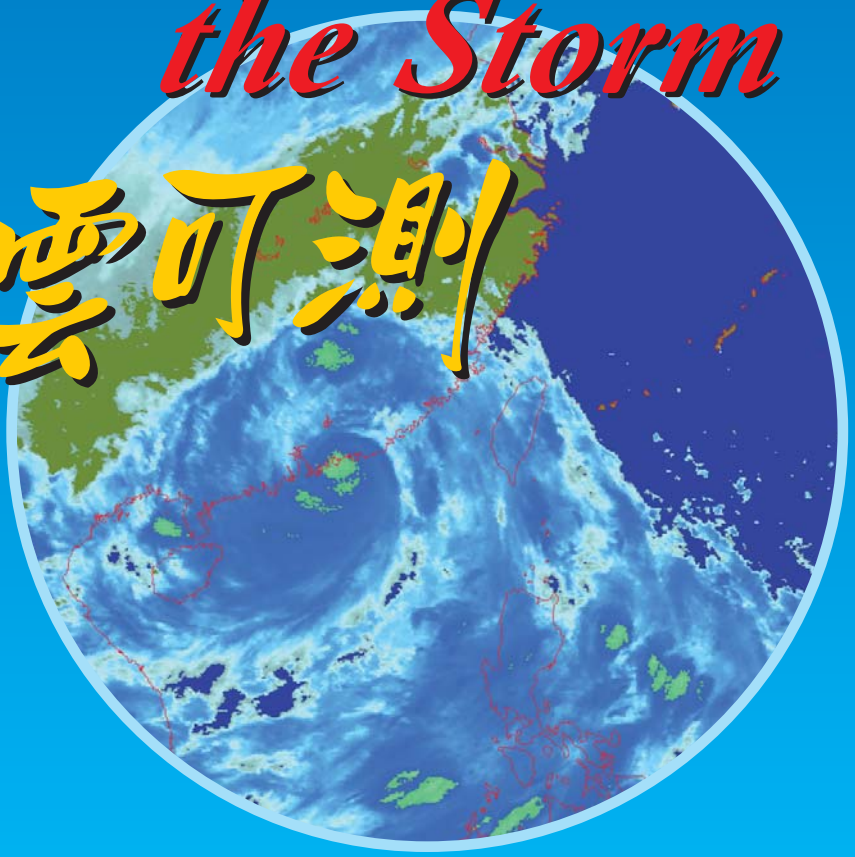
Weathering the Storm
風雲可測



Hong Kong Observatory and Social Development
香港天文台與社會的變遷

Ho Pui-yin
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FOREWORD

Wind whispering, rain rattling, students reciting, I hear;
Family issues, state matters, world affairs, myself endear.

- classical Chinese doublets

Traditional Chinese intellectuals looked at the world with wisdom and benevolence, quietly sensed the rhythm and the evolution of Nature and empathised with the turns and sufferings of Humankind. Come rain or shine, hot or cold, our task at the Hong Kong Observatory is to keep watch over the weather, with a commitment to protect the public from harm; perhaps silently following the footsteps of our ancient counterparts.

The Hong Kong Observatory was established in the late nineteenth century. It was brought about by the wish of the Western scientific community to collect data about nature. It was also a response to the call of the local community for better warning services after a series of typhoon onslaughts. Therefore, since its inception the Observatory has to live with the inherent tension between science and service. This has very much shaped the metamorphosis of the Observatory all through the years.

One hundred twenty years have elapsed. The Hong Kong Observatory has continuously introduced new services to keep pace with the development of Hong Kong. Be it marine or aviation weather services, astronomy or seismology, time service or warnings of typhoon and rainstorm, the demands of the community are always ahead of what science and technology could offer. Generations of Observatory staff have been, and still are, committed to ensure that all the available science and technology are used to advance the work of the Observatory.

