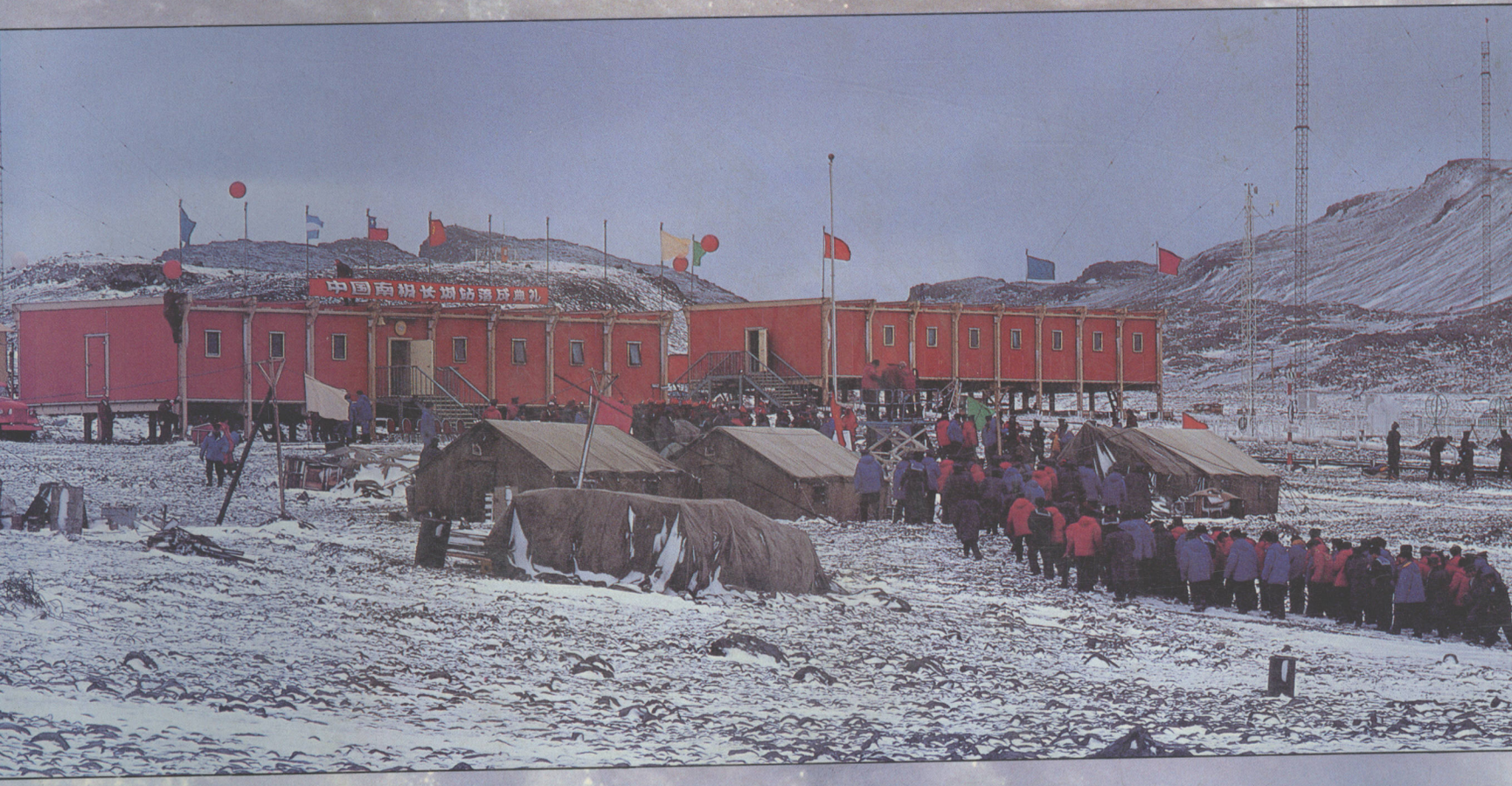
中国南极科学考察

China's Antarctic Scientific Exploration



一九八五

中国南极科学考察

China's Antarctic Scientific Exploration

中華人民共和國
國家南極考察委員會
北京・一九八五
National Committee for Antarctic Research
The People's Republic of China
Beijing. 1985

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乘勝前進

Advances on the Crest of Victory

（代序）

(By Way of Introduction)

1984年我國第一次組織了南極的科學考察，並建立了第一個南極科學考察站——中國南極長城站。這是一件值得慶賀的事，全國人民都寄以很大的關懷和希望。

本世紀80年代以來，我國相繼派出40名科學家登上了南極洲這塊冰雪的大陸。在澳大利亞、新西蘭、智利、阿根廷、日本等國的科學站，開展了多學科的科學考察，中國的科學工作者對南極事業的熱枕，他們的獻身精神和嚴格的科學態度，爲人類認識南極增添了知識，爲我國組織南極考察積累了寶貴的經驗。

