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The True Causes of the El Niño Phenomenon and Countermeasures for Its Mitigation

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Abstract: As El Niño phenomenon has caused severe disasters in many parts of the world, many people are straining their brains to find its causes and solutions. But due to their isolated and static perspective on observing the problem, their hypothesis about the causes of El Niño phenomenon is shallow, weak, and unbelievable. Therefore, the author of this article has found the true cause and governance method of El Niño phenomenon based on the galactic environment in which the Earth is located and the gravitational relationship between planets. Every time the southern hemisphere enters autumn, winter, or spring, as the Moon orbits around the Earth and approaches the South Pole cyclone, the Moon can tilt or rupture the cyclone, creating a huge cold current from south to north in the southern hemisphere. This cold current originates from the cold waters along the coast of Antarctica, moves northward along the west coast of South America, passes through the coasts of Chile, Peru, and Ecuador, and forms the Peruvian cold current. But if the southern hemisphere enters summer and encounters Jupiter's opposition, due to Jupiter's massive mass and proximity to Earth, it can attract and destroy Antarctic cyclones through strong gravity, thereby weakening the Antarctic cyclones that produce the Peruvian cold wave. In addition, Jupiter can also lift up many cloud layers covering the southern hemisphere through its strong gravity, causing stronger sunlight to shine on the equatorial sea surface, resulting in abnormal warming of the sea surface and the occurrence of El Niño phenomenon.

Key words: Peruvian cold wave, El Niño, Earth, Moon, Jupiter's opposition to the sun.

1. Introduction

At the beginning of the 19th century, fishermen in countries such as Ecuador and Peru in South America discovered that a warm current moving southward along the coast would occur every few years, causing a significant increase in surface seawater temperature. There was originally a Peruvian cold current prevailing on the east coast of the Pacific Ocean in South America. The fish that moved with the cold current made the Peruvian fishing grounds one of the world's four major fishing grounds. However, once this warm current appeared, a large number of fish that prefer cold water would die, causing fishermen to suffer a catastrophic disaster. This phenomenon is called El Niño phenomenon. Its frequency of occurrence is irregular, usually occurring once every few years. If the duration of the phenomenon is less than 5 months, it is called an El Niño condition; if the duration is more than 5 months, it is called an El Niño episode [1, 2].

An extremely strong El Niño event occurred in 1997-1998, which was one of the strongest El Niño events on record. Its powerful influence lasted until the first half of 1998, and the rare catastrophic flood that China experienced in 1998 was the result of the impact of El Niño [3].

On July 4, 2023, the United Nations Meteorological Organization issued a statement announcing the first occurrence of El Niño in the tropical Pacific in seven years. The occurrence of this phenomenon led to July 3rd (the 16th day of the fifth lunar month in China) becoming the hottest day on record on Earth, with a global average temperature of 62.62 degrees Fahrenheit or 17.01 degrees Celsius 2 meters above the Earth's surface on that day.

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As of July 2026, the equatorial central eastern Pacific has entered an El Niño state in May and is rapidly strengthening. Multiple meteorological agencies, such as NOAA (National Oceanic and Atmospheric Administration) and the China National Climate Center, predict that this El Niño event will reach its peak in the autumn and winter of 2026, with a high probability of developing into a strong to super strong level. Its warming effect may make 2027 the hottest year on record worldwide.

Although the El Niño phenomenon has brought profound disasters to many parts of the world [4], people have only a partial understanding of the causes of this phenomenon, with vastly different viewpoints. There are currently multiple hypotheses in the scientific community regarding the causes of the El Niño phenomenon[5], such as:

(1) Atmospheric factor theory: Its mainstream view holds that the random weakening of trade winds is the main triggering point;

(2) Earth factor theory: Some studies speculate that submarine volcanoes, earthquakes, or crustal activity may affect the cold and hot state of the ocean.

(3) Astronomical factor theory: Scholars who hold this view believe that small changes in the Earth's rotational speed may alter ocean currents and airflow patterns through inertial forces.