The history of the Hong Kong Observatory is not just a chronicle of changing instruments or evolving services, but the fruits of the aspirations and dedication of its staff. No meteorologist can escape from the curse of wrong forecasts and the associated barrage of public criticism. Rather than being defeated or deterred, the men and women of the Observatory have persevered with their work, buttressed by their faith in science and their passion to serve. The compilation of meteorological records during the very difficult time when the Director and his staff were interned in Stanley camp 60 years ago is but one testament to the unyielding professionalism of the people of the Observatory. It is also a perennial reminder to us that in times good or bad, we shall always work hard and carry out our mission.

Wisdom shines, heavenly secrets untold,
Benevolence rises, human virtues behold.

This book is dedicated to the staff of the Hong Kong Observatory, past and present.

C. Y. Lam
Director of the Hong Kong Observatory
8 October 2003

序

風聲、雨聲、讀書聲，聲聲入耳
家事、國事、天下事，事事關心

傳統的知識份子，睿智慈悲，澄明的心靈感應著大自然的流轉動靜，關懷著人世間的波折起伏。香港天文台人員以觀測風雨為工作，以減少傷亡為目的，晝夜不停，春秋不斷，默默地走的也許就是一樣的道路。

香港天文台成立於十九世紀末，一方面反映西方科學界對自然科學數據的渴求，另一方面回應香港屢遭颱風肆虐後本地各界對警報服務的期望；成立伊始，就活在科學與服務之間的張力裡，註定了此後蛻變演化的軌跡。

一百二十年過去了，隨著香港社會的發展，香港天文台的服務內容陸續有所增添，由航海至航空，由天文至地震，由報時至報颱風、報暴雨，社會的需求總是走在科技的前頭，一代又一代的天文台人員不得不殫精竭慮，把用得上的科技都貫注入天文台的工作中。

香港天文台的歷史，不單是儀器更替或服務變更，更是多年全台上下心血凝聚的結晶。氣象人員都逃不出預測間有失誤的宿命，以及由此而生的社會責備，但是歷代天文台人員都以對科學的虔敬和對服務人群的熱誠堅持下去。六十年前戰時在赤柱集中營裡艱苦保存的氣象觀測紀錄，凸顯了天文台人員的不朽精神面貌，亦提醒我們不論環境順逆，均應緊守崗位，努力不懈。

籌算天機明智慧
體念人情顯慈悲

謹以此書向所有過去及現職香港天文台人員致敬。

林超英
香港天文台台長
2003 年 10 月 8 日

PREFACE

Much has been written about the evolving functions and organisational changes of the Hong Kong Observatory since its founding in 1883, leaving very little ground to cover when one endeavours to write on the history of the Observatory again. However, when we re-examine closely its development process, we find that the functions of the Observatory and its subsequent expansion are inseparably tied to the overall progress of Hong Kong society. Since its inception in the nineteenth century, the Hong Kong Observatory has attended to the changing needs of society and continually improved its services to complement economic reforms, becoming a driving force behind social restructuring. Thus, the following research study is not a mere retelling of the 120-year history of the Observatory, it is also a portrayal of the development of Hong Kong society during that period.

The book is divided into four chapters. Chapter 1, 'Hong Kong's Climate', is a comprehensive review based on historical documents and meteorological data between 1841 and 2002, in order to gain an understanding of the climatic characteristics and the major obstacles encountered in Hong Kong's early development. Before 1884, the bulk of the data originated from the meteorological reports from government departments, such as Victoria Gaol, the Police Force, the hospitals and the Harbour Master's Office. From 1884 onwards, the Observatory was the principal provider of meteorological data.

The small and hilly Hong Kong Island was neither geographically nor climatically endowed. Not only was it desperately short of natural resources and developable land, it was also handicapped by an inhospitable climate. It was humid for most of the year and the summer months were extremely hot. Such weather conditions were unbearable for the Europeans who started to arrive in the nineteenth century for trade. Each year, between the months of May and September, residents on the island lived in constant fear of attacks by inclement weather conditions. The capricious climate triggered natural disasters such as floods and landslides, toppled building structures, brought droughts and hence limiting drinking water supply. Not only did the inhabitants suffer economically, their lives and properties also came under severe threat.