1983年5月9日，第五屆全國人民代表大會常委會第27次會議通過了我國加入《南極條約》的決定，它宣告了10億人民的中國，從此加入了南極國際合作的大家庭。

爲了發展我國的南極考察事業和建立國際合作關係，國家南極考察委員會先後組織代表團訪問了澳大利亞、新西蘭、美國、英國和日本，學習他們的先進經驗，派代表團到阿根廷和智利研究南極建站的可行性，並到南極半島勘察站址。經過半年緊張的籌備工作，1984年11月20日我國首次派出有591名科學家、船員和海軍官兵參加的南極考察編隊。在這次歷史性的航程中，科學考察船"向陽紅10號"和"J121號"担負了運輸人員、物資和科學考察的任務。船隊戰勝了太平洋的驚濤駭浪，穿過南美大陸南端的德雷克海峽，勝利抵達南設得蘭羣島的喬治王島。接着，考察隊在海軍官兵配合下，以頑强的拚搏精神，戰勝風雪寒冷和各種艱難困苦，在喬治王島菲爾德斯半島西南端，勝利建成了我國第一個南極科學站。南極洲上第一次出現了以中國名字命名的山川、湖泊和海灣，莊嚴的五星紅旗，從此將永遠飄揚在南極上空。

科學工作者們還對喬治王島進行了地質地貌、氣象、地球物理、生物、海洋等學科的科學考察，取得了一系列可喜的成果。與此同時，南大洋考察隊乘"向陽紅10號"在南極海域戰勝極地風暴，登上南極半島，完成了10萬平方公里海域的多項目的綜合考察，在海洋生物、氣象、化學、地質、地球物理等領域取得數以萬計的數據、樣品和資料。這次南極考察前後歷時142天，航程48955.2公里，成功地開闢了一條從我國通往南美洲的新航線。

中國南極長城站的勝利建成，以及南極科學考察首戰告捷，是在黨中央、國務院的關懷下，在全國各族人民的大力支持下取得的。全體考察隊員、船員和海軍官兵，發揚了艱苦奮鬥，不怕犧牲的精神，出色地完成了這一具有歷史意義的光榮任務。

此外，我國的南極考察，特別是這次在南極建站，得到了各友好國家的熱情支持和幫助，中國人民十分珍惜同各國人民和科學家的友誼。爲了和平利用南極，發展我國南極事業，我們將始終不渝地爲增强各國人民的友誼，密切合作，共同爲人類和平利用南極做出貢獻。

對於這樣一個具有歷史意義的壯舉，我們特編輯出版這本畫册，作爲向黨、政府和人民的滙報，並藉以向各國的南極考察站和科學家們進行交流，爲了人類的美好未來，爲了發展南極科學事業，我們將繼續不懈的努力，並期待着取得更大的成績。

國家南極考察委員會

主任　武　衡

一九八五年六月

The year of 1984 witnessed the organization, for the first time, of the Chinese Antarctic scientific expedition and the establishment of the Nation's first Antarctic station — the Chinese Antarctic Great Wall Station. Both of these are worthy of congratulation, upon which the people of the whole country hinge close attention and great hopes.

Since the 1980s, groups of scientists from China, forty scientists in groups, have landed on the ice covered Antarctic continent, conducting multi-disciplinary scientific investigations at the stations of Australia, New Zealand, Chile, Argentina, Japan, etc. With their zeal toward the Antarctic cause, spirit of self-sacrifice and rigorous scientific approach, the Chinese scientists have provided fresh knowledge for mankind's understanding of Antarctica and have accumulated valuable experience for the future organization of the Nation's Antarctic exploration.

The decision on the accession of China to the Antarctic Treaty, as approved by the 27th session of the Standing Committee of the Fifth National People's Congress on May 9, 1983, proclaims that the one-billion people of China have henceforth joined the international cooperative community in the cause of Antarctica.

With a view to developing the Nation's Antarctic exploration and establishing the international cooperative relationship therein, the National Committee for Antarctic Research has successively organized several delegations to Australia, New Zealand, the United States, the United Kingdom and Japan to learn their advance experience in the field,

and has sent others to Argentina and Chile for inquiring into the feasibility of constructing an Antarctic station, which was followed by an *in situ* siting reconnaissance in the Antarctic Peninsula. As a result of the half-year-long intense preparation, a formation of ships for the Nation's first Antarctic expedition set sail on November 20, 1984. During the historic voyage involving 591 scientists, crewmen, and the Naval officers and sailors, the scientific research vessel Xiangyanghong No. 10 and the Naval salvage ship J 121 were charged with the tasks of personnel and equipment transportation and scientific investigation. The two ships conquered the terrifying waves of the Pacific Ocean, passed through the Drake Passage, and triumphantly arrived at King George Island of the South Shetland Islands. Then, in coordination with the Naval officers and sailors, the Expedition further surmounted snowstorms and severe cold as well as other untold hardships and difficulties before they succeeded in constructing the Nation's first Antarctic scientific station at the Fields Peninsula, King George I. Some mountains, lakes and bays were named in Chinese for the first time in the Antarctica and, from then on, the solemn Five-Star Red Flag will flutter forever over this continent. The scientific workers also conducted multi-disciplinary investigations on the geology and geomorphology, meteorology, geophysics, biology and oceanography of the King George Island, achieving a series of gratifying results. Meanwhile, struggling against the Antarctic storms, the Southern Ocean Exploration Team on board the scientific research vessel Xiangyanghong No. 10 carried out a multi-disciplinary, multi-parameter comprehensive exploration covering an area of 100,000 km^2 in the surrounding Antarctic seas before their landing on the Antarctic Peninsula, which resulted in tens of thousands of data, samples and information in the fields of marine biology, meteorology, chemistry, geology and geophysics. The 142-day-long Antarctic expedition covering a course of 48955.2 km has successfully opened up a new shipping line from China to South America, thus setting a record in Chinese navigation history.

