

# CHINESE COMMITTEE ON ANTARCTIC RESEARCH



## Chinese Antarctic Research Report to SCAR

RECORD OF ACTIVITIES: APRIL 1, 1989—MARCH 31, 1990

PLANNED ACTIVITIES: 1990—1991

BEIJING CHINA JUNE 1990



The Chinese National Committee for Antarctic Research  
and Its Operating Agency

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**The Chinese National Committee for Antarctic Research  
and Its Operating Agency**

**Chinese national committee for Antarctic research**

**Chinese Committee on Antarctic Research**

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**Chinese national operating agency**

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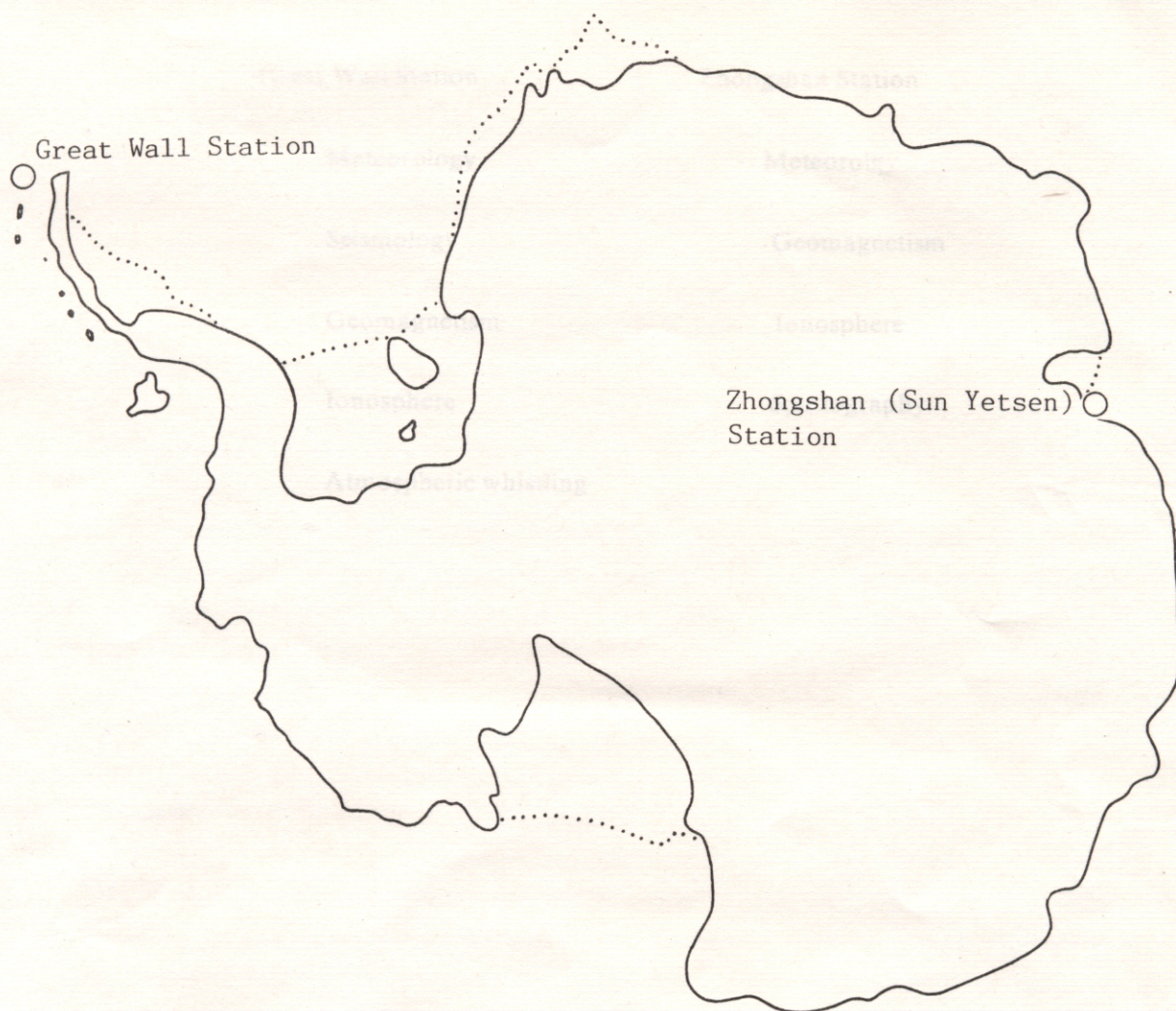
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# Station Map



Great Wall Station:  $62^{\circ}12'59''$  S  
 $58^{\circ}57'52''$  W

Zhongshan Station:  $69^{\circ}22'24''$  S  
 $76^{\circ}22'40''$  E



## **Report on the Activities from April 1, 1989 through March 31, 1990**

### **Spatigraphy**

#### **Great Wall Station:**

Made observations of sunspot, atmospheric whistling, and atmospheric electric field; Carried out synchronous observation of the spatiographical events during the peak year of solar activity with the observation stations at home.

#### **Zhongshan Station:**

Carried out the same observation items as those in the Great Wall Station; Also conducted the measurement of solar radiation and the measurement of solar constant, atmospheric trace elements and ozone in summer.

### **Meteorology**

#### **Great Wall Station:**

Carried out the same routine items as those last year; Newly-added observations including the general flux of the solar direct radiation and scattering; the optical thickness of aerosols in the atmospheric environment; particle spectral analysis, index of refraction, etc.

