

CHINESE COMMITTEE ON ANTARCTIC RESEARCH



CHINESE ANTARCTIC RESEARCH REPORT TO SCAR

RECORD OF ACTIVITIES: OCTOBER 1988 TO OCTOBER 1989

PLANNED ACTIVITIES 1989-1990

BEIJING, CHINA, JUNE 1989

Chinese National Committee for Antarctic Research

Chinese Committee on Antarctic Research

No. 1, Fuxingmenwai Street, Beijing, China. 100860

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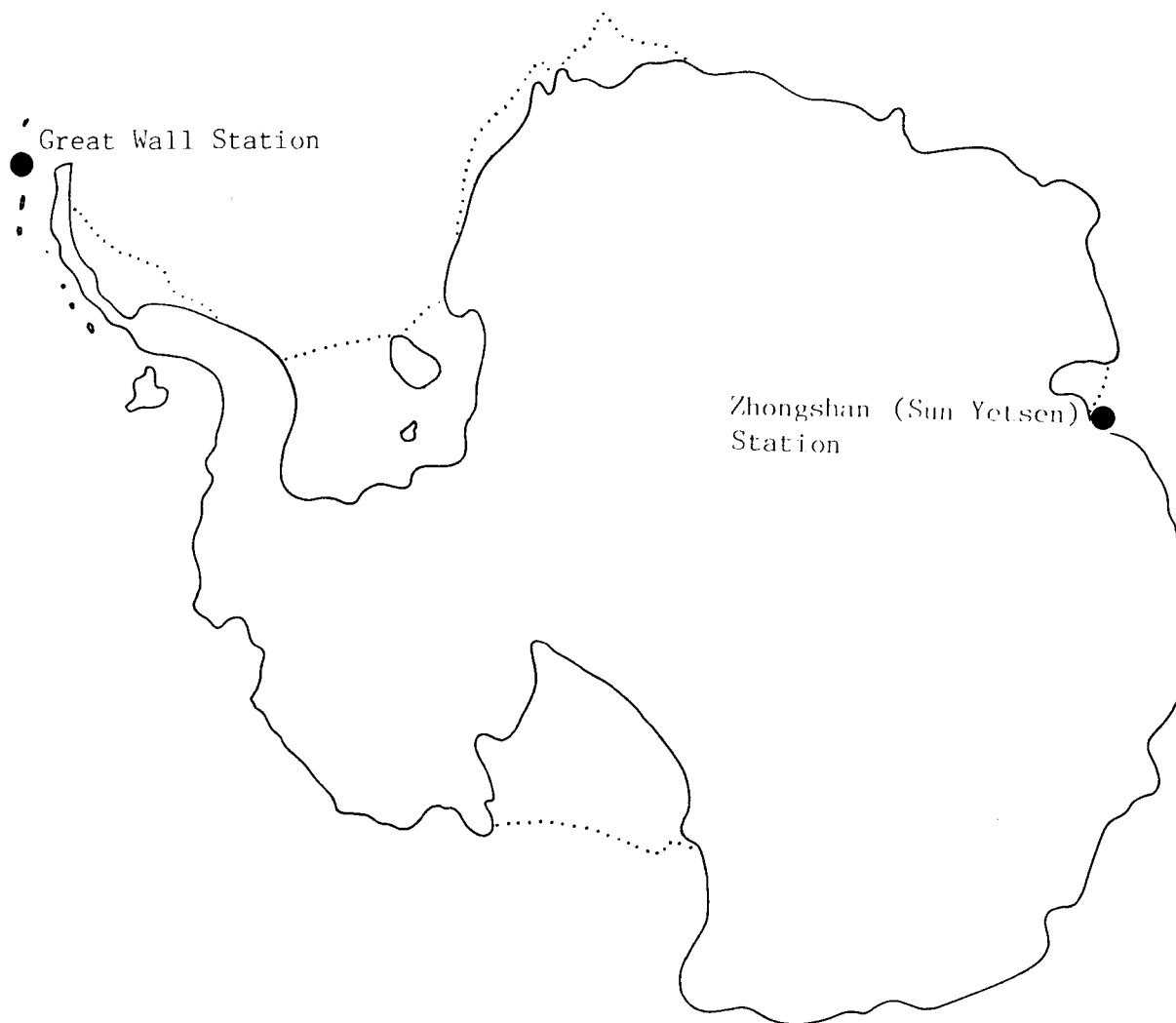
Chinese Antarctic Administration