The success in the construction of the Chinese Antarctic Great Wall Station and the victory in the first Antarctic scientific expedition should give credit to the cordial concern of the Party Central Committee and the State Council, as well as to the energetic support from the people throughout the country. The whole Expedition Team, the crew and the Naval officers and sailors have fulfilled this glorious task of historic significance by displaying the revolutionary spirit in their utter disregard of hardship and danger.

Moreover, this Antarctic expedition of China, especially the construction of her first Antarctic station, has received warm support and help from various friendly countries. The Chinese people, highly treasuring their friendship with other people and scientists, will steadfastly strengthen the friendship and close cooperation with them in their own efforts to promote the development of China's Antarctic cause, as well as in an international effort to make a common contribution to the peaceful use of Antarctica by mankind.

This album on the magnificent feat of historic significance is hereby edited and published as a report to the Party, the government and the people whereby sharing experience with foreign Antarctic stations and scientists. We shall continue to make unremitting efforts for the glorious future of mankind as well as for the enhancement of the Antarctic cause. We are looking forward to greater successes.

Wu Heng
Chairman of the National
Committee for Antarctic
Research of the People's
Republic of China
June 1985

全國人大常委會關於加入《南極條約》的決定

（一九八三年五月九日通過）

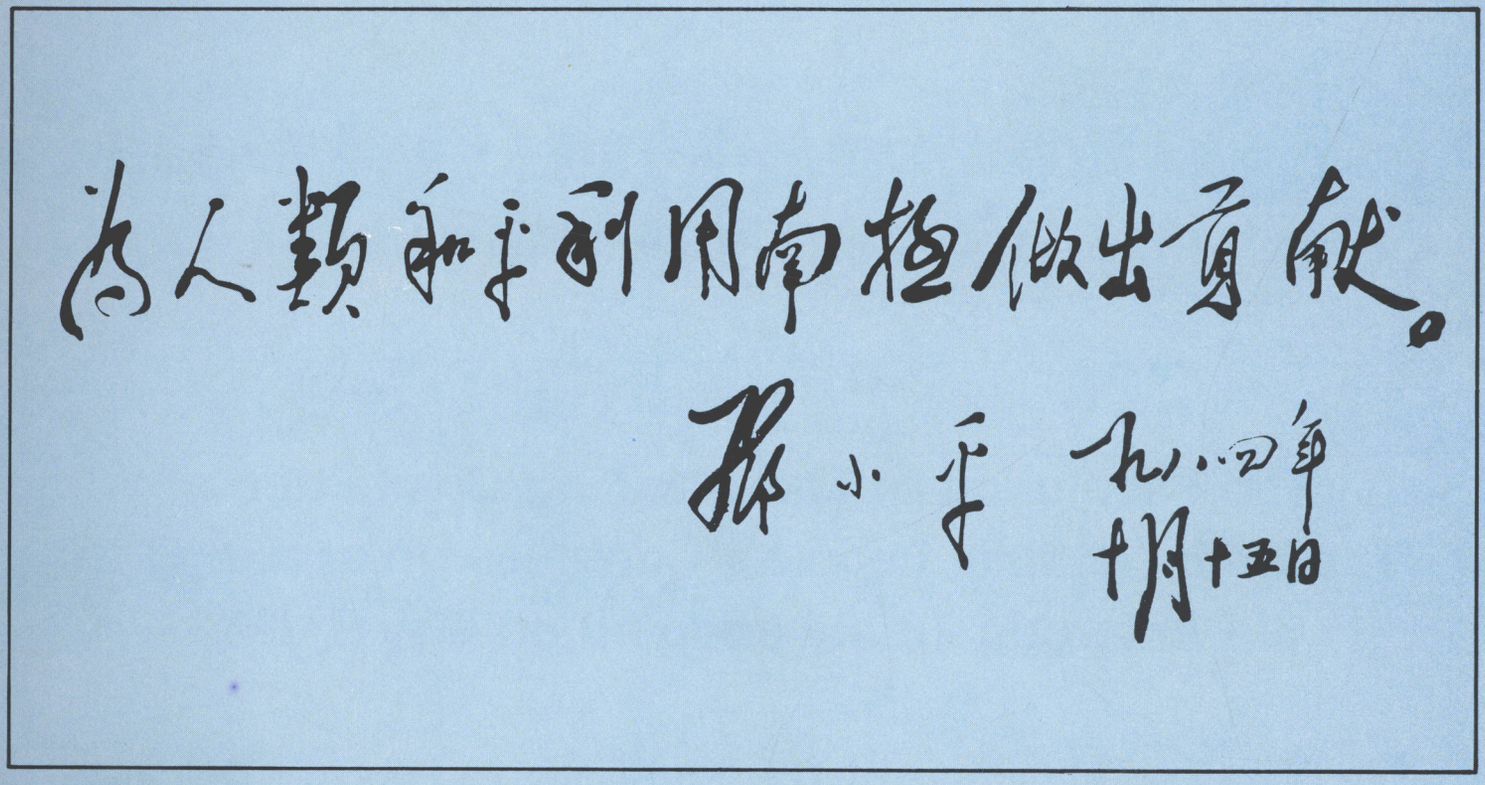
第五屆全國人民代表大會常務委員會第二十七次會議決定：

中華人民共和國加入1959年12月1日在美國華盛頓制定的《南極條約》。

The Resolution of The Standing Committee of The Fifth National People's Congress on acceding to the Antarctic Treaty adopted on May 9, 1983.

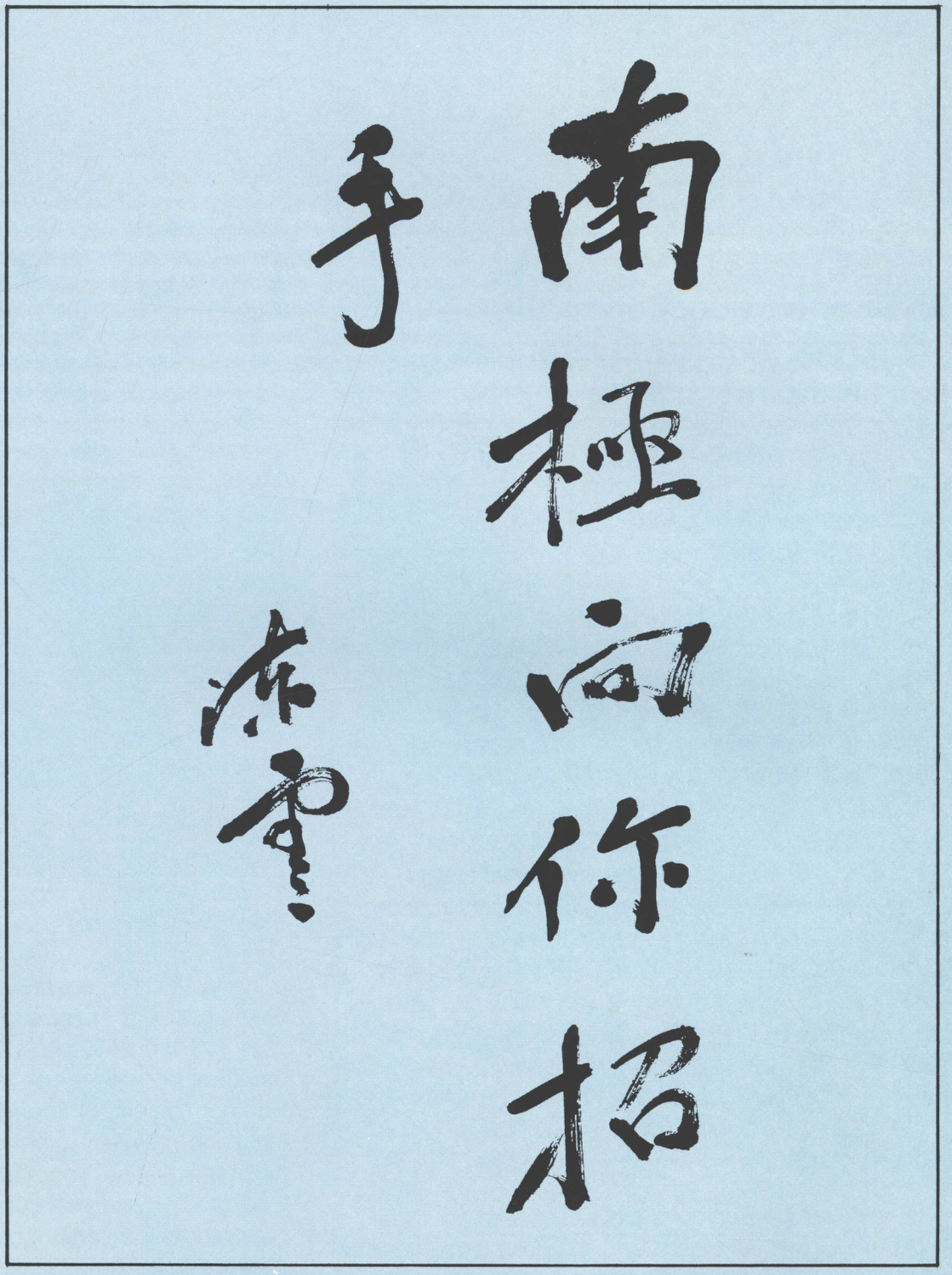
The Standing Committee of The Fifth National People's Congress adopted The Resolution at its Twenty-seventh Meeting:

The People's Republic of China accedes to The Antarctic Treaty signed in Washington, D.C., U.S.A. on December 1, 1959.



