as the moon approaches the earth, more and larger clouds will move closer to the moon and follow the moon. In this way, many places originally covered by clouds will be exposed to stronger sunlight, thus warming and raising the global average temperature. In addition, as the moon approaches the earth, more greenhouse gases with large molecular weight (such as carbon dioxide, methane and nitrous oxide) deposited on the ground will be attracted to higher space by the moon, resulting in a sharp increase in the concentration of greenhouse gases in the air, so as to enhance the greenhouse effect and increase the global average temperature. In addition, as the moon approaches the earth, when the moon passes over the poles, the moon’s gravitational attraction to the polar ice shelf increases, which is easy to cause the polar ice shelf to collapse and be dragged into the sea. The melting of polar glaciers will bring the moon closer to the earth and further increase the earth’s temperature.

In addition, the moon’s orbit close to the earth will also cause changes in the earth’s environment. For example, many undersea earthquakes are caused by the gravitation of the moon approaching the earth. Because the seafloor has been eroded by seawater for a long time, the seafloor crust has become thinner and many rock formations have broken. When the lunar orbit is close to the earth, the gravity of the moon on the seabed rock strata becomes larger, and the dislocation between the rock strata is easy to occur, so that a large amount of seawater enters the mantle and contacts with high-temperature magma, causing violent explosions and strong earthquakes, and even setting off a huge tsunami. For example, since the early morning of May 21, 1960, a strong earthquake with a magnitude of 9.5, which was rare in the history of the world earthquake, suddenly occurred on the seabed near port Monterey, Chile, and the resulting tsunami affected Japan and other places. In fact, May 21st, 1960 happened to be April 26th of the lunar calendar, and the moon just moved northward from the top of the south pole to the sky over port Monterey. Therefore, the moon was close to the epicenter and had a strong attraction to the rock strata on the seabed of the epicenter, so it was easy to cause the dislocation of the rock strata on the seabed of the epicenter, which eventually led to the submarine earthquake.

3. Strategies to Prevent Global Warming and Environmental Change

Through the above analysis of the causes of global climate change anomalies, it can be seen that due to the massive melting of the Arctic ice sheet and the retreat of glaciers, the Arctic vortex becomes thin and the compression capacity of cloud gas decreases, which slows down the rotation of the earth and drives the moon to slow down, so that the moon gradually approaches the earth along a spiral line, and finally leads to global warming and other climate change anomalies. In order to solve these problems, we should prevent the massive melting of the Arctic ice sheet and the retreat of glaciers, restore the strong trend of the Arctic vortex, enhance the compression capacity of the polar vortex to the cloud gas, accelerate the rotation of the earth and drive the revolution of the moon, so as to keep the moon away
from the earth appropriately, to reduce the global average temperature and environmental change. Since the retreat of polar glaciers is caused by human activity in the polar regions, global warming should be prevented by controlling human behavior. Therefore, people should take the following measures:

1. Reinforce the embankment along the Arctic channel to prevent ice sheet melting and glacier loss.

2. Fill the exploration and mining areas with stones, sand or wood to stabilize the ice base, so as to prevent the melting of the Arctic ice sheet and the decline of the permafrost layer.

3. Reduce people’s activity in the polar regions (such as tourism and oil and gas exploration), so as to keep the polar ice sheets from melting, the temperature will not rise, and prevent the subsidence of the edge of the polar basin.

4. Control the population and prevent excessive reclamation, protect forests, prevent deforestation and promote forest regeneration plans.

4. Conclusion

Global warming and sudden environmental changes have made people increasingly uneasy. In order to effectively deal with global warming and environmental mutations, we must grasp the pulse of earth change, and then apply the right medicine to the case and make precise measures. Therefore, the author re-analyzes various factors that cause global climate change and environmental mutation, and finds that the disappearance of polar glaciers leads to the moon gradually approaching the earth, which leads to global warming and a series of environmental mutations. In order to solve these problems, the author puts forward corresponding countermeasures.

References

[1] Xu, W.-S. 2017. “The Causes and Practical Significance of the 24 Solar Terms in China, Central Plains Culture Research.” Nakahara Culture Studies 5 (4): 96.
[2] Haigh, J. D. 1996. “The Impact of Solar Variability on Climate.” Science 272: 981.
[3] Gale, A. S. 1989. “A Millankovich Scale for Cenomania Time.” Terra Nova. 1 (5): 420.
[4] Rock, A. 2000. “Volcanic Eruptions and Climate.” Reviews of Geophysics 38 (2): 191-219.
[5] Matthews, H., Gillett, N., Stott, P., and Zickfeld, K. 2009. “The Proportionality of Global Warming to Cumulative Carbon Emissions.” Nature 459: 829-32.
[6] Muller, R. A. 2008. Physics for Future Presidents: The Science behind the Headlines. New York: W. W. Norton & Company.
[7] Wallace, J. M., and Hobbs, P. V. 1977. Atmospheric Science: An Introductory Survey. New York: Academic Press.
[8] Cavallo, S., and Hakim, G. J. 2013. “Physical Mechanisms of Tropopause Polar Vortex Intensity Change.” Journal of the Atmospheric Sciences 70 (11): 3359-73.
[9] Seviour, W. J. M. 2017. “Weakening and Shift of the Arctic Stratospheric Polar Vortex: Internal Variability or Forced Response?” Geophysical Research Letters 44 (7): 3365-73.
[10] Li, L., Li, C., and Pan, Y. 2012. “On the Differences and Climate Impacts of Early and Late Stratospheric Polar Vortex Breakup.” Advances in Atmospheric Sciences 29 (5): 1119-28.