

Research on the formation process of high mountains

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Abstract: Mountains formed by tectonic movement are called tectonic mountains. Tectonic mountains are formed because of the crustal movement, which causes a large area of the surface rock layer to fold, or the fault block mountains formed because of the crust rupture and rise. For example, the Himalayas and Taihang Mountains in Asia and the Andes Mountains in South America were formed by tectonic plate movement and compression. Originally a plateau or structural mountain, and later by the long-term erosion of external forces such as water, wind and other mountains, called erosion mountains. The water erodes the mountain into voids, and when the voids collapse, they are washed into valleys by the water, forming mountains. Mountains formed by the accumulation of certain materials on the surface of the earth are called accumulation mountains. These mountains are symmetrical in shape and generally stand in isolation on low ground. For example, volcanoes everywhere are the most common accumulation mountains.

Keywords: Tectonic Mountain; Tectonic Plate Movement; Erosion Mountains; Accumulative Mountain

1. The formation of mountains

The major plates in the earth's crust are formed by collision and extrusion with each other after continuous movement. Mountains exist on the surface of the earth, and the earth's crust is made up of six plates: the Eurasian plate, the American plate, the African plate, the Pacific plate, the Indian plate and the Antarctic plate. As far as the crustal plate is concerned, it is relatively stable, but the plates are not fixed, they are in constant motion, and the junction between the plates and the plates is a very active zone of crustal activity, where the crust is not stable. These plates will collide, squeeze and crack with each other in the process of continuous movement. When these plates collide and crush, they form mountains, which we see as mountains. The major plates in the earth's crust are formed by collision and extrusion with each other after continuous movement.

The world's largest mountain range is the Himalaya-Karakoram Range, which contains 96 peaks over 7,315.2 meters high. However, the real largest mountain range is under the sea, located in the Indian Ocean to the eastern Pacific Ocean under the Cordillera Mountain range (Cordillera mountain system), it from the Gulf of Aden through the seabed between Australia and Antarctica, to the California Gulf, stretching 30898.56 kilometers, an average of 2438.4 meters above the sea floor, is really majestic.

The longest mountain range in the world is the Andes. On the western edge of the South American continent, there stands a huge mountain range running north-south, which is like a long dragon lying on the east coast of the Pacific Ocean, which is the world-famous Andes Mountains.

The Andes Mountain range is not only the longest mountain range in the Americas, but also the longest mountain range in the world, it stretches 9,000 kilometers in the north and south, from the island of Trinidad in the north to Tierra del Fuego in the south, across Venezuela, Colombia, Ecuador, Peru, Bolivia, Argentina, Chile and other 7 countries, covering an area of 1.8 million square kilometers.

The Andes Mountains are 6,000 kilometers longer than the famous Himalayas. The Andes Mountains belong to the Cordillera mountain system in the structural system, which is a young folded mountain range with high and steep mountains, and the straight peaks and peaks are rolling like a natural barrier. Most of them are above 3000 meters above sea level.

2. Why are there mountains on the Earth

2.1 Geologist Li Siguang believes that the horizontal compression of the Earth's crust is the main driving force of orogeny. In the crustal movement, the strong part of the crust is broken, and the two sides of the fracture rise or fall relative to each other, so that mountains can be formed, and the weak part of the crust will fold violently, and become continuous mountains when it rises. After the earth's crust movement makes the ground uneven, in the process of water erosion of the ground, due to the different nature of the rocks on the ground, their

ability to resist water erosion is different, some mountains are reduced, but at the same time, the ground is carved up and down, so there are all kinds of mountains on the earth.

2.2 Mountains are not the same as high and low mountains have a lot of different directions, so how did the mountains come and how did the direction of the mountains form. The formation of mountains is caused by the contraction of the earth's atmospheric cold body, which produces pressurized sea water. Under the action of directional force, pressurized sea water pushes up mountains one by one. Under the action of the sun, pressurized sea water has directional force, so the pressurized sea water presses the seafloor and pushes up the seafloor rocks in front of it. The height of the earth's mountains, the direction of mountains, and the distance between mountains are all regularities to follow. The plate theory and geothermal theory we have learned are all one-sided understandings. First of all, mountains are mountains one by one, and they are called mountains only when they are divided into regions. Mountains rise from the sea floor, so sea creatures will appear on the top of mountains. Mountains are also divided into old and new, and the more northern mountains are older. So mountains don't form all at once but one after another.