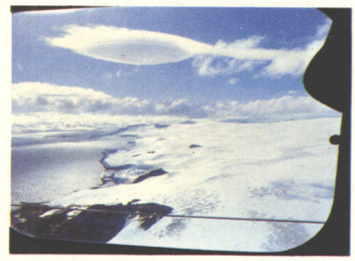
Make a contribution to the peaceful use of Antarctica for humanity

Deng Xiaoping
Oct. 15, 1984



Antarctica is beckoning you on

Chen Yun



在飛機內拍攝的照片（海岸）
A bird's eye view of Antarctic coast

南極自然概況
A Brief Introduction to the Antarctic Natural Environment

南極地處南緯60度以南的地區，包括南極洲和南大洋，面積約爲5200萬平方公里。南極洲，包括南極大陸和周圍島嶼，面積約一千四百萬平方公里，在地球的七大洲中居第五位，相當於中國面積的一點四五倍。環繞在它周圍的海洋有南太平洋、南大西洋、南印度洋，統稱南大洋，面積約三千八百萬平方公里，被稱爲世界第五大洋。

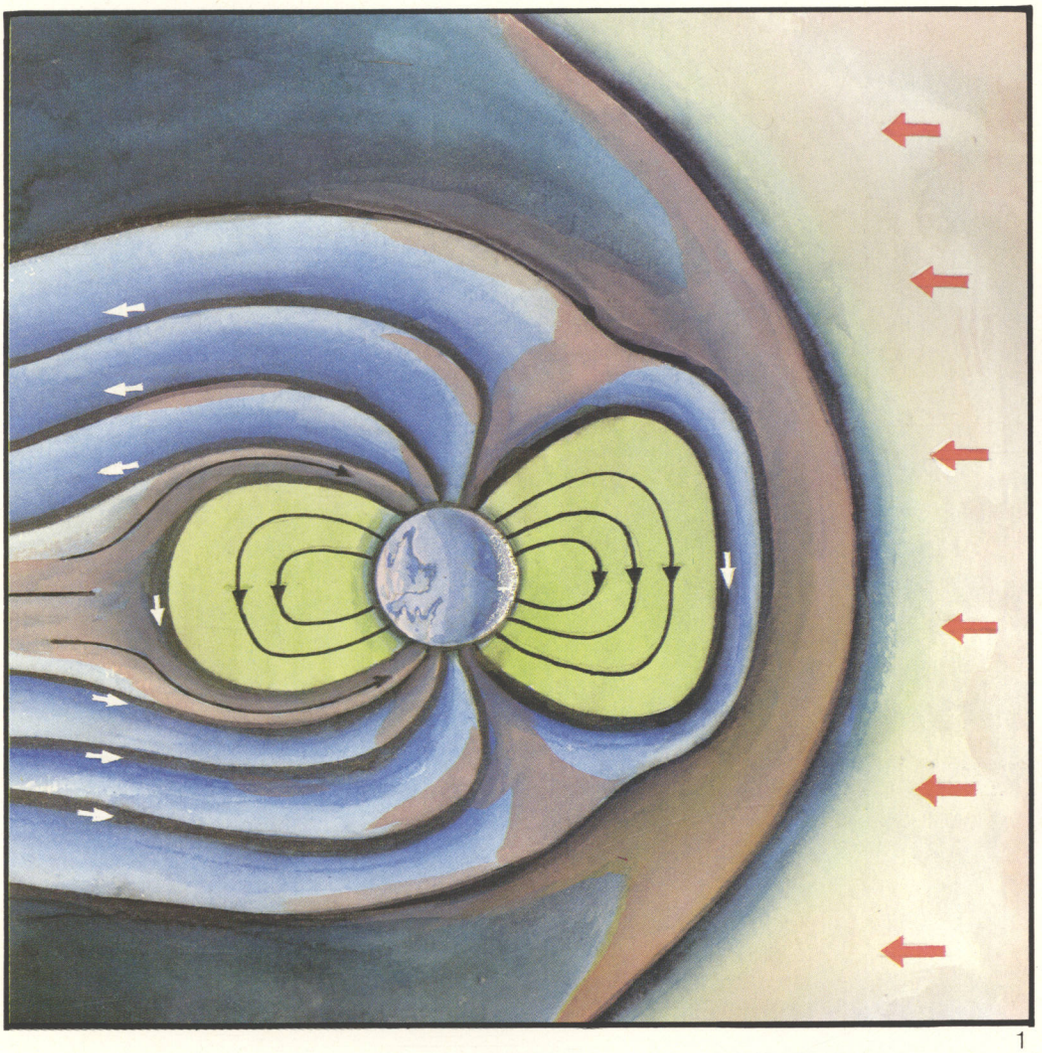
南極洲是世界上最高的大陸，平均海拔二千三百五十米。那裡是世界最寒冷、暴風雪最頻繁、風力最强、最乾燥的地區，南極大陸年平均氣溫爲零下25攝氏度，極端最低氣溫達零下88.3攝氏度，有世界"寒極"之稱。大陸沿岸平均風速17-18米/秒，最高可達92.5米/ 秒，被稱作世界"風極"。南極內陸高原的年平均降水量只有30—50毫米，素有"白色沙漠"之稱。冰雪是南極的象徵。95%以上的南極大陸常年被冰雪覆蓋，冰蓋平均厚度約二千米，最厚達四千八百米，冰蓋的總體積二千四百五十萬立方公里，佔地球上冰雪總量的90%以上。

