

<<中国冰川及其环境>>

图书基本信息

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作者：Shi Ya feng 编

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前言

Since the professional institution for glaciology attached to the Chinese Academy of Sciences (CAS) was established in 1958, studies of glaciers in alpine regions, later extended to Arctic and Antarctic regions, and then of Quaternary glaciations all over China, have been developed gradually. The study fields include general glaciology, hydrology and climatology in glaciated regions, the physics of snow and ice, glaciochemistry, the extraction and analysis of ice cores, the seasonal snow cover, snow and ice hazards and their control measures, and climatic and environmental changes in relation to glaciers. The study methods include expeditions, static observations, laboratory experiments and analyses, and a glacier inventory across China. It was my honor to manage the studies from 1958 to 1984. Since then, I have become engaged in this field until the present time. Therefore, I am lucky enough to have witnessed the whole development of glaciology in China. Nowadays, the papers published in scientific periodicals are increasing so rapidly that there are thousands already, calling eagerly for integrated studies both for a single discipline and as a whole, so as to convenient the citing and reference providing for a broad range of scholars. For an integrated study, we have produced two Chinese monographs: An Introduction to the Glaciers in China (Science Press in 1988) with 322 references and Glaciers and Their Environments in China the Present, Past and Future (Science Press in 2000) with 794 references. We are pleased to have them widely used by Chinese scholars.

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内容概要

However , due to language difference between China and the western countries , the progress of glaciology in China , of which most accounts have been published in Chinese , is difficult for western scientists to appreciate. Therefore , we decided to publish an English edition based on *Glaciers and Their Environments in China—the Present , Past and Future* (in Chinese) , as you see here , named *Glaciers and Related Environments in China* , which in fact is an optimized version , with new research data till 2005 and a revised structure. It is our hope , through publishing this monograph , to enable foreign scientists to understand systematically the current situation and historical progress of glacier research and other relevant environmental studies within the Chinese territory , so as to promote more cooperation with foreign glaciologists , who also share the wish to develop further the field and to face effectively the widespread concerns as global warming , water cycle changes , glacier shrinking and deteriorating environments.