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Great Wall Station 62°12'59"S, 58°57'52"W
Zhongshan Station 69°22'24"S, 76°22'40"E

List of Permanent Observatories

Great Wall Station

Zhongshan Station

Meteorology

Meteorology

Seismology

Ionosphere

Geomagnetism

Ionosphere

Communications

Atmospheric whistling

Report on Highlights of Science Activities from Previous Reporting Period

Biology

Great Wall Station:

Conducted tidal-zone and shallow-sea ecological research; Made observation of the quantity and distribution of seals and birds.

Investigated lichen and moss; Conducted research on the relationship between penguins and krills.

Zhongshan Station:

Observed the birds, vegetation and freshwater phycophyta appearing in the area of observation stations and found crustacea.

Geodesy and Geographic Information

Great Wall Station:

Re-surveyed the deformation of crustal fault of the Fildes Strait, Nelson Glacier, and the deformation of the Great Wall Station structures.

Zhongshan Station:

Completed the construction and setting-out; Established the coordinates system for the surveying and mapping of the Zhongshan Station; Defined the height system of the Zhongshan Station; Surveying and mapping of the 1:2000 topographic map for the station area; Monitoring of the building subsidence in the Zhongshan Station, etc.

Glaciology

Great Wall Station:

Observation of the surface material balance and nivation cirque in

the two major sections of the Nelson ice-cap; Measuring of the intraglacial temperature and observation of the ice floe movement; Laboratory cryometry of the ice cores.

Geology

Great Wall Station:

Systematically conducted the palaeomagnetic sampling; Filled out the topographic map for part of the Fildes Peninsula and Nelson Island; Re-surveyed the ice-marginal geomorphologic measurements.

Zhongshan Station:

Understood in general the topography and geomorphology of the station area and its environs through the research on the environmental background and evolution, found a large number of traces of palaeoglacial activities and erosion process and collected samples of rock, sediment, lake water and snow in different sections related to glacial activities.

Solid Earth Geophysics

Great Wall Station:

Routine observation of solid tides; Field gravimetric survey.

Upper Atmospheric Science

Great Wall Station:

Satellite observation of differential Doppler beacon; Research on atmospheric ozone and nitrogen dioxide.

Zhongshan Station:

Providing navigational and meteorological guarantee, and conducted researches on the cyclone and canyon wind process affecting the Zhongshan Station, the relationship between sunspot activities and the bearing varia-

tions of the polar region, cloud and weather as well as the possibility of forecasting weather with data of the station.

Human Biology and Medicine

Great Wall Station:

Part of the team members have undergone tests of heart functions.

Logistics

Great Wall Station:

The Fifth Antarctic Expedition Team of China has a total of 41 members, among which 27 are summer members, 14 wintering members.

Prof. Kentaro Watanabe and Prof. Masakane Inoue, both biologists from the Japan National Polar Research Institute took part in the summer expedition of the Great Wall Station.

Zhongshan Station:

The "JIDI", an Chinese Antarctic scientific expedition ship, undertook the task of making its first voyage to East Antarctic to set up the Chinese Zhongshan Station. With a crew of 40 and Level I A ice-resistance capability, the ship is 152 m in length, 20 m in mould width, and has a displacement of 15000 tons.

The ship started its voyage on November 20, 1988 from Qingdao Port in Shandong Province. Heading for Prydz Bay via Hobart, Australia, it had been blocked by the continental-margin ice and locked by ice quake for 31 days before it reached its anchorage. Upon completion of the summer scientific projects and building of the Station, it returned to Qingdao on April 10, 1989 via Australia and Singapore.