這塊神秘的白色大陸，千年冰封，萬古長寒，卻是一塊"萬寶之地"。經過幾十年科學考察，証明南極大陸及其大陸架，蘊藏着豐富的鐵、煤、銅、鉛、鋅、錳、金、銀、鈾、石油和天然氣等多種礦產。南大洋的生物資源極其豐富，主要有磷蝦、企鵝、海豹、烏賊、鯨類和魚類。其中磷蝦的蘊藏量就有十至五十億噸，有些科學家認爲，如果每年捕撈一至一點五億噸，也不會影响南大洋的生態平衡。

The Antarctic Region is the whole area south of 60°S, including Antarctica and the Southern Ocean. The total area is about 52 million square kilometers. Antarctica includes the Antarctic continent and the surrounding islands, with an area of 14 million square kilometers which is an equivalent of 1.45 times of China's total territory. It is the fifth largest among the seven continents on the earth. The surrounding South Pacific Ocean, South Atlantic Ocean and South Indian Ocean are usually called the Southern Ocean, also known as the "Fifth Ocean" of the world with an area of 38 million square kilometers.

Antarctica is the highest continent in the world, averaging in altitude 2350 meters above the sea level. It has the coldest weather, the most frequent wind storms of strongest power and is the driest area in the world. Known as the world's "coldest spot," its annual average temperature is —25°C and the lowest —88.3°C. The average wind speed along its coasts is 17 — 18 m/s and the highest can reach 92.5 m/s, hence the name "wind spot of the world". The average rainfall on the plateaus of the interior Antarctica is only 30 — 50 mm. Therefore, it is well known as "the white desert". Ice and snow is the symbol of Antarctica. Ninety-five per cent of the continent is covered by ice and snow all the year round. The average thickness of the ice cover is 2000 meters and the thickest 4800 meters. Its total volume is 24.5 million cubic kilometers, which is 90% of the total ice and snow in the world.

Freezing cold for thousands of years, this mysterious continent is a land of "treasures". Tens of years of scientific survey shows that the Antarctic continent and its continental shelf is possibly rich in several dozens of mineral resources, such as iron, coal, copper, lead, zinc, manganese, gold, silver, uranium, oil, natural gas and other minerals. The Southern Ocean is abundant in biological resources, including mainly krill, penguins, seals, inkfish, whales and other fishes. There are about 1 — 5 billion tons of krill. Some scientists believe that 1 — 1.5 hundred million tons of catches of krill a year makes no impact on the ecological balance of the Southern Ocean.



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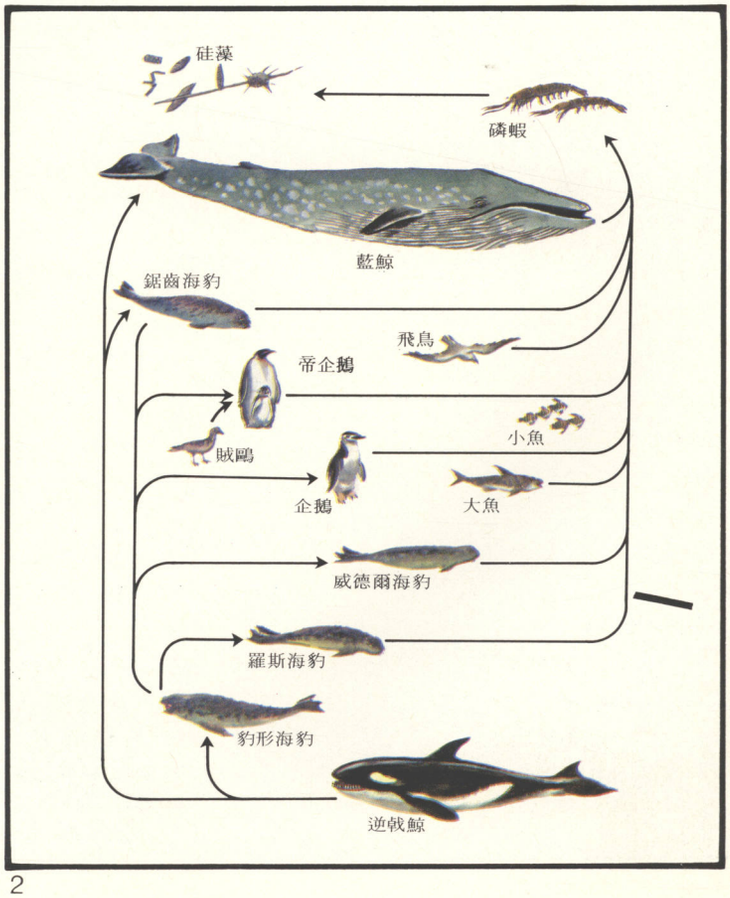
1 太陽風和磁圈
由於太陽風（圖中紅箭頭所示）的强大威力，把地磁場從地球的向陽面壓向另一方向。由於地磁場的屏蔽作用，來自太陽的高能粒子和波無法進入地球的中、低緯度地區，只是沿着距離地球200—300公里的電離層上方向南極和北極運動，在南極和北極上空形成强大的電場。這個電場的變化，對中、低緯度地區的電離層產生影响。因而，太陽活動的信息會在南、北極地區最先捕捉到。所以，南、北極是研究超高層大氣物理與太陽活動的最好場所。
Solar wind and magnetosphere due to the sheltering effect of the terrestical magnetic field, the high energy solar particles and waves cannot penetrate through to reach the mid- and low-latitudes of the earth, but will move towards both poles, forming strong electrical field at an altitude of 200 — 300 km above the earth. This electrical field would influence the ionosphere in the mid- and low- latitudes. Hence signs of solar activities could first be detected at both poles. That is why both the north and south poles are places best suited to the study of upper atmosphere physics and solar activities.



