

# 認識香港的 地質公園



## 地質公園是什麼？

地質公園是具有特殊地質意義，並融合自然景觀與人文景觀而構成的獨特自然區域。保育、教育及可持續發展是地質公園的三大目標。

## 為什麼香港需要設立地質公園？

地質公園可以為香港擁有的獨特地貌及其特殊景觀加以適切的保育。除此之外，為了生態保育，我們也須保護生物賴以生存的地貌環境，為自然環境提供更好的保護。這種整體性的保育策略也是世界潮流。因此，我們希望透過設立地質公園，推廣保育地貌和岩石的信息。

地質公園可分為國家級及世界級，達至這些級別均須符合特定條件。現時，中國共有138個國家地質公園，其中20個已列為世界級，全球則有57個世界地質公園。我們相信，將香港地質公園申報成為國家地質公園的有關工作，必會為本地的自然保育領域帶來強大動力，推動政府及利益相關者在這方面精益求精。

作為中國的一份子，香港更可藉此設立國家級地質公園向世界展示值得港人自豪的自然保育成果，我們的國際形象應不僅限於大廈林立的繁華市區，而是一個自然和健康的國際大都會。



## 西貢東部的六角形岩柱

約於1億4,000萬年前，香港東部發生多次強烈火山爆發，產生大量火山灰，與此同時，熔岩從地底岩漿庫全部噴出，所形成的地下空洞最後倒塌，成為巨大的破火山口，大量夾雜熔岩的火山灰隨而注入其中。這些熾熱的混合物其後散失熱力，再均勻冷卻收縮，於是產生六角形節理。

## 香港地質公園的地質景點

擬設的地質公園將包括香港東部兩大區域的八個地質景點，每個地點均擁有各自獨特的地質特徵。

## 西貢東部—世界罕見的酸性火山岩柱

在世界其他地方，大部分六角形火山岩柱均由含硅質較低的基性玄武質熔岩構成，惟香港西貢一帶岩柱為含硅質較高的酸性流紋質凝灰岩，而且所佔範圍逾100平方公里，平均直徑1.2米，不論就規模和石質而言，皆堪稱世界罕見。更特別的是，這裏的凝灰岩亦同時展現熔岩的特徵，不同地質學家至今仍對其形成持不同看法，並致力解開這個謎團。

## 糧船灣

糧船灣沿岸一帶布滿排列整齊的六角火山岩柱，萬宜水庫東壩的宏偉六方柱石壁堪稱「天然六角岩柱壁畫」。這裏的斷層、褶曲、扭曲石柱及岩脈入侵等地理現象，最宜作近距離觀察。位於不遠處的大浪灣海岸，更展示最動人的火山岩海岸地貌，難怪曾多次被遊人評選為「香港十景」之首。



## 橫洲、火石洲及沙塘口山

甕缸群島由沙塘口山、橫洲、火石洲等多個島嶼組成，沿岸盡是密集排列的六角形火山岩柱，由於承受南中國海猛烈的風浪長期衝擊，以致形成極多懸崖峭壁和海蝕拱。橫洲角高30米的長形海蝕拱及火石洲高45米的海蝕拱同被譽為香港四大海蝕拱。



## 果洲群島

果洲群島由南果洲、北果洲、東果洲，以及多個小島和石排組成，其中北果洲的六角形岩柱尤為壯觀；布滿節理的岩石長期受到風浪侵蝕，因此造成大量蔚為奇觀的海蝕地貌。這裏的六角形岩柱直徑可達2米以上，為區內之最。

## 橋咀洲、吊鐘洲和澗西洲西南部

吊鐘洲和澗西洲西南部海岸的柱狀節理跟糧船灣及果洲群島一帶相似，但大概因為岩石形成時的冷卻環境有所不同，遂只呈現四角或五角的岩柱，相信地質學家定會繼續為解開這個謎團而努力。橋咀洲則擁有在破火山口外圍形成的多種火山岩，包括熔岩和條紋斑雜岩等。吊鐘洲高20米的長形海蝕拱「吊鐘洞」被譽為香港最美的海蝕拱。

## 新界東北部—最佳戶外沉積地質教室

在新界東北部約3,000公頃的範圍中，展現了香港最完整的沉積地層，包括4億年前泥盆紀形成的砂岩和礫岩，以至僅有6,500萬年歷史的第三紀粉砂岩，而且可在其中找到大量因不同過程而產生的地貌景觀。



