

# Mount Kinabalu

The highest peak in Southeast Asia, Kinabalu, rises majestically to 4093 metres above sea level. Geologically, it is a young mountain whose summit of bare rocks, clefts and pinnacles has been created by erosion and glacial activity. The mountain is home to Sabah's Kadazan people and the inspiration for numerous legends.

The varied forms of glaciation and erosion have created a fascinating land surface on the stark, imposing summit of Mount Kinabalu.



Rock surface smoothed out by glacial flow.

## Morphological features

Mount Kinabalu is made up of igneous rock, which is relatively hard compared to sedimentary rock. It overlooks the rest of the folded mountains in Sabah's Crocker Range, towering above Mount Trunadi (2649 metres) and Mount Tambora (2579 metres) which lie to the south and north respectively and which rank as the second and third highest mountains in Malaysia. Its base, at about 1500 metres above sea level, roughly where the Kinabalu Park Headquarters is located, covers an area of approximately 250 square kilometres. From this altitude, the mountain rises up steeply, especially on its western side. It is comparatively gentle on the southeastern side towards the towns of Kundasang and Ranau.

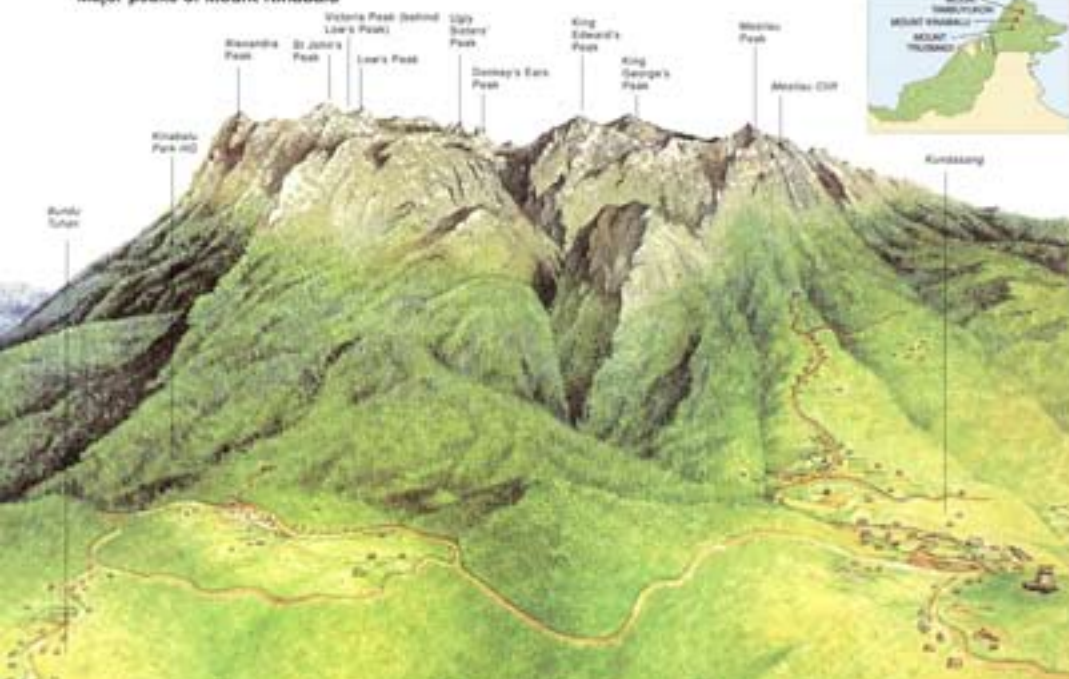
At a height of about 3000 metres, the cone-shaped Kinabalu massif juts upwards forming a jagged outline punctuated by several prominent peaks, such as those of Low, St John, King Edward,



A cloud cover daily envelops Mount Kinabalu, increasing moisture on the vegetation known as fog-shipping.

King George, Victoria, and the colourfully named Ugly Sinner's and Donkey's Ears peaks. Years of scouring by running water, ice sheets and rock boulders have transformed the surface of the bare igneous rock, which exhibits unique erosional features characterized by linear gorges and deep gorges. Low's Gully, one of the deepest gorges in the region (1500 metres), divides the mountain in

## Major peaks of Mount Kinabalu



two—the Kinabalu West and the Kinabalu East. Waterfalls, more than 100 metres in height, and narrow, V-shaped valleys have developed on the flank of the mountain. Over time, boulders and gravel have accumulated along the valley floors.