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2 南大洋食物鏈
Antarctic Marine Food Chain

1 南極長城站座標牌
Sign board of the Great Wall Station's geographical coordinates

2 絢麗迷人的南極光
Magnificent aurora

3 南極上空太陽的一日軌跡
The sun track for a day in Antarctica

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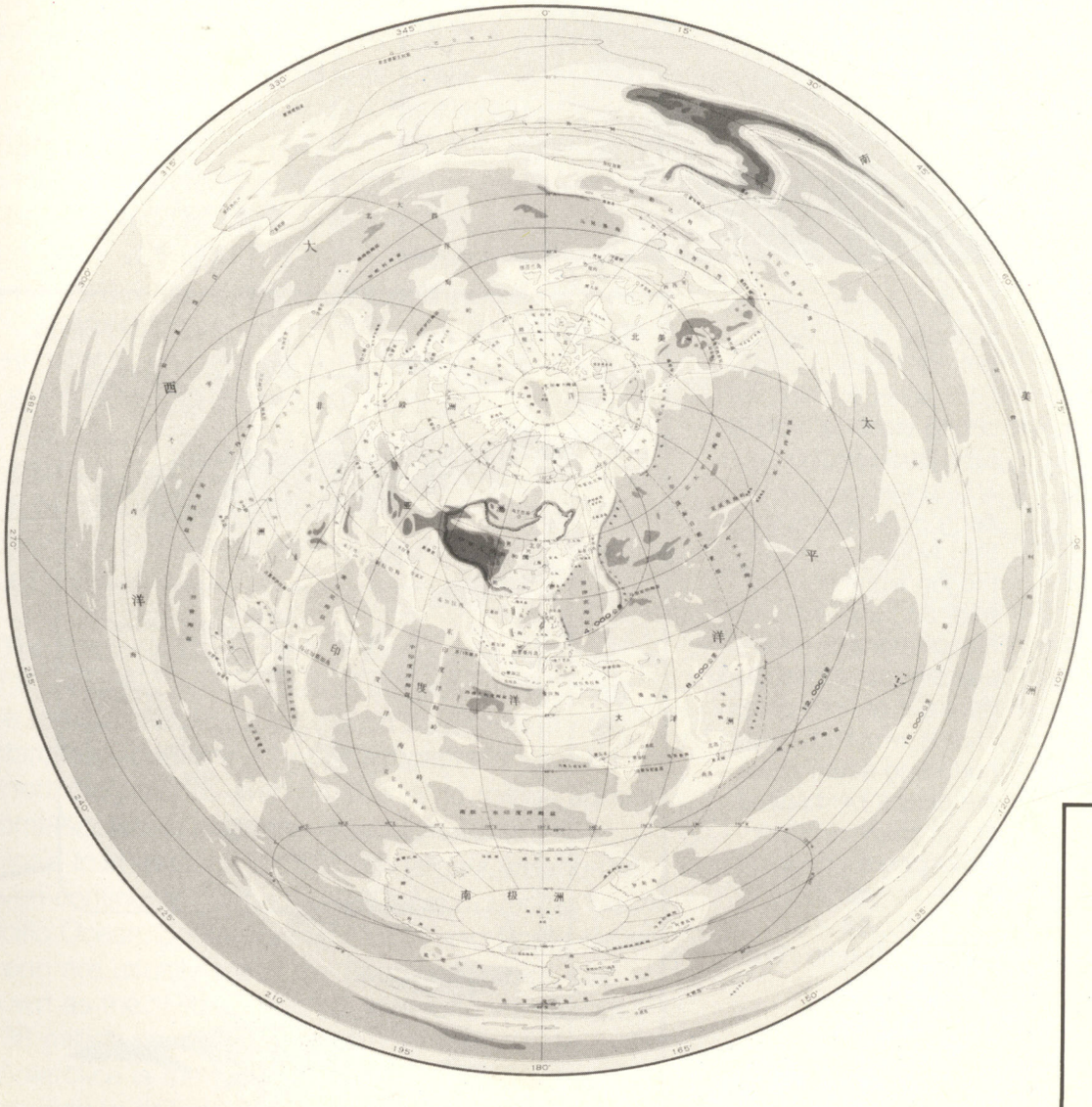