It can be seen that these hypotheses only look for reasons from a single perspective, which is superficial, weak, and unbelievable. Due to the fact that the Earth is in an interconnected and interacting galactic environment, we should search for the causes and impacts of El Niño phenomenon based on the solar system in which the Earth is located, its operating processes, and interrelationships.

2. The True Causes of the El Niño Phenomenon

2.1 The True Causes of the Peruvian Cold Current

As is well known, the Earth has a dense atmosphere. Due to the centrifugal force of the Earth's rotation, the Earth grows into a sphere with an equatorial bulge and slightly flattened poles, making the radius of the Earth's poles smaller than the radius of the equator and other positions. Universal gravitation is inversely proportional to the square of distance. When the Earth rotates rapidly, the strong centrifugal force generated makes it easy for clouds over the equator and low latitude regions to move away from their rotational orbit and move along a spiral trajectory towards the South or North Pole. Due to the greater gravitational force at the polar regions than at other locations on Earth, clouds are easily attracted by the polar gravitational force when they move over the polar regions. After inhaling cold air, the clouds condense into thick cloud clusters and sink. Many cloud clusters falling towards the polar regions form a strong circulation around the poles as the Earth rotates, known as the "polar vortex", as shown in Fig. 1. There are two major vortex structures on Earth, located in the South Pole and North Pole, with depths that can span the Earth's troposphere and stratosphere, and cannot easily cross polar basins, as shown in Fig. 2. This vortex structure exists year-round and reaches its maximum strength in winter. When the Arctic is in summer and its eddies are not significant, while the Antarctic is in winter and its eddies are significant; when Antarctica is in summer and its eddies are not significant, while the Arctic is in winter and its eddies are significant. So these two vortex structures have complementary advantages.

Fig. 1 Polar vortex.

Fig. 2 Polar basin.

When the polar vortex is not damaged by external factors, it can effectively control the cold air in the polar region, as shown in Figure 3(a). But when the polar vortex is disrupted by external factors and splits, it can bring cold air to mid to low latitude regions, as shown in Figure 3(b).

Due to the thicker Antarctic ice sheet, lower temperatures, and the presence of plateaus surrounding the polar vortex, it is less affected by external winds. Therefore, the Antarctic vortex is stronger, more stable, and significant than the Arctic vortex, less prone to rupture, and has a longer duration. But during the process of the moon orbiting the earth, when the moon approaches the polar vortex, it can tilt or rupture the polar vortex, pouring out some cold air and inner sub cyclones, forming a polar vortex cold air flow that pours out around the world as shown in Figure 3(b).

The main climate type in Antarctica is the cold temperate ice sheet climate. Every autumn, winter, and spring (March to November), the temperature in Antarctica is relatively low, and cyclones are prevalent. This type of polar cyclone is a large vortex formed by the rotation of horizontal airflow in the surrounding high-pressure atmosphere, and is the main cause of Antarctic blizzards.

From March to November each year, as the southern hemisphere enters autumn, winter, or spring, temperatures tend to be lower. Especially between the 16th and 22nd of the lunar calendar, when the moon moves from low latitudes to high latitudes in the southern hemisphere, as shown in Fig. 4, as the distance between the moon and the South Pole cyclone becomes closer, the moon's gravity on the South Pole cyclone also increases,