## Formation of the mountain

Mount Kinabalu is considered one of the youngest mountains in the world. Its formation began some 40–50 million years ago when the island of Borneo was submerged beneath the sea. Thick marine sediments accumulated on an oceanic floor consisting of basic and ultrabasic rocks in the area that is now Kinabalu. Over a period of time, these alternating layers of sand and mud were transformed into sedimentary rocks by pressure and temperature.

About 15–20 million years ago, the sedimentary rocks, together with the ultrabasic rocks, were folded, faulted and subsequently uplifted to form a series of mountain ranges, now known collectively as the Crocker Range, which stretch for over 200 kilometres the length of Sabah.

Continued compression in this region resulted in the development of a huge ball of molten rock or magma under the folded mountain. About 9 million years ago, the molten rock intruded into the overlying sedimentary rocks. As it cooled and hardened, a rounded cap called a pluton was formed and remained deep beneath the earth's surface until just over a million years ago when it was forced upwards along a major fault zone, through the Crocker Range. Erosion of the overlying sedimentary rocks finally revealed the Kinabalu massif, together with

## Aki Nabalu

Mount Kinabalu's name remains a mystery although several opinions have been put forward about its origin. The most popular view is that the word derives from the Kadazan (Dusun) term *Aki Nabalu*, meaning 'the revered place of the dead'. Local communities believe that their spirits dwell on the mountain top. Among the bare rocks of the summit grows a moss which early Kadazan guides believed provided food for the spirits of their ancestors. In the past, these guides would often perform religious rites upon reaching the summit. During the ceremony, chickens were



slaughtered to appease the spirit of the mountain as well as the ancestral spirits who lived there. Nowadays, a commemorative ceremony is held annually by guides from the Kinabalu Park. Others contend that 'Kinabalu' derives from *Kina* meaning 'Christ' and *Balu* meaning 'widow'. A Kadazan legend tells the story of a Chinese prince who climbed the mountain in search of a huge pearl guarded by a ferocious dragon. The prince succeeded in slaying the dragon and stealing the pearl. He then married a Kadazan woman, but soon abandoned her and returned to China. Heartbroken, the wife wandered to the mountain to mourn and where she was turned to stone.

parts of the ultrabasic oceanic floor. Glaciation, during the last Ice Age, and erosion further sculptured the summit and deposited a chaotic assemblage of rock fragments known as till.

## Measuring the mountain

Low's Peak is regarded as Kinabalu's highest point. Since it was measured in 1910, its height of 4101 metres has not been in question. However, 87 years on, in June 1997, a measuring expedition set off, equipped with sophisticated, new satellite technology called the Global Positioning System. The accuracy of GPS revealed that the supposed highest peak had dropped 8 metres. The adjacent Victoria's Peak is now thought to be higher. The news was beamed across the globe that Kinabalu has a new (lower) height of 4093.572 metres.

## The Kadazan (Dusun) on Mount Kinabalu

The Kadazan people, Sabah's largest indigenous community, live on the lower slopes of Mount Kinabalu. They traditionally practise rotational agriculture where secondary forest is cleared to make way for rice, along with tapioca, sweet potatoes, sugar cane and tobacco. More recently, temperate climate vegetables, such as cabbage, lettuce and asparagus, have flourished in the cooler, higher areas around Bundo Tuhan and Kundasang. The change from natural vegetative cover to more formal vegetable plots, and the uncontrolled use of chemical pesticides, have affected the volume and the quality of the rivers in the vicinity.

Many Kadazan work as rangers and guides for the Kinabalu Park. Since 1975, the mining of copper, gold and silver in the Mamut area, located on the southeastern flank of Mount Kinabalu, has provided employment for local communities. The mining activity has had detrimental environmental effects by causing a deterioration in the quality of the rivers. Some of these rivers generate hydropower on a small scale for local communities.



Rice fields in the plains below Mount Kinabalu.



Kadazan picking tea on the slopes of Kinabalu.



Kadazan farmers clearing the land at the foot of Mount Kinabalu for the planting of vegetables.

## The geological evolution of Mount Kinabalu



The Kinabalu area was subjected to the process of folding, faulting and uplifting 10–20 million years ago.



Magma intrusion took place about 9–12 million years ago.



Just over a million years ago, glaciation and erosion over time exposed the Kinabalu massif that we see today.