## 印洲塘

在6,000至8,000年前上一次冰期之末海平面上升之後，海水淹沒了印洲塘一帶原是河谷的陸地，因而在此形成灣灣相連，眾島環抱的內海環境。這裏的著名地貌景點包括紅石門、白沙頭及往灣洲等。

## 赤門南北岸

赤門北岸和黃竹角咀同時擁有香港最古老的岩石，海峽西面的馬屎洲則展現在大約2億8,000萬年前形成的沉積岩，南岸荔枝莊的多種火山岩和沉積岩則是1億4,000萬年前的產物。

## 黃竹角咀及赤洲

黃竹角咀擁有香港最古老的岩石，大約於4億年前由聚積在河口三角洲的沉積物形成；赤洲以紅色礫岩、砂岩和粉砂岩著稱，其赤紅顏色是大約1億年前岩中鐵質發生氧化作用的結果。島上的沉積岩層理十分清晰，向東傾側入海。

## 東平洲

從地質歷史角度來看，東平洲擁有香港境內最後形成的岩石，僅有6,500萬年歷史。然而，其地層非常獨特，由粉砂岩組成，岩石層層平疊，加上各種海蝕地貌，構成獨一無二的沉積岩景觀。這裏的著名地貌景點包括龍落水、更樓石及斬頸洲等。



印洲塘及東平洲的相片為香港八大地貌勝景攝影比賽的得獎作品，拍攝者為陳賢財（作品：印洲塘觀日）及劉偉華（作品：東平洲日出）。



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| <p><b>新界東北地區</b><br/>Northeast New Territories Region</p> <p>1 東平洲<br/>Tung Ping Chau</p> <p>2 印洲塘<br/>Double Haven</p> <p>3 赤門<br/>Tolo Channel</p> <p>4 赤洲<br/>Port Island</p> | <p><b>西貢地區</b><br/>Sai Kung Region</p> <p>5 糧船灣<br/>High Island</p> <p>6 橋咀洲<br/>Sharp Island</p> <p>7 橫洲、火石洲及沙塘口山<br/>Wang Chau, Basalt Island &amp; Bluff Island</p> <p>8 果洲群島<br/>Ninepin Group</p> <p>▲ 地質公園遊客中心的選址<br/>Sites for Geopark visitor centre</p> |
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## WHAT IS A GEOPARK?

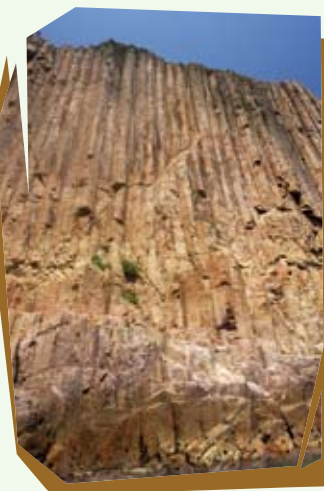
A geopark is a unique natural area with special geological significance and natural and cultural landscapes, and serves the three objectives of conservation, education and sustainable development.

## WHY DOES HONG KONG NEED TO ESTABLISH A GEOPARK?

A Geopark serves to conserve the unique landforms and landscapes in Hong Kong, through protecting the landform environment that provides natural habitat to many living things. Such an integrated conservation strategy is also a global trend. Therefore, we are establishing the geopark to promote landform and rock conservation.

Geoparks meeting prescribed conditions may be listed as national and global. Now, China has 138 national geoparks, with 20 designated as global, out of the 57 global geoparks in the world. We believe that the initiative to upgrade the Hong Kong Geopark to a national geopark will provide momentum for local nature conservation and will be a focal point for further action by the government and the interested parties.

Hong Kong, as part of China, may leverage on the initiative of establishing a national geopark to display to the world



## Hexagonal columns in Sai Kung East

A number of violent volcanic eruptions in eastern Hong Kong about 140 million years ago produced huge amounts of volcanic ash; meanwhile lava spurted out of the magma chamber deep underground and the resulting enormous underground cavity collapsed, forming a gigantic caldera which swallowed quantities of lava-rich volcanic ash. The incandescent mixture cooled down and contracted evenly, forming hexagonal joints.

its nature conservation results which Hong Kong people are proud of. The international image of Hong Kong does not have to be just a city with many buildings but can also be a natural and healthy international metropolis.

## GEOSITES OF HONG KONG GEOPARK

The proposed geopark will include 2 regions covering 8 geosites in the eastern part of Hong Kong, each with unique geological features.