The corner stone of the Zhongshan Station was laid on January 26, 1989, and the construction was completed on February 26, 1989. With a total floor space of 1655 square kilometres, the Station operates such major facilities as the power station, dormitory building, office building,

weather forecasting, oil depot, etc. The main equipment includes:

Caterpillar generator:	3
excavator:	1
crane (over 16 tons):	2
Germany-made snow car:	2
bulldozer:	1
1.6 kW single-band transmitter:	1
1.6 kW single-band receiver:	1

The First East Antarctic Expedition Team has 76 people, including 56 summer members and 20 wintering members.

Major Tasks and Team Composition for the Chinese Sixth Antarctic Expedition in the Zhongshan Station during 1989-1990

The major tasks of the Sixth Antarctic Expedition Team in the Zhongshan Station are to: complete the second stage of construction and carry out scientific expedition on land and (for some items) at sea.

I. Major Tasks

1. Completion of the second stage of construction

- Construction of the scientific research building, recreational and sports building and oil depot
- Water-supply line and sewer
- Installation of the device for utilizing the waste heat from the generator set
- Installation of the biochemical sewage treatment device
- Other winding-up works

2. Scientific projects

Routine observation items:

- Meteorology: Completing the construction of the ground observation station of the meteorological observatory and formally sending reports to the World Meteorological Centre beginning from April, 1990; Installing the satellite cloud-picture receiving equipment
- Geomagnetism: Completing the construction of the geomagnetic station and starting the observation work
- Ionosphere: Installing the ionosphere receiving device and starting the detection

Summer scientific projects:

- Geology: Comprehensive research on the Precambrian metamorphic

geology in the Larsemann Hills

— Glaciology: Exploration of the Amery Ice Shelf

At-sea scientific projects

— Investigation of krill ecology: Investigation on Elephant Island and in the Prydz Bay centring on krill ecology

— Carbon-cycle survey: Underway survey of the carbon cycle of the Southern Ocean

— Aerosol: Underway survey of the aerosol for the whole voyage

— General survey of the surface and investigation of the planktons

— XBT underway survey for the whole voyage

Winter scientific projects

Ice and snow investigation around the station area apart from routine observation items

II. Team Composition

In the light of the major tasks of the Zhongshan Station, the expedition team is to be composed of three parts: construction, scientific expedition and logistic support, with a total of about 60 members.

The Major Tasks, Team Composition and Implementation of the Chinese Sixth Antarctic Expedition in the Great Wall Station during 1989-1990

The major tasks of the Sixth Antarctic Expedition in the Great Wall Station are: to enhance the management of the Station and improve the environment with emphasis on the scientific expedition.

I. Major Tasks

Scientific projects

1. Priorities: Research on the environmental changes during 10000 years
2. Follow-up items: Tidal-zone ecosystem research
Medical research on human bodies
3. Routine items: Communications
Upper atmospheric physics
Geomagnetism and seismology
Meteorology
Ionosphere
4. International cooperative investigation:
Biological cooperative research joined in by two Japanese scientists
Survey of the station construction by two Pakistani scientists

Engineering construction for the Stations

1. Perfecting the labs in the scientific research building
2. Building No.1: Improving the station master's room; relaying the floor and ceiling of the dining hall; expanding the lavatory; rebuilding the corridor and refitting the wind scoop
3. Installation of the biochemical sewage treatment device
4. Building the parking apron for helicopters

5. Maintenance of main structures, machinery and vehicles, the water-supply line and sewer
6. Installation of the wind-driven motor set

II. Team Composition

The Great Wall Station will have 38 summer members and 16 wintering members.

III. Implementation Plan

The Chinese scientific expedition ship "JIDI" plans to start from Qingdao Port in Shandong Province in late October, 1989, sail to the Great Wall Station via the Pacific and arrived at it in early December. After unloading the materials, it will leave for the Zhongshan Station in mid-December, sailing eastward along the coast of the Antarctic. After completing the second stage of construction of the Zhongshan Station and at-sea scientific projects, it will head for home by the end of February, 1990 via Australia and Singapore.