

The Geodynamics Of The Mountain Ranges

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Introduction

The geodynamics of the mountain ranges involve a lot of elements. The study of mountains revolves around multiple things, such as the history, the climate, the role of respective areas, the cultural experiences and the difficult topographical features. Without any doubt, all the mountain climbers so far claim to have experienced the most amazing incidents during their climbing practices, which have changed their lives completely. Despite the fact that mountain climbing is one of the most rewarding, exhilarating, and greatest accomplishments, reaching a summit is much more than a mere panoramic scene – it is a true wilderness experience and a satisfying experience. Besides, it is a great challenge which involves hardships, danger, and risk. [K2 and Mount Everest](#) are two of the most inspirational landscapes on planet Earth. They attract not only the attention of climbers but also tourists as they possess incredibly striking natural beauty. Both of these mountains hold exclusive uniqueness in terms of their topographical features, and people have differing perspectives regarding the K2 and Mount Everest. It cannot be overlooked that both of the peaks are counted as the greatest wonders of the world. The historical background of both mountains is another significant point associated with them. One cannot deny the fact that Mount Everest is the tallest of all the mountains in the world, and, for K2, its difficulty level for attempting any summit is simply unmatched. Mount Everest counts as one of the biggest attractions in Nepal, where K2 is the ‘Mighty Pride of Pakistan’ and has the second-highest peak in the world. Climbing either Everest or K2 is not an overnight dream, but it might take more than months or even years to attain that kind of training. Several camps are arranged to provide the sort of training required to reach such the highest peaks. Although both the peaks have identical challenges in general, like extreme weather and altitudes, both peaks have their own dynamics and need to be attempted in entirely different manners. The presence of both peaks is of paramount importance for their respective countries. They play an important role in shaping the local culture and economy of both places. It would not be untrue to say that both mountains have become a hallmark of national pride and identity. Though both the peaks offer almost identical challenges to the visitors, they are very much unique in a lot of ways, which can only be best described once one has attempted to summit both.

Mount Everest And K2

Mount Everest, at a staggering 29,029 feet above sea level, is the world’s tallest mountain. Everest has the shape of a pyramid with three sides, its summit is covered with rocky hard snow, and it is surmounted by a coating of softer snow, which has an annual fluctuation of 1.5-6 meters or 5-20 feet. It is situated within the Himalayas in the Asian continent. The Himalayas are one of the greatest

mountain ranges in the world. Mount Everest positions itself at the frame of the Nepal, Tibet, China, and Sagarmatha zones. Everest's upper slopes and summit sit so up high in the atmosphere of the earth that the amount or quantity of breathable oxygen is around one-third of what is present at sea level. K2 is a rocky mountain that is more than 8000 meters high and situated at the Pak-China border in the Karakoram mountain range. K2 is basically a folded mountain, and it was formed by the convection currents of the plates, which were able to push the continental plates together. It had a different shape once it was formed. K2 is 8611 meters, and it is considered the second highest peak in the world, Mount Everest being the first highest peak at 8,848 meters.

History

People generally lack significant knowledge of several noticeable events related to Mount Everest. In fact, people were not even aware of the existence of Mount Everest as the roof of the world until the 19th century. Britain launched a survey during the 1800s for the analysis of Mount Everest. However, the difficult climatic conditions, the wild bugs and insects in the area, and complicated relief created severe complications for surveyors in conducting their research. Despite all the impediments faced by the researchers, the survey's results proved that the Himalayas have the highest mountain range in the world. Later, in the 1900s, Mount Everest was named the King of all the mountain ranges. After the declaration that Everest was the tallest of all, several mysterious attempts were made to scale Everest in the 19th century.

K2 is one of the wonderful attractions in Pakistan for people around the globe. Most native people use the term K2 as Chogori, which means "King of the Mountains" in the local language. K2 has also been known as the Killer Mountain because several climbers had lost their lives while attempting to climb it. Even the American expedition has made too many unsuccessful attempts to reach its summit. K2 is massive in size, but the size is not exactly an issue when climbing it. There is one traditional route for the K2, which includes the base camp in Skardu. It was during the war of 1856 that a young lieutenant among the royal engineers took a keen interest in exploring the Karakoram mountain ranges. It was the time when he discovered this beautiful peak of the K2. Owing to his relation with the royal engineers, the survey he did in reference to this mountain was quite remarkable. He, indeed, was the exact same person who put forward the idea and organized the survey of Kashmir as well.