According to available records, Hong Kong was frequently struck by natural disasters in the past — a major hindrance to its development in the early years. An evaluation of the meteorological data from the mid-nineteenth to twenty-first centuries can give useful insights into the development of Hong Kong society. Chapter 2, 'A Review of Natural Disasters of the Past', makes extensive use of historical materials and describes in depth the various types of natural disasters that the territory had endured since 1844. These disasters included typhoons, rainstorms, severe sustained droughts, cold and very hot weather, which are analysed for their impact on the livelihood of the public. The narration of the disasters of the past shows how the unpredictable climate had suppressed the development of Hong Kong in the early years, and how the government was faced with this daunting challenge while securing the establishment and growth of the city.

引言

有關香港天文台自1883年創立以來的職能及其組織結構的轉變，已有不少的作品作過全面且詳盡的記述，要重寫香港天文台發展的歷史，空間似乎不大。在重新檢視香港天文台發展的過程時，不難發現其工作的確立與擴張，與整個香港社會的發展步伐，有著密不可分的關係，香港天文台自十九世紀創立以來因應社會需求，不斷更新的服務，與香港整體經濟的改革同步，是香港社會轉型的主要動力之一。因此，以下的研究，不僅是香港天文台百多年來的發展歷史，也是近代香港社會演變的寫照。

本書討論要點大致可分為四大部份。第一章「香港的自然氣候」利用文獻及 1841 年至 2002 年的氣象統計資料，就香港的氣候作一全面的報導及綜覽，從而總結香港自然氣候的特徵及早期發展的主要障礙。 1884 年以前所採用的統計資料主要取材自香港政府其他部門，如監獄、警察、醫院、船政署等政府機構發表的氣象報告，1884年至現在的資料則主要依賴香港天文台的氣象報告。

從客觀的環境來看，香港這個嶙峋的小島，既缺乏天然資源及可開發的土地，自然氣候亦不宜人，全年大部份時間氣候潮濕，夏季天氣尤其炎熱。對東來貿易的歐洲人來說香港絕對不是一個天堂，每年自五至九月，島上的居民，必需面對惡劣天氣的侵襲，不穩定的氣候有時甚至會引發水災、山泥傾瀉、房屋倒塌、天旱、水源不足等問題，居民不但經濟生活受到打擊，性命及財產亦受到嚴重的威脅。

根據現存的資料所載，香港天災發生的頻密次數，對早期社會的發展，有相當大的阻礙。因此，第二章「歷年天災的回顧」就十九世紀中期至二十一世紀氣象資料的評述，對全面了解香港社會的發展，有一定的啟發作用。

為加深讀者對香港整體氣候特徵的認識，本部分會根據文獻資料，深入報導自1884年以後香港所經歷的嚴重天災，諸如風災、雨災、旱災、嚴寒及酷熱等天災的實況，進而分析天然災害對社會民生的影響。有關歷年天災的描述，可讓市民知道香港氣候的不穩定，是早期社會發展的障礙，政府要改變客觀的自然環境，讓城市得以建立從而蓬勃發展，實不容易。

第三章「天文台的創立及其早期的氣象服務」的研究時期將以天文台創立的年份為上限，日佔時期終結為下限。目的在探討天文台成立的意義，及其

The third chapter, 'Establishment and Early Services of the Observatory', covers the era that starts from the establishment of the Observatory and ends with the outbreak of the Second World War. This section investigates the reasoning behind the establishment of the Observatory, the meaning of the term 'observatory', and the role it played during the initial years. The findings show why Hong Kong has secured its position as the maritime trade hub in the Asia Pacific region by the end of the nineteenth century, and subsequently as the aviation centre in the Far East by the early 1930s.