## SAI KUNG EAST—WORLD UNIQUE VOLCANIC COLUMNS

Large hexagonal volcanic rock columns in other regions of the world are usually basic basaltic lava. By contrast, the hexagonal columns in Sai Kung East are acidic silica-rich rhyolitic tuff. This extraordinary composition makes them particularly interesting. Their large coverage of over 100 km<sup>2</sup> and average diameter of 1.2 m also made them outrival similar columns in the world. More amazingly, the tuff here has also the features of lava, and how they have come about has been a topic of debate among geologists to the present day.

### High Island

Well arranged hexagonal volcanic columns are well exposed along the coast of High Island. The magnificent hexagonal volcanic column wall at the High Island Reservoir East Dam is like a “Natural Hexagonal Column Mural”, where geographical phenomena like faults, folds, twisted stone columns and vein intrusions are best appreciated at close quarters. The Tai Long Wan coast nearby showcases a breathtaking coastal landform of volcanic rocks, and justifiably rated as No. 1 of “Top Ten Hong Kong Natural Attractions” many times.

### Wang Chau, Basalt Island and Bluff Island

Together known as the Ung Kong Group, the three islands consist of hexagonal columns, which are well exposed along the coast. The southeast-facing coastlines, attacked by the relentless waves and wind, showcase some spectacular columnar joints and precipitous cliffs. The 30m-high long sea arch at Wang Chau and the 45m-high sea arch at Basalt Island have entered the list of top four sea arches in Hong Kong.



### Ninepin Group

The Ninepin Group is made up of three larger islands, namely East Ninepin Island, South Ninepin Island and North Ninepin Island, and several small rock islets. Imposing hexagonal columns of North Ninepin Island are particularly breathtaking. Long-term wind and

wave erosion of rocks with joints has resulted in many peculiar abrasion landforms. The hexagonal rock columns here measure over 2 m in diameter, ranking first in the region.

### Sharp Island, Jin Island and southwest Kau Sai

The coasts of Jin Island and southwest Kau Sai are dominated by columnar joints, which are of the same formation as those of High Island and the Ninepin Group but take tetragonal or pentagonal shapes probably due to the different cooling environment of the rock. Geologists have been trying to solve the mystery. Sharp Island is covered by various volcanic rocks formed around the caldera, such as lava and eutaxite. The 20m-high long sea arch “Tiu Chung Arch” on Jin Island is rated as the most beautiful of its kind in Hong Kong.



## NORTHEAST NEW TERRITORIES—IDEAL OUTDOOR GEOLOGICAL CLASSROOM

The area of 3000 hectares in northeast New Territories represents the most comprehensive stratigraphy of sedimentary rocks in Hong Kong, ranging from Devonian sandstone and conglomerate of about 400 million years of age to Tertiary siltstone of 65 million years old, and is rich in landforms of different earth processes.

### Double Haven

As a result of the rise in sea level 6000 to 8000 years ago, the river valleys in Double Haven were flooded, therefore forming indented shorelines with headlands and bays. Famous landforms here include Hung Shek Mun, Camp Cove and Double Island.



## North and south coasts of Tolo Channel

The rocks along the north coast of Tolo Channel and at Wong Chuk Kok Tsui are the oldest in Hong Kong. Ma Shi Chau on the west represents the sedimentary rocks formed some 280 million years ago; various igneous rocks and sedimentary rocks at Lai Chi Chong of south coast were formed 140 million years ago.

## Wong Chuk Kok Tsui and Port Island

Wong Chuk Kok Tsui (Bluff Head) has the oldest rocks in Hong Kong, formed by deposits at estuarine deltas about 400 million years ago (Devonian). Port Island (Chek Chau) is best known for its red conglomerate, sandstone and siltstone. The red colour of these sedimentary rocks has resulted from the iron oxidized about 100 million years ago (late Cretaceous). The layers of those sedimentary rocks are clear and dip gently to the east and into the sea.



## Tung Ping Chau

In geological history, Tung Ping Chau has the youngest rocks in Hong Kong which are only 65 million years old. However, its peculiar formations are composed of layers of siltstone, and form a unique sedimentary rock landscape in Hong Kong with various abrasion landforms. Famous landforms here include Lung Lok Shui, Kang Lau Shek and Cham Keng Chau.

*Photos of Double Haven and Tung Ping Chau are prize winners of the “8 Geo Wonders of Hong Kong Photo Competition”, taken by Chan Yin Choi (work: Sun View at Double Haven) and Lau Wai Wah (work: Sunrise at Tung Ping Chau).*