Effects On Respective Economies

Nepal is considered one of the most poorly developed countries in the world. Mount Everest being the major attraction in the country, therefore, a handsome proportion of nation's economy depends on the revenue generated by the tourism. Nepal has always been famous for its historical landmarks, and the nation follows a beautiful culture. The Himalayan mountain range is not only home to Mount Everest but to fourteen other mountains as well, which are a part of these mountains in Nepal.

According to research, the tourism industry produces almost half a billion dollars every year, and this money helps stabilize Nepal's economy. However, in the past few years, the locals have planned to preserve the area because increased tourism has caused greater environmental damage to the mountain.

There are approximately 25,000 visitors to Nepal who are attracted by the Himalayan mountains alone. On average, a three-day stay may result in \$30 per day. But this number will not be same for the people who want to go up to the higher mountains. According to Nepal's Board of Tourism, all the peaks above 6500 meters are classified as premium property, and there are fees to be paid to get a permit for attempting a climb. The base permit costs \$1000, but \$500 is added for every 500 meters in addition to the base of 6500 meters. Therefore, one permit for Mount Everest may cost as much as \$3350. But this economic effect does not stop here. Since Mount Everest has defined routes, if you are going to take the most commonly used route, Nepal's Government shall charge \$25,000 for one person. In the case of a crew, the price tag shall be \$70,000 for a seven-person crew. This means that Mount Everest alone is a significant source of income for Nepal's government.

Given the level of difficulty of climbing the K2, already very few climbers come to attempt the summit. Also, Pakistan has a tourism-friendly policy, which means that no royalties are charged to mountaineers who are interested in attempting the K2 climb. In addition, Pakistan does not levy permit fees for visiting the peaks. Having said so does not mean that these magnificent peaks do not play their part in Pakistan's economy. The real benefactors are the local community and local businesses. These peaks attract a significant number of tourists on an annual basis. All these tourists have to travel by air or by road to reach the mountainous areas, which fosters the travel industry in Pakistan. Also, to meet their needs, these tourists often visit the local markets, purchase trekking gear and other supplies, and thus contribute to local businesses. Lodging in the northern areas of Pakistan may cost as much as \$130 per day for a family suit, which makes significant revenue for the local hotel industry. The people of local communities provide porters and transport facilities, which is a way of making their living for locals.

Cultures

The majority of people on Mount Everest are the Sherpas, numbering around 150,000. They constitute a Nepalese ethnic group and are famous for their climbing capabilities, superior strength, skills, and endurance at high altitudes. Since climbing the mountain is a perilous mission therefore, the climbers mostly rely on the assistance and help provided by these local mountain guides, who usually are Sherpas. Foreign climbers pay these people for tasks such as preparing the routes to follow, fixing the ropes in place, and carrying the essential climbing kits up to the mountain. This ethnic group is really significant and is considered the backbone of any expedition, and without these people, it could have been difficult for the climbers to reach Everest's summit. It is, therefore, clear that Mount Everest makes up a handsome source of income for the local community as well as Nepal's national economy. (Turcotte & Schubert, 2014)

Whereas K2 is extremely diverse in terms of culture and is surrounded by several different ethnic groups, including Yashkuns, Turks Laddakis Baltis, Moghal, Pathans, and Kashmiris. This region is beautiful, unique, and rich in cultural heritage and manifests in local music, traditions, and dress. However, the dresses play an integral role in identifying a person because the traditional clothing is subject to local weather, geography, and culture. The most noticeable component is the traditional caps, which are soft and round-topped woollen with a peacock plume or feather attached on the side or front of the cap. The inhabitants of the area are quite soft spoken and have a hospitable and welcoming attitude, they are peaceful and speak different regional languages. Skardu and Gilgit constitute two chief hubs for expeditions to K2 and other mountains in the range. The local language spoken around the K2 is Shina, which many of the original settlers speak; however, the newcomers in the area have diverse backgrounds, and now other languages like Balti, Chitrali, Wakhi, and Balti are also common.