The two major elements for building a modern city are population growth and restructuring of economic activities, with the development pace largely determined by their interactions. For Hong Kong's successful transformation from a mere fishing village into a thriving entrepôt in the Asia Pacific region, and eventually an international financial centre, its development direction was largely set by government policies. The founding of the Observatory saw the replacement of traditional Chinese meteorological observation methods by new cultural concepts introduced from the West. The services that it provided — geomagnetic measurements, meteorological observations and time service — were great navigational aids to the trading vessels and fishermen. They enabled Hong Kong to become the de facto navigational compass in Asia Pacific by the end of the nineteenth century, and confirmed Hong Kong's position as a premier entrepôt port. The aviation meteorological services introduced by the Observatory in the 1930s, in support of the aviation industry, catapulted Hong Kong to become the No. 1 airfreight centre in the Far East.

Before the Second World War, the observation equipment at the disposal of the Observatory was rather primitive; observations and forecasting had to rely largely on the knowledge, skills and tenacity of the Observatory staff. Their perseverance and dedication to scientific research ensured the smooth launch and expansion of meteorological observation services. This attitude was especially reflected during the Japanese occupation, when recording of observation results were performed by a few Observatory staff imprisoned in the concentration camp. Thus, the Hong Kong Observatory was the only government department that continued to discharge its duties during the occupation.

The fourth chapter, 'Modernisation of the City', covers the era from the liberation of Hong Kong in 1945 until 2003. The emphasis is on the multifaceted services offered by the Observatory and its changing functions. The aim is to observe the contributions made by meteorological services towards the city's modernisation and the influence they exert on the daily lives of the people.

After the war, Hong Kong developed at a rapid pace and modern technologies had a profound influence on urban construction. During the modernisation process the Observatory rendered supporting services, such as the tidal assessment work for reclamation projects to help determine the extent of reclamation; and the provision of data on typhoons, wind direction and strength and projections to ensure the safety of building structures.

在成立初期所擔當的角色，藉此了解香港在十九世紀末期能成為亞太地區海上貿易中心，繼而在二十世紀三十年代成為亞太地區航運中心的主因。

一個現代都市的形成，人口的增長及經濟活動的轉型是兩大主要元素，而兩者的互動關係，是決定城市發展速度的關鍵。香港島要從一個藉藉無名的漁村發展成為亞太地區轉口貿易中樞，再臻至國際金融大都會，政府的發展策略對城市發展的方向，有著舉足輕重的作用。天文台的成立，首先改變了中國傳統的氣象探測方法，帶來了新的文化概念，其所提供有關地磁、氣象、及報時服務，對往來貿易的船隻，出海捕漁的漁民均有很大的導航作用，使十九世紀末期香港能成為亞太航導上的指南針，香港的轉口貿易港地位亦因而確立。自二十世紀三十年代開始，香港天文台更開展航空氣象服務，協助香港成為遠東最大的空運站。

戰前，天文台的氣象探測儀器，仍相當原始，氣象的觀測及預報，主要依賴天文台工作人員的天文知識及個人毅力，他們對科學研究的堅持與執著，是氣象探測服務能順利開展與擴張的主要原因，在日治時期，天文台有關氣象的紀錄仍能由幾位被囚禁於日軍集中營的員工執行，就是最好的例證，而這亦使天文台成為日治時期唯一執行工作的政府部門。

第四章「城市的現代化」的研究年限起自香港重光，而終於2003年，以戰後香港天文台多元化服務的開展及職能的轉變為討論重點，旨在觀察氣象服務與城市現代化的關係及其對市民日常生活的影響。

戰後香港城市發展的步伐相當迅速，現代的科學技術對都市建設影響至為深遠。香港天文台在城市現代化的過程中，所提供的實用氣象服務，例如為填海工程作潮汐漲退的評估，以方便釐定填海的規模；為樓宇興建預測颱風、風力和風速的相關數據，確保樓宇的安全，使香港建築業得以蓬勃發展；為新興建的國際機場，進行有關風切變的監測，及航空氣象的報告，使香港國際機場能安全地運作，都是城市得以逐步擴充的關鍵。

氣象服務隨著社會的需求，逐漸介入市民的日常生活，成為市民每天起居的定向儀，雷達氣象、衛星氣象等新天文觀測技術的應用，使天文台能更準確地掌握大自然變更的規律，確保城市經濟活動及市民日常生活如常運作。一些預防性的氣象警報服務，如颱風、雷暴、暴雨、山泥傾瀉、山火、酷熱天氣、寒冷天氣、等預報警告和輻射水平及紫外線指數等資訊，是現代生活不可或缺的環節。

These services have made a substantial contribution to the prosperity of Hong Kong's construction and building industry. To assist the building of the new international airport, the Observatory conducted windshear monitoring and produced aviation meteorological reports to assure safe operation. With the support of the Observatory, the city has been able to expand gradually with notable success.