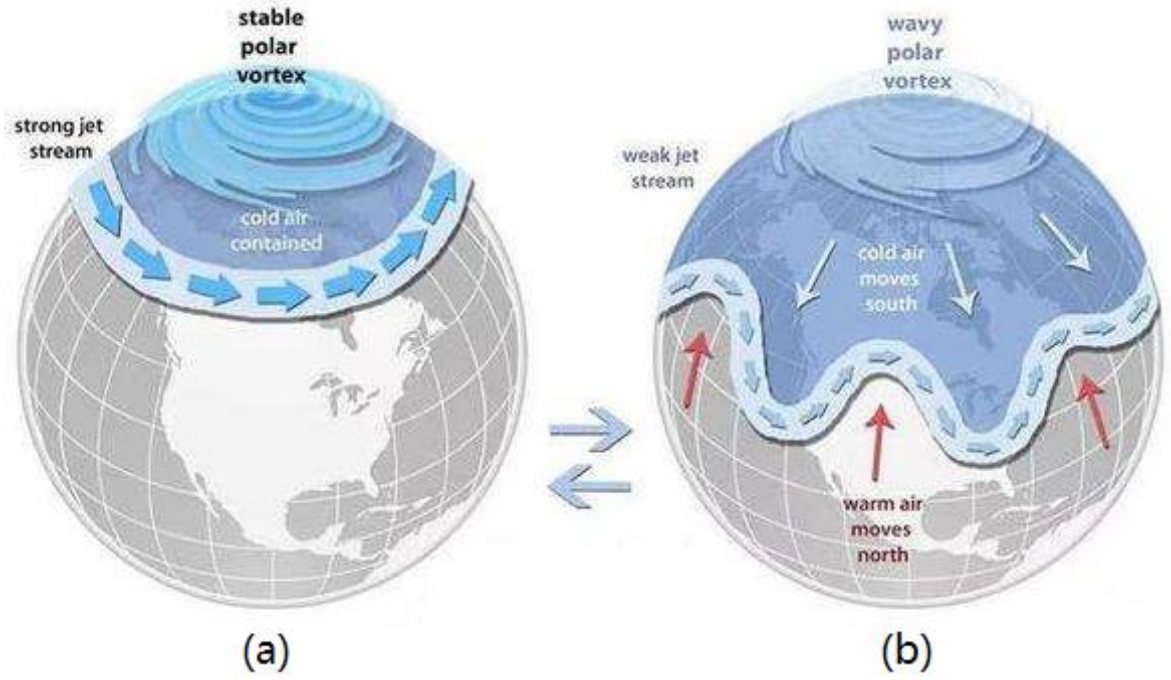

Fig. 3 The state change of polar vortex.

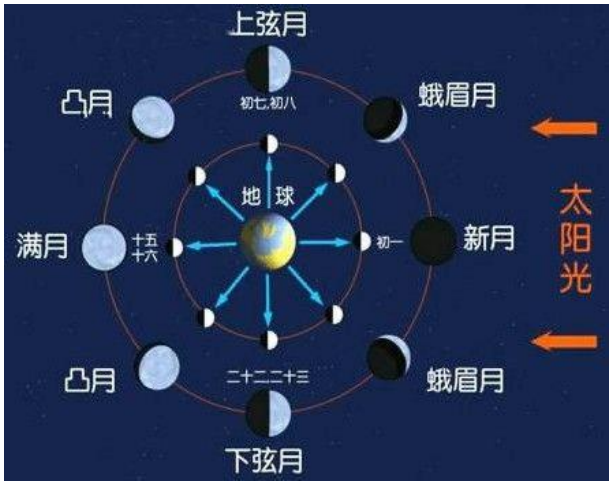

Fig. 4 Changes in moon phase.

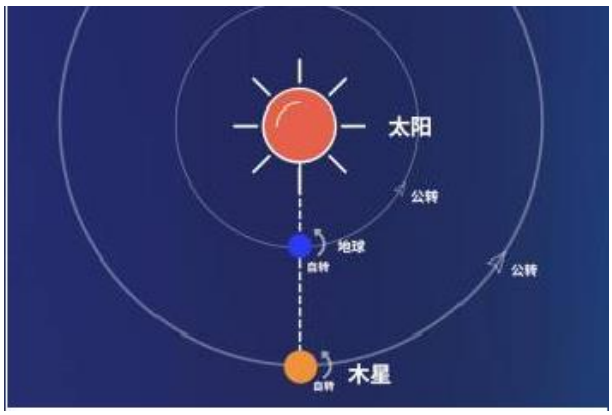

Fig. 5 Jupiter's opposition to the Sun.

