A strong evidence of variable gravitational constant: tropical storm

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Abstract: The new theory shows that the gravitational constant may be variable with changes in space. Since the earth orbits the sun, there are perihelion and aphelion, which causes the constant changes of the gravitational constant measured by the earth at different orbital positions. This change in the gravitational constant directly causes a change in the gravitational force on the earth's matter. If the earth's gravitational constant changes, it will lead to changes in the potential energy of the entire atmosphere, which in turn will cause changes in kinetic energy of air. The formation of tropical storms is more sensitive to changes in atmospheric energy. If there is enough energy change, under other conditions suitable, it may cause a rapid increase or decrease in the frequency of tropical storms. This article compares the existing tropical storms on the earth and finds that after the earth begins to move out of the aphelion (in July), the earth's gravitational constant begins to increase gradually. This leads to a decrease in the potential energy of the earth's atmosphere, causing a gradual increase in kinetic energy of air. This increase in kinetic energy can easily lead to the instability of the sea level atmosphere, and then more tropical storms. The earth's orbit begins to deviate from the perihelion (January), and the earth's gravitational constant begins to gradually decrease, which leads to an increase in the potential energy of the earth's atmosphere, which in turn leads to a gradual decrease in the kinetic energy of air. The reduction of kinetic energy of air also means that more atmospheric disturbance energy can be absorbed, thereby reducing the frequency of tropical storms. This trend is in line with the global tropical storm record for a long time in the past. It is a good explanation why there are many tropical storms in August and September, but there are very few tropical storms in April and May.

Keywords: gravitational constant; tropical storm; atmospheric dynamics

1 Introduction

I pointed out in the last paper [1] that the gravitational constant is constantly changing. The gravitational constant is related to the space position, so the value of the gravitational constant measured at different positions of the earth's orbit will be different. In addition, the change of the gravitational constant has a certain influence on the precession of Mercury's perihelion.

The formation of tropical storms is closely related to sea temperature. Only after the sea temperature exceeds a certain value, the frequency of tropical storms will increase significantly. Therefore, even

if other conditions are met, but the seawater temperature is not enough, it is difficult to generate storms. But the occurrence of tropical storms also has a periodic pattern. That is, the frequency of tropical storms in the world mainly occurs from August to September each year, and the frequency of tropical storms is the least from April to May. In addition, the occurrence of tropical storms also has a ten-year cyclical change rule [2].

Due to the change of the gravitational constant, the potential energy of various objects on the earth will change. Among them, the earth's atmosphere is easy to flow and also easy to be compressed. Therefore, the change of the earth's gravitational constant has a direct impact on the atmosphere. The fluidity and compressibility of the atmosphere also make changes in the physical properties of the atmosphere more sensitive to changes in the gravitational constant.

2 Changes in kinetic energy of air

Considering the weight of the earth's atmosphere is approximately: $m = 6 \times 10^{18} kg$

Then the potential energy of the atmosphere is:

$$V = -\frac{GMm}{R}$$

Where *G* is the gravitational constant, *M* is the mass of the earth, *m* is the mass of the atmosphere, and *R* is the radius of the earth.

Where $M = 6 \times 10^{24} kg,\ R = 6.4 \times 10^{6} m$

According to the data of the gravitational constant changing with the earth's orbit in the paper [1], the change of the atmospheric potential energy corresponding to the change of the gravitational constant caused by the different positions of the earth's perihelion and aphelion is:

$$\Delta V = \frac{\Delta GMm}{R} \approx \frac{3.3 \times 10^{-11-4} \times 6 \times 10^{24} \times 6 \times 10^{18}}{6.4 \times 10^{6}} \approx 19 \times 10^{-15+24+18-6} = 2 \times 10^{22} (J)$$

What can be used for comparison is that a medium-sized typhoon (a more intense tropical storm) has an energy of about 1 billion tons of TNT equivalent, which is equivalent to $10^{9+3} \times 10^{6} = 10^{18} J$

It can be seen that the change in atmospheric energy caused by the change of the gravitational constant is 10,000 times the energy of a typhoon. The energy far exceeds the typhoon, indicating that the energy provided by the change in the gravitational constant is sufficient to cover the energy required for tropical storms. Tropical storms are very sensitive to changes in atmospheric energy. For example, when the seawater exceeds a certain temperature, the frequency of tropical storms increases rapidly. Therefore, changes in the frequency of tropical storms are very sensitive to changes in the gravitational constant.