In response to the needs of the community, the Observatory has expanded its service to cover areas that have direct impact on everyday life, and the community has come to regard its services as a compass for daily activities. The application of radar and satellite technologies in meteorological observations has enabled the Observatory to gain a more accurate understanding of the pattern of nature's changes, so its forecasting can minimise interruption to economic activities and daily living. The precautionary warning services provided for typhoons, thunderstorms, rainstorms, landslips, hill fires, cold weather, very hot weather, and information on ultraviolet radiation index and radiation levels have become an essential part of our lives.

Beginning from the last part of the nineteenth century, meteorological observation services made use of the little available data to service the transoceanic navigational needs of the mariners. By the twenty-first century, the emphasis has shifted to the application of new technologies and the development and maintenance of close liaisons with local government departments and meteorological agencies in other parts of the world. The Observatory has continued to introduce new services and achieve a marked improvements in terms of accuracy and scope in the past 120 years, and its pursuit of excellence symbolises the progress of Hong Kong society.

氣象觀測服務從十九世紀末期，利用僅有的氣象資料為遠涉重洋的商旅提供導航服務，至二十一世紀強調新技術的應用、緊密與其他政府部門及世界各地氣象組織連繫，不斷開拓新的服務，無論資料的準確程度抑服務的範圍，均較120年以前有了長足的進步，氣象工作的精益求精，是香港社會與時並進的象徵。

ACKNOWLEDGEMENTS

The impact Hong Kong's weather on the development of city has been widely discussed. Going through the historical material, one finds that the information on Hong Kong's climate is largely made up of sad memories of natural catastrophes; there is hardly any analysis made on the relationship between the climate and Hong Kong society's development. In early 2002, with financial support from the Hong Kong Observatory, work commenced on this worthwhile research project titled *Hong Kong Observatory and Hong Kong Social Development (1883–2003)*. Having been reviewed by experts and scholars, the research findings are published at the end of 2003 with funding provided by the Observatory. As a new source of social study, this book serves the general public of Hong Kong and all who have an interest in the social history of Hong Kong. I am most grateful to the contributions made by the Hong Kong Observatory to this worthwhile cause.

Many scientists of the Hong Kong Observatory have rendered invaluable assistance in explaining to me the highly technical meteorological data. They include: Mr Lam Chiu-ying, Dr Lam Hung-kwan, Mr Yeung Kai-hing, Dr Wong Ming-chung, Dr Lee Boon-ying, Mr Leung Wing-mo, Mr Chan Hong-ping, Mr Chan Chik-cheung, Mr Chan Yuk-kwan, Dr Tam Cheuk-ming, Mr Tse Ming-ho, Dr Lee Tze-cheung, Mr Ng Cho-hing, Mr Cheng Siu-ming, Mr Kwok Wei-hing, Mr Chu Wing-ki, Mr Cheung Yiu-kun, Mr Lo Gun, Mr Lui Yau-lok, Mr Mok Hing-yim, Mr Tam Kwong-hung, Mr Yeung Tak-lam, Ms Lau Sum-yee, Dr Chang Wen-lan and Mr Hui Tai-wai. I have learned much through the unfailing patience of the Observatory staff, who have explained to me the detailed workings of the Observatory and the meteorological data. The analyses of this study draw upon the historical records kept by the Hong Kong Observatory, as well as past Hong Kong meteorological data. Other organisations have also provided valuable supporting source material, including: the History Department of the Chinese University of Hong Kong, the Chinese University libraries, the Hong Kong Institute of Asia-Pacific Studies, the Hong Kong University libraries, the Public Records Office, the Hong Kong Museum of History, the photographic library of the Information Services Department and the Hong Kong Science Museum. This material has complemented the records furnished by the Hong Kong Observatory and made the research more comprehensive and objective. I wish to offer my deepest thanks to the above-mentioned experts, scholars, organisations and institutes.