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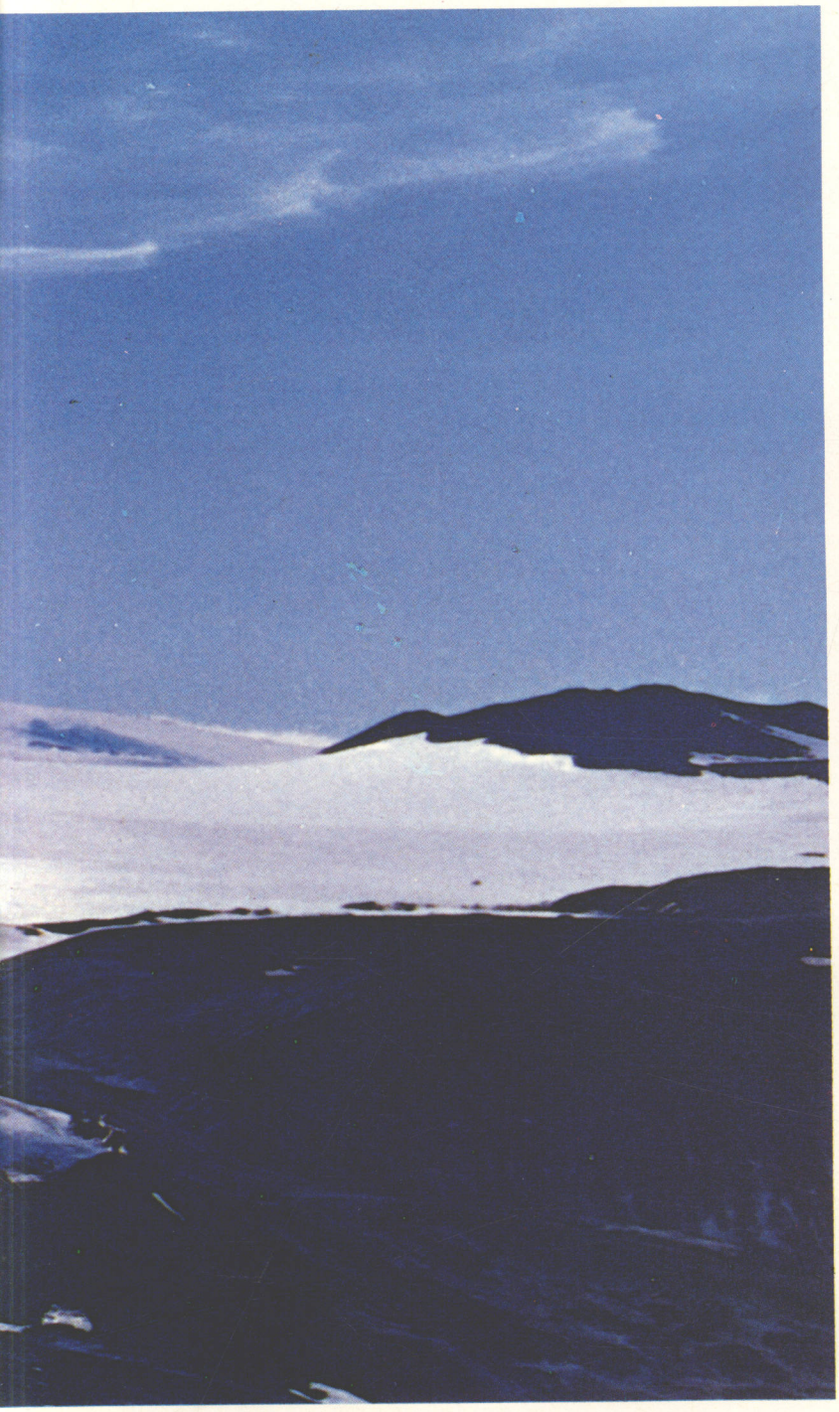
1 埃里伯斯活火山—神話中的白髮魔女
The active volcano Mt. Eribus — a white-haired godness in myth

2 千姿百態的南極浮冰
Pack ice in various postures

3 旖旎的冰瀑布
Charming and gentle ice fall

4 冰蓮花
Ice lotus flower

5 冰原崩裂
Breaking icefield



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1 南極苔藓和地衣
Mosses and lichens
2 長城站附近的神奇綠洲
A mystical oasis near the Great Wall Station
3 喬治王島石上髮草
Hair grass on the rocks of King George Island
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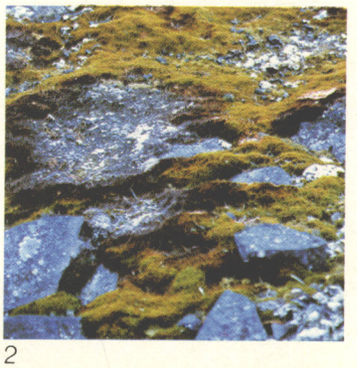

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