#### **Zhongshan Station:**

Carried out the same observations as those last year; Newly-observed items including aerosol, radiation and gradient wind.

### **Ionosphere**

#### **Great Wall Station:**

In coordination with the observation of the solar peak year, mainly conducted the researches on the total electron content of the ionosphere, vertical-section analysis of the ionosphere, ionospheric absorption and the lower ionosphere as well as radio waves propagation, with special emphasis laid on the research into some morphological features.

#### **Zhongshan Station:**

Carried out the same observation items as those in the Great Wall Station.

### **Glaciology**

#### **Great Wall Station:**

Snow-cover section of the Collins Ice Cap; Preliminary exploration into the ice core drilling; Investigation and research of the retreat process of the King George Island Glacier.

### **Geomagnetism**

#### **Great Wall Station:**

Geomagnetic pulse observation; Observation of relative changes of three geomagnetic



components; Observation of the geomagnetic absolute intensity.

Zhongshan Station:

Geomagnetic pulse observation.

### **Geology and Geography**

Great Wall Station:

Research on the formation conditions of the stone circle in the tundra; Research on the coastal terrace and the beach sediment movement in the Great Wall Station region; Preliminary exploration into the evolutionary process of the palaeoenvironment in the past 10 000 years.

Zhongshan Station:

Reconnaissance geological survey of the Broknes Peninsula; Geologic mapping of the Mueller Peninsula; Lithologic and structural survey of this region.

### **Surveying and Mapping**

Zhongshan Station:

1:2000 survey map for the area near the station; Aerosurveying over an area of 35 square kilometres.

### **Biology**

Great Wall Station:

Research into the ecology and cold endurance of the land arthropods on the Fildes Peninsula; Survey of the shallow-sea ecological systems in the intertidal zone and its adjacent areas.

Zhongshan Station:

Survey of the microorganisms in the lakes of the station areas; Investigation of the penguin and seal species.

### **Human Physiology**

Research on the encephlogram and memory function of the team members; Survey of the energy metabolism and trophic intake; Investigation of the biorhythmic changes; Tests of heart functions for part of the team members.

### **Oceanic Expedition**

Krill: The research findings by using fish finders and trawl nets show greater annual variations in the distribution and reproduction of large krills. They are distributed zonally along 65° S.

Marine Hydrography: The vertical structures both in and outside the Prydz Bay show obvious changes.



Marine Chemistry: Underway survey of such data as temperature and nutrients.

### Cooperative Projects

#### Great Wall Station:

Dr. Ohyama Yoshikuni and Dr. Shimada Kimio, scientists from the Japan National Polar Research Institute took part in the biological survey of the Great Wall Station.

### Logistics

On October 30, 1989, the JIDI, a Chinese Antarctic scientific expedition ship, started the sixth scientific expedition to the Antarctic and then accomplished the task of providing material supplies to the Great Wall Station and the Zhongshan Station and transporting materials for the construction of the station area. The total voyage took 180 days and covers 30 203 miles. The Sixth Antarctic Expedition Team has a total of 138 members, including 39 for the Great Wall Station and 61 for the Zhongshan Station in addition to a crew of 38.

#### Great Wall Station:

Installed the biochemical sewage treatment device and the refuse destructor; Carried out maintenance of housing and mechanical equipment.

#### Zhongshan Station:

Completed the construction of the scientific research building and recreation and sports building, with a total floor space of 450 M<sup>2</sup>; Improved the water— supply line and sewer project of the station area and constructed the biochemical sewage treatment room and installed the equipment; Installed two transmitters, three short-wave receivers, a teletype, as well as Model JUE-45A Satellite Communication System and the antenna tower, which have been put into normal operation; Accomplished the installation and debugging of the instruments in the disciplines of atmosphere, meteorology and upper-atmospheric physics.



## Scientific Plan for 1990—1991

### Zhongshan Station:

The major tasks of the Seventh Antarctic Expedition Team in the Zhongshan Station are to ship materials, carry out scientific research and improve the environmental construction of the station area.

### I. Major Tasks

#### Scientific Research

1. Routine observation: meteorology; ionosphere; geomagnetism; spatiography; solid tides; environment.

2. Follow-up items

Solar-terrestrial physics during the peak year of solar activities; the ionosphere, electric field and geomagnetic field events and their interrelationship during the peak year of sunspots.

Geology: Multipurpose research on the precambrian metamorphic geology in the Larsemann Hills area.

3. Newly-added items

Medical science: Research on human physiology under polar conditions (including physiological survey)

Surveying and mapping

Glaciology: Geophysical prospecting of the Amery Ice Shelf

4. Multipurpose investigation of the Prydz Bay

Survey of krill and other marine life

Marine hydrological and meteorological survey

Investigation of the marine carbon cycle

5. Cooperative projects

The Third Institute of Oceanography of the State Oceanic Administration will cooperate with the Canadian Institute of Ocean Science in undertaking the research on the marine carbon cycle in the Prydz Bay, mainly involving the measurements of  $\text{PCO}_2$ ,  $\text{TCO}_2$ , ALK etc. along the shipping line and the launch of sediment traps.

#### Construction in the Station Area

Install the refuse destructor and dispose of the smoke discharged from the power generating units.

### II. Team Composition

The Zhongshan Station will have a total of 48 team members, including 20 wintering members and 28 summer members.