My research team members: Miss Wong Man-han, Miss Lau Chung-yan, Mr Wong Ka-kin, Miss Cheng Ling-ling, Mr Ngan Ngo-chai have worked tirelessly in collecting and collating data, as well as and typing the manuscript. Professor Adam Lui Yuen-chung, Head of the History Department of Hong Kong Shue Yan College, has given valuable advice to the research project and the manuscript, while Professor Yee Yim-kwong has provided useful suggestions on the research direction. I am greatly indebted to them for their help and efforts, which have enabled this book to be published within a short period of time. The precious historical photographs and postcards generously made available by Dr Tong Cheuk-man have enriched this book immensely. To all the people who have contributed to the publication of this book, I wish to express my heartfelt thanks. This book is bound to contain numerous errors and omissions, for which I offer my sincerest apologies.

鳴謝

香港的天氣對城市發展的影響，一直以來都是大眾關心的課題，翻閱歷史書籍，有關香港自然氣候的記載，總是一些慘痛災難的回憶片段，甚少有關香港的氣候與香港社會發展關係的分析。2002年年初，承蒙香港天文台贊助研究經費，「香港天文台一百二十年與社會的變遷」這個有意義的研究項目得以開展， 2003 年年底研究報告，經各學者及專家審閱後，再獲香港天文台資助出版經費，印製成專書，為香港社會史增加了新的研究素材，使全港市民及有興趣研究此課題的讀者可以參閱研究成果，實萬分感激，在此謹向香港天文台致以崇高敬意。

要解讀艱深的氣象資料並撰寫成書，是得到天文台各科學家——林超英先生、林鴻鋆博士、楊繼興先生、黃明松博士、李本澄博士、梁榮武先生、陳項平先生、陳積祥先生、陳鋈鋆先生、譚焯明博士、謝明浩先生、李子祥博士、吳初興先生、鄭少明先生、郭渭熙先生、朱榮基先生、張耀君先生、盧根先生、呂友樂先生、莫慶炎先生、譚廣雄先生、楊德林先生、劉心怡女士、張文瀾博士、許大衛先生等的協助，他們對氣象資料及天文台工作耐心的講解與分析，使我在研究過程中獲益良多。 天文台內部的歷史檔案及香港歷年來的氣象紀錄等資料，都是本書立論的重要依據，而香港中文大學歷史系、香港中文大學圖書館、香港亞太研究所、香港大學圖書館、歷史檔案館、香港歷史博物館、政府新聞處圖片資料室、香港科學館各機構、院校所提供的資料及協助，平衡了天文台內部資料的觀點，使研究能盡量做到客觀及詳實，在此謹向各專家學者、機構、院校致以衷心謝忱。