2.3 The trend of mountains is also regular, so how is the trend of mountains formed? There are few mountains that run north-south, few mountains that run east-west, mountains and mountains that run northwest to southeast, some of the mountains that run northwest to southeast, and some of the mountains that run northwest to southeast, and the Himalayas that run northwest to southeast are light, and the Himalayas are not a single mountain, it is a combination of mountains and mountains. The same is true of the mountains on the West Coast of the United States which are connected to each other to form mountains, which are formed by the same principle as the sea pressure of Haiti. The mountains on the west coast of the United States are formed by the western wind blowing east of the Pacific Ocean and pushing the sea water on the west coast to the east, which causes the sea water to rise on the east coast. The rock formation of the mountains on the Shanxi coast is high in the west and low in the east. The height of the mountains in the north and the south is proportional to the pressure of the air, and is also related to the old mountains. So the mountains on the west coast of the United States run more due north by northwest. The Himalayan mountains are heavier in the east-west direction; The reason is that the Himalayas are mountains where water pressure from the south pushes up to the north. And the mountains on the west coast of the United States are the mountains that are pushed eastward by the Pacific Ocean in the west and the Rocky Mountains and the mountains that are raised up in Haiti in the west and there are also famous North-South mountains in the world that are pseudo-north-south transverse mountains that are not really North-South mountains that are pushed by the Himalayas into slanted and curved mountains that look like North-South; In fact, it's tilted to the north and the evidence is that the Hengduan Mountains are older than the Himalayas and then the Hengduan Mountains and then the Himalayas. There are a variety of mountain ranges in China. The west-east trend of mountains in the central and western regions is the same principle as the formation of Himalayan mountains. They're all mountains driven from the south by air and the mountains in the north are older and the farther north they are, the Kunlun Mountains are in the north of the Himalayas and the Kunlun Mountains are older than the Himalayas and the Kunlun Mountains were formed 250 million years ago; The Himalayan mountains have only been formed for 50 million years. The mountain strata are high in south and low in north and flat in east and west. Both the Himalayas and the Kunlun Mountains have upward mountain layers in the south higher than the north, and the mountains in eastern China tend to run north-south to northeast; But those mountains aren't too high because it's mostly Pacific water pressure pushing east. The mountains in the east of China are only the mountains pushed up by the pressure of the Pacific Ocean, including the Central Mountains of Taiwan, which are also pushed up by the water pressure of the Pacific Ocean. The rock layer of the mountains in Taiwan is the opposite of that of the mountains in the west coast of the United States. The rock layer in Taiwan is high in the east and low in the west, and the rock layer is raised toward the Pacific Ocean. The opposite is true on the west coast of the United States where the rocks look westward; So why is the trend of the mountains on the west coast of the United States different from that of the Himalayas? The west-east thrust of the west Coast of the United States is greater than the west-east thrust of the Himalayas and that's why the trend of the Himalayas and the trend of the west coast of the United States are different. So the direction of the Himalayas is basically a little bit of an east-west tilt and it's a southerly push out of the Himalayas; On the west coast of the United States, the mountains tend to be more north and south and the height of the mountains is proportional to the pressure the higher the pressure the higher the mountain, and the direction of the mountain is related to the direction of the wind; The direction of mountains is transverse to the wind, the west wind will have a north-south slope of

mountains, the south wind will have an east-west slope of mountains, the west coast of the mountains are blown by the west wind, the Himalayas are blown by the south wind. So people are being misled by the plate theory. So why are the mountains in other places not as high as the Himalayas? It is because the Himalayas will not be strong if they retreat. That is to say, the northern thrust of the southern gas is weak after it has passed the equator; The reason the mountains are high is that when the southerly air pushes north, it will gradually move south until it reaches the equator and then further south it will pass the equator and the push will stop. So how is the height of the mountain and the air pressure formed? The air is under pressure. When the upward thrust of the ocean floor is less than the pressure of the mountain, the mountain will stop, and new mountains will appear.

References

- [1] Chen Jing, Yang Yinghui, Liao Shisen, et al. Himalayan tectonic knot crustal deformation and fault movement in the east [J/OL]. *Geodesy and geodynamics*, 1-11 [2024-08-14].<https://doi.org/10.14075/j.jgg.2024.01.011>.
- [2] Zhao Junbin, Wei Rongzhu, Zhang Chenglong, et al. Fission track constraint of Mesozoic Cenozoic uplift evolution in the middle Taiyue Mountains [J]. *Northwest Geology*, 2024, 57(03): 237-250.