<<中国冰川及其环境>>

书籍目录

FOREWORD	FOREWORD	PREFACE	CHAPTER 1 INTRODUCTION	1.1 GLACIERS, CRYOSPHERE AND GLACIOLOGY	1.2 DEVELOPMENT OF GLACIOLOGY IN CHINA	1.2.1 Preliminary Development during 1958-1977	1.2.2 Relatively Steady Development of Glaciological Research since 1978	1.3 S(OCIAL SIGNIFICANCE) OF GLACIOLOGY	1.3.1 Applications to Studies of Water and Tourism Resources and Their Rational Utilization	1.3.2 Effective Mitigation of Glacier- and Snow-Induced Disasters	1.3.3 Valuable Information Sources of Climate and Environment	1.3.4 Inspiring Future Generations	REFERENCES																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
CHAPTER 2 GLACIERS AND THEIR DISTRIBUTION IN CHINA	2.1 C(ONDITIONS) FOR GLACIER DEVELOPMENT	2.1.1 Mountains and Glacier Development in West China	2.1.2 Climatic Conditions of Glacier Development	2.2 MAIN RESULTS OF THE GLACIER INVENTORY OF CHINA	2.2.1 The Glacier Inventory of China	2.2.2 Glacier Volume	2.2.3 Distribution of Glaciers by Province (Region)	2.2.4 Distribution of Glaciers by Mountain System	2.2.5 Distribution of Glaciers by Slope Orientation	2.2.6 Distribution of Glaciers by Water Drainage System	2.3 GLACIER TYPES AND THEIR REGIONAL DISTRIBUTION	2.3.1 Classification in Terms of Geophysical Properties	2.3.2 Classification in Terms of Morphology and Distribution Characteristics of Morphological Types	2.3.3 Relation between Glacier Morphological Type and Glacier Size	2.4 SNOW LINE ALTITUDE AND ITS SPATIAL DISTRIBUTION	2.4.1 Method to Determine the Snow Line Altitude	2.4.2 Spatial Distribution of the Snow Line Altitude and Its Dependent Factors	2.4.3 Accumulation Area Ratio of Glaciers and the Factors on Which It Depends	2.5 GLACIERS LOCATED IN SOME REPRESENTATIVE REGIONS AND THEIR FEATURES	2.5.1 The Altay Mountains	2.5.2 The Tianshan Mountains	2.5.3 The Qilian Mountains	2.5.4 The Pamirs	2.5.5 The Karakorum Mountains	2.5.6 The Kunlun Mountains	2.5.7 The Qangtang Plateau, Especially the Purog Kangri Ice Field	2.5.8 The East Section of the Nyainqentanglha Range	2.5.9 The Mount Gongga and Mount Yulong of the Hengduan Mountains	2.5.10 The Middle Section of the Himalayas	REFERENCES																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
CHAPTER 3 PHYSICS OF GLACIERS	3.1 DISTRIBUTION OF TEMPERATURE IN GLACIERS	3.1.1 Introduction	3.1.2 Heat Transfer in the Near-Surface Layer	3.1.3 Heat Conduction at the Glacier Base	3.1.4 Heat Transfer within a Glacier	3.1.5 Two-Dimensional Temperature Distribution	3.1.6 Temperate Glaciers	3.1.7 Types of Glacier Temperature Distribution	3.2 ICE FORMATION	3.2.1 The Transformation of Snow to Ice	3.2.2 Glacial Zonation	3.2.3 Glacial Zones in the Main Glaciated Areas	3.3 ICE TEXTURES	3.3.1 The History	3.3.2 Crystal Size	3.3.3 c-Axis Orientation	3.3.4 The Features of Ice Textures in China	3.4 MECHANISMS OF GLACIER MOTION	3.4.1 A Brief View	3.4.2 Deformation of Ice	3.4.3 Basal Sliding and Deformation of the Bed	3.4.4 Hydraulic Effects at the Glacier Bed	3.4.5 A Summary of Motion Mechanisms of Glaciers in China	REFERENCES																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
CHAPTER 4 MASS AND ENERGY BALANCE OF GLACIERS	CHAPTER 5 SNOW AND ICE CHEMISTRY AND ITS ENVIRONMENTAL SIGNIFICANCE	CHAPTER 6 SNOW COVER DISTRIBUTION, VARIABILITY, AND RESPONSE TO CLIMATE CHANGE IN CHINA	CHAPTER 7 GLACIAL RUNOFF AND ITS MODELING	CHAPTER 8 SNOW AND ICE HAZARDS AND THEIR CONTROL MEASURES	CHAPTER 9 CLIMATE AND ENVIRONMENT CHANGES DERIVED FROM ICE CORE RECORDS	CHAPTER 10 QUATERNARY GLACIATIONS, GLACIAL AND INTERGLACIAL CYCLES AND ENVIRONMENTAL CHANGES	CHAPTER 11 IMPACT OF GLOBAL WARMING ON GLACIERS AND RELATED WATER RESOURCES IN CHINA	INDEX	PLATES	PHOTOGRAPHS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										

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章节摘录

插图：The methods of measurement and calculation of mass balance currently applied in China are described as follows.

4.1.3.1 Direct measurement A stake network is fixed on the glacier surface for direct measurement. The surface level relative to the stake top is measured periodically. To measure snow depth and density and describe snow-firn stratigraphy in the accumulation area, snow pitting or ice core sampling should be conducted at some fixed sites within some fixed dates, so that snow accumulation rates for different time intervals can be calculated. By means of net balance isopleths and/or altitude zones, an isoline diagram can be drawn on a large-scale glacier map from the measurements for the calculation of the instantaneous, seasonal (winter and summer) or annual mass balance components. Xie Zichu and Zhang Jinhua (1988) have systematically summarized this method. In this Chapter, we only stress aspects of mass balance measurement and calculation that have been improved and replenished.

(1) In China continental or warm season accumulation glaciers are widespread with extensive development of superimposed ice. Therefore, it has been suggested that net balance of snow/tim, superimposed ice and glacial ice should be measured separately at a fixed site. Although the measurements expend a lot of labor, these measurements are necessary for calculating instantaneous net balance, therefore, the process of calculation can be simplified.

(2) In the wet snow zone or higher zones, it is possible that meltwater percolates into the firn formed in the previous year. So, when acquiring net accumulation by means of snow pits, be careful to measure the mass increase in old firn.

(3) In the previous studies, only the method of net balance isopleths was applied to estimate the net balance of a glacier. This method is inconvenient for studying the elevation related balance variation. To keep consistency with WGMS, it is suggested that the method of altitude zones should be employed simultaneously on those monitored glaciers. In that case, their results can compare and compensate each other, thus the chance for errors got minimized.

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