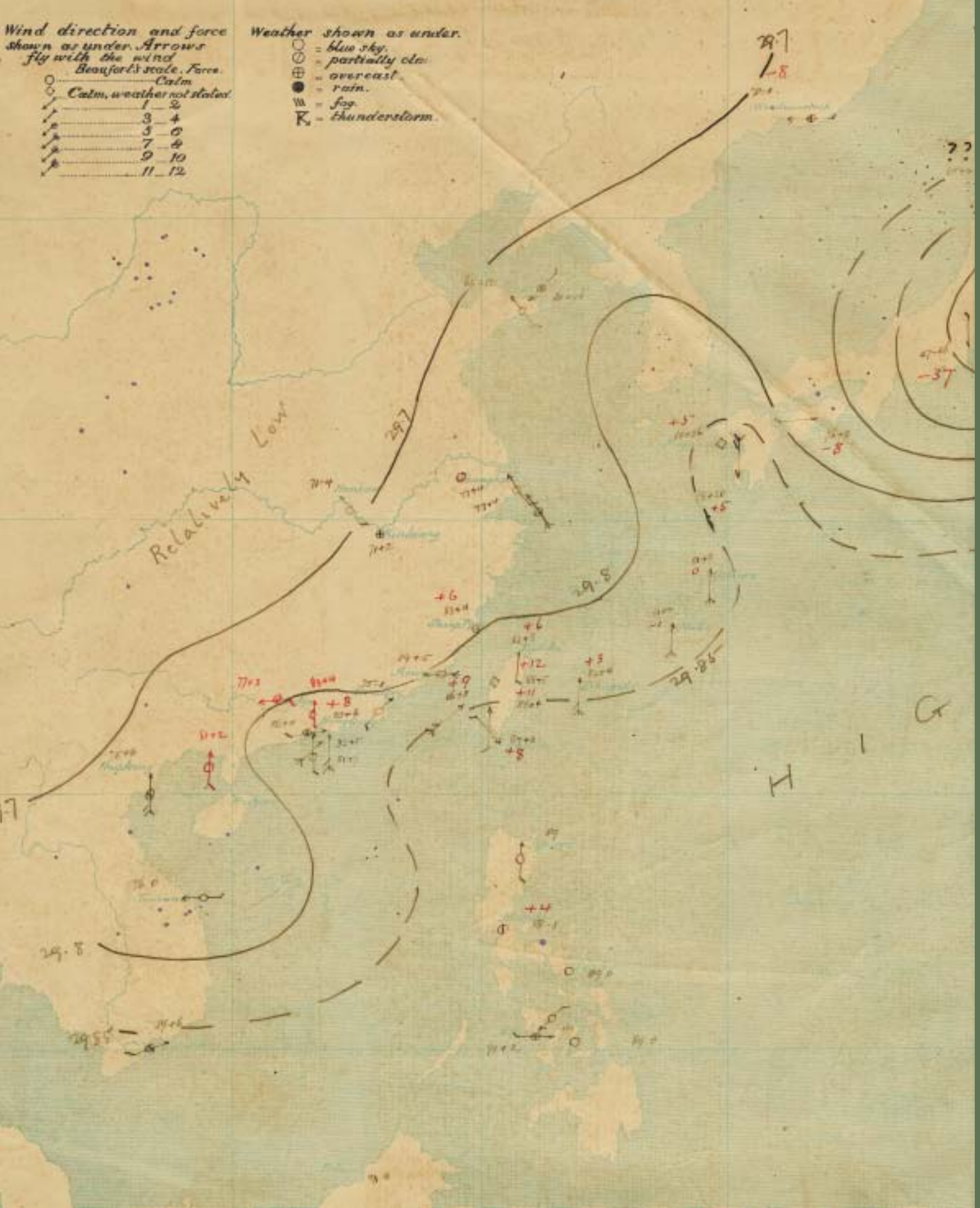
研究小組成員黃敏嫻小姐、劉頌欣小姐、鄭玲玲小姐、王家健先生、顏傲儕先生等努力不懈地蒐集、整理資料，打印文稿；樹仁學院歷史系系主任呂元驄教授就研究及文稿提供的寶貴意見、余炎光教授就研究方向的建議，都是全書能於短期內順利出版的關鍵；本書更蒙唐卓敏醫生，借出私人珍藏的歷史照片及明信片，使本書的內容更為豐富，在此謹向各位致謝。由於個人學養所限，行文錯誤紕漏之處多不勝數，祈盼讀者包涵和不吝賜教。

Part I
上篇

Man and Nature
人與大自然

1

Hong Kong's Climate
香港的自然氣候



One of the oldest weather maps at the turn of the twentieth century
現存最古舊的天氣圖之一
— 二十世紀初

A region's climate quite often exerts fundamental influences on its political, economic and cultural developments. Hong Kong, a small island with no natural resources, suffers from hot and wet climate, as well as from typhoons in summer and autumn. Yet since the mid-nineteenth century it has managed to overcome all the obstacles posed by the natural environment and has emerged as the cosmopolitan city it is today. Hong Kong's success has been described as a miracle of modern times, and how this city overcame such unfavourable environmental factors is a worthy subject to explore. The following research commences with a meteorological study of Hong Kong and seeks to understand its relationship to the rise of Hong Kong to enhance understanding of our society.