forcing more and more cold air to be poured out from the South Pole cyclone, forming larger storms and a huge cold current from south to north. During the 22nd to 23rd of the lunar calendar, when the moon approaches the South Pole, as shown in Fig. 4, the moon will promote the South Pole cyclone, allowing it to absorb a large amount of cold air and restore its strong momentum. The polar vortex cold flow is greatly reduced, and the wind and rain in the mid to low latitude regions temporarily converge. During the period of 24 to 30 in the lunar calendar, when the moon moves from high latitudes to low latitudes in the southern hemisphere, as shown in Fig. 4, the Antarctic cyclone, under the gravitational force of the moon, sometimes pours out cold air and sub cyclones, causing a sharp drop in temperature in the middle and low latitudes of the southern hemisphere, forming a huge cold current from south to north. In short, every autumn, winter, and spring in the southern hemisphere, as the moon revolves around the earth, a huge cold current from south to north occasionally occurs. This cold current originates from the cold waters along the coast of Antarctica, moves northward along the west coast of South America, passes through the coasts of Chile, Peru, and Ecuador, and forms the Peruvian cold current. The cold current in Peru is about 900 kilometers wide and 4,000 to 5,000 meters long. For the fishing industry, the Peruvian cold current, due to its strong upward cold current characteristics, can flood the sediment on the seabed to the sea surface, bringing nutrients to plankton. These nutrients can become bait for fish and shrimp, making this cold current a famous Peruvian fishing ground in the world.

2.2 Jupiter's Opposition to the Sun Triggers El Niño Phenomenon

From November to March of the following year, the southern hemisphere enters summer. The sun shines directly on the southern hemisphere, increasing the duration of sunshine and temperature. The water temperature in the southern hemisphere's waters also generally rises, strengthening the westward flowing equatorial warm current. If Jupiter is in opposition to the sun at this time, and Jupiter is closest to Earth, Jupiter, Earth, and the Sun will be arranged approximately in a straight line, as shown in Fig. 5. Just as Jupiter can attract and move cyclones on the sun, it can also attract and move Earth's Antarctic cyclones that are closer, severely hindering and weakening the Antarctic cyclones that generate the Peruvian cold wave. Through Jupiter's gravity, it can move the global pressure and wind belts southward, and also cause the northeast trade winds to cross the equator. Under the influence of the southern hemisphere's rotational bias, they can deflect to the left and become the northwest monsoon. This northwest monsoon not only weakens the offshore wind along the west coast of Peru—the southeast trade wind, causing the cold water of the

Peruvian cold current to weaken or even disappear, but also blows the warmer equatorial current southward, causing the water temperature of the Peruvian cold current to abnormally rise. In addition, Jupiter is able to lift up many clouds covering the southern hemisphere through its strong gravity, causing stronger sunlight to shine on the equatorial sea surface and resulting in abnormal warming, which is known as the El Niño phenomenon.

3. Strategies for Managing El Niño Phenomenon

Through the analysis of the causes of El Niño phenomenon, it is known that the polar regions are the air conditioners of the entire Earth. The movement of polar glaciers affects the formation and activity of polar cyclones, while the activity of the Moon orbiting the Earth and Jupiter's opposition directly affect global climate change. Due to human activities in the polar regions being the true cause of glacier retreat and retreat, it is necessary to control human behavior in order to prevent abnormal global climate change.

1. To prevent global warming, the first step should be to prevent the loss of polar glaciers, including preventing the decline of polar ice caps and permafrost layers; reduce people's blind activities in the polar regions (such as blindly extracting oil and gas, unnecessary tourism, etc.) to maintain the continuous coverage of sea ice in the Arctic and Antarctic, prevent temperature rise, and prevent subsidence of the edges of polar basins. Only in this way can the polar vortex gradually recover its strong momentum, generate strong winds, lower global temperatures, and solve the problem of global warming.

2. Countries around the world should work together to address global climate change, should their responsibilities, and make positive contributions to protect the global environment

4. Conclusions

The emergence of El Niño phenomenon causes people to feel anxious every day. In order to effectively cope with the climate change caused by El Niño phenomenon, it is necessary to first understand the reasons for the occurrence of El Niño phenomenon and then find effective countermeasures. However, the scientific community has only a partial understanding of the causes of the El Niño phenomenon, which remains unresolved. Therefore, the author reanalyzed the reasons for the occurrence of El Niño phenomenon and found that the activity of Jupiter's opposition to the sun and the moon's pull of polar vortices are the main factors affecting global climate change, and proposed corresponding countermeasures.

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