Expeditions

From time to time, much research was carried out on the subject matter, and most of the evidence was captured by the camera lens. Mount Everest is situated in the Mahalingam mountain range. For the first time in history, the height of Mount Everest was determined in 1856, which was about 29029 feet. The first attempt to climb Mount Everest was made during a Reconnaissance expedition by Britain in 1921 during the spring season under the leadership of Colonel Charles Howard Bury. The summit could not be reached mainly due to a lack of strength and a difficult route, but the expedition's focal aim was to discover the route to the peak from the northern side. British Mount Everest expedition in 1922 came as the first mountaineering voyage that aimed to summit the peak using bottled oxygen, but still, the climbers could not succeed. Later, from time to time, many attempts were made when finally, in 1953, the expedition led by John Hunt, two members named Tenzing Norgay Sherpa and Edmund Hillary managed to reach the summit and were honoured with knighthoods for their extraordinary achievement. It was one of the most renowned and talked-about expeditions of all time.

The first human activity regarding the K2 was initiated in 1856 when TG Montgomerie, a British surveyor, named this peak as K2 during the Great Trigonometric Survey of India as a lieutenant. Later, in 1902, a formal international expedition was carried out under the leadership of O Eckenstein, who applied the principles of engineering to mountaineering and its equipment in Pakistan. In 1953, a team of medical doctors attempted to climb K2 with the purpose of carrying out research on the effects of higher altitude on the lifespan of humans and also the risks and possible diseases which can be caused during the stay of climbers in the higher altitudes. The first ascent of K2 happened on July 31st, 1954, when two men, Lino Lacedelli and Achille Compagnoni, for the first time, set their feet on the K2's summit, the second-highest peak on Earth.

Climatic Conditions

Since both of the peaks are located in the Himalayan range, the climatic conditions of both of the regions are quite similar. Mount Everest and K2 have harsh and extreme climates and weather. The temperature is below the freezing point on both of the mountains all around the year. The most distinguished characteristic of Everest and K2 base camp weather is its immensely great temperature gap between night and day.

At Mount Everest, the temperature at its peak is an average of -36 degrees Celsius or 33 degrees Fahrenheit, and moreover, it can even drop to as much as -60 degrees Celsius or -76 degrees Fahrenheit in January. In July, the average summer temperature at the summit is -19 degrees Celsius or -2 degrees Fahrenheit. Meanwhile, at K2, the temperature at its summit is about -40 degrees Celsius in January and -13 degrees Celsius or 8.6 degrees Fahrenheit. In general, it is extremely cold at night, but it is a little warmer during the daytime in both regions.

Despite the colder days in winter, especially in January and February, one can view incredibly breathtaking scenes of sunrise and dawn, majorly sun casting an orange silky ray on Everest's summit. In September, the level of snow is highest after the monsoon, whereas in May, it is lowest due to the depletion by strong winter winds from the northwest. Unsurprisingly, there is a massive amount of snow in the Mount Everest area from December to February. Owing to the location and height of K2, ferocious and violent winter storms strike the area and fierce, heavy snowdrops, and at times, it portrays the deadliest weather on the planet. K2 has never experienced a winter ascent, and due to a great height, jet stream winds blow across the highest slopes of the K2's peak.

At Everest, in summer, particularly during the monsoon season, it rains or snows more or less every day. However, at the peak of Everest, the chances of precipitation are quite low, except for the season of monsoon. Monsoon season, from July to September, brings a lot of precipitation, whereas, from December to March, there is quite little rainfall, which is usually due to winter storms in the Everest area. At times, such unexpected snow storms can drop as much snow as around three meters or about 10 feet. While K2 occasionally experiences heavy rainfall in March, May, and August in winter, comparatively owing to the influential drift of winds from the tropical west, K2 receives high precipitation either in the form of snow or rain. Therefore, hikers and climbers are supposed to be quite vigilant.

One of the extremely concerning and alarming issues that a climber should be worried about is the high-speed and swift wind that is attacking the Himalayan range frequently. In dead winter, particularly from November to February, the global jet stream, which flows southwest, moves in from the north. This jet stream produces winds that contain hurricane force, and moreover, it beats the peak with a wind speed as high as around 285 kilometres per hour or more, about 177 mph. Also, the average level of speed is over 160 kilometers per hour, 100 mph in that area, such fast and strong winds are tremendously perilous as they can simply blow off the climbers from the mountain. The

sudden strong winds also strike the region even at the pre – or post-monsoon time. Such storms and winds, at times, blow the ice and snow from the summit, which can cause severe trouble for the climbers and the tourists.