3 The earth moves from aphelion to perihelion

The position of the earth at the aphelion has the smallest gravitational constant. If earth moves from the aphelion to the perihelion at this time, the gravitational constant will continue to increase during the movement.

If the process of moving the earth from the aphelion is approximately considered, the increase in the gravitational constant is uniform. It takes half a year to move from aphelion to perihelion, which is about 180 days. In this way, the decrease in atmospheric potential energy caused by the increase in the gravitational constant of the earth's atmospheric energy per day is approximately:

$$1 \times 10^{20}(J/Day)$$

Judging from the law of conservation of energy, this also means that the kinetic energy of air has increased by so much every day. This energy is one hundred times that of a large tropical storm. From the satellite cloud images of some large storms, it can also be seen that the area of the earth's surface swept by a large tropical storm is more than 1/100 of the earth's surface area. Therefore, this energy change is basically equivalent to the energy of the storm.

The time when the earth moves from the aphelion to the perihelion is about July to January of the following year. Therefore, according to this theory, it can be predicted that tropical storms will mainly occur from July to January of the following year. From the existing data analysis [2], it can be seen that in the northern hemisphere, tropical storms mainly occur in August and September each year, and in the southern hemisphere, they mainly occur in January and February. And the frequency of tropical storms in the northern hemisphere far exceeds that of the southern hemisphere. Globally, the frequency of tropical storms is highest in August and September in the second half of the year.

The difference in the frequency of tropical storms in the northern and southern hemispheres is related to changes in sea temperature. The change of sea temperature is related to the seasonal changes of the earth.

4 Earth moves from perihelion to aphelion

Contrary to the above process, if the earth moves from the perihelion position to the aphelion, the gravitational constant will decrease at this time. The direct result of this reduction in gravitational constant is the reduction of kinetic energy of air. The reduction of kinetic energy of air means that a large amount of energy can be absorbed from the sea surface. This will help suppress the formation of tropical storms.

From the historical recorded data, the frequency of tropical storms in the first half of each year in April and May fell into a trough. This is basically consistent with the theoretical prediction.

5 The ten-year cycle of tropical storms

From the existing observational data to analyze [2], the occurrence of tropical storms also has an obvious ten-year cycle of change. We can notice that Jupiter's orbital period is about eleven years. Since Jupiter's orbital position also has a relatively obvious influence on the gravitational constant measured on the earth [1], is there any relationship between the ten-year cycle of this tropical storm and Jupiter's orbital position? This is also worthy of in-depth study.

6 Conclusion

It can be seen from the above that the frequency of tropical storms directly reflects changes in atmospheric wind energy. Current observational data show that atmospheric wind energy reached its maximum value in August and September in the second half of the year, and reached its minimum value in April and May in the first half of the year. This is difficult to explain with changes in solar radiation energy. Because in these two periods, the distance between the earth and the sun is basically the same.

So where does this extra wind energy come from in August and September? It is really difficult to explain from other sources. And if we look at it from the perspective of changes in the gravitational constant, we can explain this phenomenon to a certain extent. That is, in August and September, the gravitational constant measured on the earth is continuously increasing, resulting in a decrease in atmospheric potential energy, which in turn causes an increase in kinetic energy of air, that is, an increase in wind energy, so that new kinetic energy is continuously input into the atmosphere, causing the formation of tropical storms. And if in April and May in the first half of the year, the gravitational constant will continue to decrease, so the large kinetic energy of air will also continue to decrease. This reduction in kinetic energy of air can effectively suppress the formation of tropical storms.

Due to the sensitivity of atmospheric tropical storms to changes in the earth's gravitational force, it is a very effective method to use the generation mechanism of tropical storms to study the mechanism of gravitational constant changes. Therefore, I believe that the conclusion of this article will be able to provide strong evidence that the gravitational constant is indeed constantly changing. On the other hand, the conclusions of this article also help to predict the occurrence of tropical storms more accurately.

References

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