However, due to the high upper slopes in the atmosphere of Earth, at Everest's summit, the air pressure is nearly about one-third when compared to the sea level, which is why the amount of breathable oxygen is quite less. The strong winds usually cause a decrease in the air pressures, which results in an additional reduction in the oxygen levels that add to the complexities of the climbers. Indian monsoons control Mount Everest from June to September. During this period, wet and warm winds blow from the Indian Ocean to the south slop of the mountain, and those predict violent and frequent snowstorms.

In the Karakoram Range, the climate changes according to elevation. The temperature drops with an increase in the elevation and gets wetter with a drop in the altitude. Therefore, the climatic and temperature variations are significant and quick. At the K2, monsoon rainstorms, high winds, floods, snowstorms, and other sorts of precipitation can occur all of a sudden, making the overall climate extremely dangerous and unpredictable.

April and May are the appropriate time of the year to climb Mount Everest because, at this point in time, the wind has almost died, and the Mountain top is engulfed by the jet stream, the overall weather is calm, dry, and warm, so it is safe to ascend. Other suitable months are September, October, and November because there is no season for snow storms and monsoon rains. Unlike Mount Everest, K2's weather conditions are notoriously fickle, and there are brief periods of good weather which allow mountain climbing. However, June and September are somewhat considered prime times of the year for the K2 trek as the precipitation level is lower in these months, but September is more suitable.

Flora And Fauna

The mountains act as a barrier to both animals and plants because of the rapid variations in the ecosystems, fierce and harsh climatic conditions, scarcity of food and dangerous climbing. Due to this, one side of any mountain range may be home to completely different animal and plant species. Nevertheless, animals and plants that inhabit the area have adapted to survive in cruel and difficult conditions in many different ways. The most considerable adaptations of animals and plants are noticed at higher altitudes because these regions offer extremely complicated conditions.

Higher up the mountain, the trees stop growing because it is too cold and windy, but shrubs still grow under the snow. Despite that everything is frozen practically, unsurprisingly very few plants thrive in such harsh circumstances but yet several types of plants are grown on the K2 mountain, the most popular ones are deodars, walnuts, elms, willows, feet birch, and blue pines. While on the Mount Everest, let alone the possibility of life, the tallest height of mountain does not allow any growth of

vegetables, even the plants such as blue pines, firs, and bamboo only grow in the lower areas. However, one plant named Allium Hybrid was found at a higher altitude than Mount Everest.

Owing to the high altitudes, lack of oxygen and harsh environment, only a few animals thrive to survive in the Himalayan range, where some of them are rare enough and are only found in this region. Yet, surprisingly, the mountain range is home to many diversified animals. However, K2 hosts a relatively lesser variety of animals than Mount Everest. Snow leopards, Himalayan Tahr, Himalayan Black Bear, Himalayan Goral, and Red Panda are the main species found on Everest. On the contrary, wild yak, snow leopards, pikas, Tibetan antelope, and marmots are seen on the K2.

Besides, astoundingly, some fauna is also found at the higher altitudes at Everest. Euophrys Omnisuperstes, which is a tiny jumping spider, lives at 22,000 feet up on Mount Everest. Also, the Bar-Headed Goose flies around the mountain at around 30,000 feet high, and another bird named Chough is also seen flying at almost 7,920 meters. On the K2, the Partridge birds, Red Brambling birds, and White Dove are found, and these do not fly as high as the birds on Mount Everest. (Willett, 1999) Overall, powerful winds, extremely low temperatures and lack of oxygen preclude the growth and development of a wide variety of life there, be it flora or fauna.

Challenges Of Climbing

When it comes to the high altitudes, Mount Everest is the clear-cut answer; however, in terms of the difficulty level of climbing, it is definitely not Everest but K2, Pakistan's pride. K2 is substantially more perilous, and it has a harder gradient for a longer distance. Nevertheless, Everest is the tallest mountain, and it is one that everyone desires to climb. Mount Everest has always been surrounded by amateurs, mostly those who want to climb a mountain for amusement. The beginners and newbie climbers who lack experience and training choose Mount Everest because of its easy approach and pathway, whereas K2 is not a tourist-oriented mountain and sees quite less traffic.

K2's general shape makes it much harder to climb than Everest. While mountaineering Everest, climbers usually prefer its backside and enter from the gate. Since Everest has no symmetry, it offers two distinct preferences, whereas the North Face is considered harder. But K2 is symmetrical and its climbing angle is higher, also, avalanches are more often on it. K2 does not have any sort of backdoor. Pakistani side is somehow simple but not considerably dissimilar from the other side. K2 is more furious, savage, strict, cold and satanic than Mount Everest.

One additional characteristic of K2 is its brutal weather, which makes it more intricate. The climatic conditions of K2 are notoriously unpredictable, as strong winds and storms are common. Since the good weather time period is brief, it is almost impossible to climb K2 practically without being stuck in a hazardous and life-threatening storm at such a height. Not only are the greatest altitude and harsh climate of Mount Everest challenging for the climbers, but the lack of oxygen at such a height is also a major complication. Mount Everest has a really low oxygen level in the air as the climbers' bodies

gradually adapt to the conditions; however, only up to a certain level and afterwards creates severe respiratory issues.

About four thousand people have climbed the tallest Mount Everest, whereas 302 people have ascended the K2. 1:4 is the fatality ratio between the both mountains, where Everest has approximately 5% fatality rate for year round climbs and for K2 it stands at 25%. It elaborates that out of every four people who attempted to reach the K2 peak, one has perished. At present, out of fourteen, K2 is the only 8000er which has not been climbed in winter. Therefore, K2 is one of the deadliest and toughest mountains on the planet.

Moreover, K2 is a rocky mountain with a height of 6000 meters and beyond it, there is an ocean of snow, which increases the complication level for the climbers. It is well known for its steep pathway, which makes the long journey extremely difficult for mountaineers. Just to reach one particular point in the tracking; there are no camps or villages nearby for these mountaineers to stop. They carry a weight over their shoulders, which can only be relieved once and for all when they are done climbing and have reached their destination. K2 is a proper expedition with a long slog from everywhere. On the contrary, Mount Everest has several sizeable settlements around it, particularly with easy reach. On the side of Nepal, Namche Bazaar is two days away, while Pheriche is mere a day. Also, on the Chinese side, one may easily drive to reach the base camp.

However, these factors are not enough to explain the deadly nature and the reputation the K2 holds. Reinhold Messner was a legendary mountaineer, and he was the one who actually inspired a lot of people to climb K2. He considers K2 to be the most beautiful peak among all the mountains in the world. Winters are considered an elite time for the climbers. In the past few years, and the last three years to be precise, the attempts to climb K2 in winter were made by the international teams, and their passion was unparalleled.

Conclusion

Despite the striking similarities between Mount Everest and K2, both peaks offer unique challenges to those who have attempted to summit them. Mount Everest, at 8,848 meters in height, is the tallest mountain in the world and is situated in the Himalayas mountain range within Nepal's national territory. K2, on the other hand, stands at 8,611 meters and falls within the Pakistani territory in the Karakoram mountain range. Mount Everest, despite being the tallest mountain, is not the most difficult one to climb. It is surpassed by the K2 in terms of the difficulty level to summit. To have a glimpse, the fatality rate of Mount Everest is 4% as compared to the horrifying 25% for K2. Both the peaks offer extreme climatic conditions, which are hostile to life. K2, again, beats the Mount Everest because of the greater unpredictability. Average temperatures on Mount Everest are around -36C, whereas it is -40C at K2. In the winter months, Mount Everest can be as cold as -60C. The climatic conditions on both the peaks are hostile to support life on the peaks. However, some sort of life, like smaller insects and bushes, may be found in the mountains. With the increasing altitudes, these living

organisms give in to the harsh climatic conditions, and all life stops to exist on the summits. Mount Everest has defined routes and a number of smaller establishments along the way to the summit, which offers climbers some hideout and safety. On the K2, on the other hand, there are no such luxuries. Climbers have to carry the weight of their supplies and gear by themselves and have to set up the camps according to the climatic conditions. It makes climbing the K2 riskier. Despite the most planned strategies, appropriate routes chosen, and tough training of the climbers, K2 has always been one of the most difficult mountains to climb. A number of deadly tragedies are reported to have taken place on the K2 climbing, where the most famous ones were from the years 1986 and 2008. The peak of K2 has been climbed from almost all the ridges, and many of the mountaineers have taken dangerous life risks to accomplish their missions. The journey to the K2 is more like a physical challenge than a source of pleasure. Both Mount Everest and K2 add to the economies and cultures of their countries. The government of Nepal issues permits for attempting Mount Everest, which may cost around \$3350. In addition, for using the defined trekking routes, the Government may take up to \$25,000.00 per person in lieu of the royalties. For K2, Pakistan's government does not make any such permits or royalties. Instead, it is the local community, in the form of hotels, porters and transporters, that is the true beneficiary of the influx of tourists.

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