General Introduction

From the point of view of modern scientific analysis, four main factors dominate Hong Kong's climate. They are: the annual amount of sunshine, topography, geographical position, and the influence of neighbouring seas. Hong Kong's total area is a mere 1,101 km^2. It is situated in the Northern Hemisphere at 22°10′–22°30′ North, 113°50′–114°25′ East, and is therefore within the subtropical climatic zone. The duration of bright sunshine each month exceeds 100 hours. The annual mean temperature is 23°C while the monthly mean temperatures range from 15.8 to 28.8°C. The climate of Hong Kong is relatively warm.

Situated at the southernmost tip of South China's hilly region, Hong Kong's geology is similar to its neighbouring area in South China. In Hong Kong there are numerous hills and very limited lowland areas. Most of the comparatively flat land is found in the northwestern part of the New Territories. Hills and mountains are not concentrated in one region but are widely distributed. The terrain is undulating, with steep rises and falls in height. This leads to quite substantial daily regional variations of weather. On the other hand, as Hong Kong is made up of islands and a peninsula at the northern flank of the South China Sea, its weather and seasonal changes are deeply influenced by mainland China as well as the neighbouring seas. In summer, the temperature difference between land and sea can be quite large. When hot air in the mainland rises, moisture-laden air from the sea blows inland. Under these conditions Hong Kong becomes very humid and rainy. In winter, cold winds from the land blow seawards, and Hong Kong has very little rain. These seasonal variations stem from changes in large-scale atmospheric circulation from sea to land or vice versa, hence the difference in moisture content. Hong Kong's terrain, geographical position and the influence of the neighbouring land masses and seas

一個地區的自然氣候狀況，往往是決定其政治、經濟與文化發展方向的基本因素。香港這個小島，不但自然資源匱乏，氣候炎熱潮濕，夏秋之際更常受颱風吹襲困擾。然而，十九世紀中期以後，香港卻能衝破種種客觀自然環境的障礙，飛躍發展成今日的國際大都會，一直都被視為近代的神話。到底香港人如何克服惡劣的自然環境，開創新的局面，實在是一個值得探討的課題。以下的研究，將從香港的氣候概況入手，希望能藉此了解其與香港興起的相互關係，加深對香港社會發展的認識。

概況

從現代科學觀點來分析，支配香港氣候的主要因素有四：本區全年日照的時間、地形、地理位置及鄰近海洋的影響。面積只有1,101平方公里，位於北半球北緯22°10′–22°30′，東經113°50′–114°25′的香港，屬於亞熱帶氣候，每月的日照一般超過100小時，全年平均氣溫為攝氏23度，月平均溫度介乎攝氏15.8至28.8度之間，是一個氣候相當和暖的城市。

香港位於華南丘陵向海伸延的最南端，地質及地貌與鄰近的華南地區相似，境內多山，低地面積不多，較廣闊的平原大多分佈在新界西北，而高地的分佈並不集中，分別散佈於各不同區域，使地面高度有頻密的變化，地貌空間的差異相當明顯，導致香港各區同日的天氣有時變化頗大。另一方面，香港整體的疆域是由多個位於南海北部的海島及半島組成，故天氣及季節的轉變也深受中國大陸及鄰近海洋所影響。夏季陸地與海洋氣溫對比相差較大，當大陸炎熱的空氣上升，潮濕的空氣由海洋吹向大陸時，香港的天氣會變得潮濕，降雨亦因而多集中在夏天。冬季冷空氣則自陸地吹向海洋，故期間數月少雨；這現象與海、陸兩者水氣輸送有直接關係。香港受到本身獨特的地形、地理位置及其鄰近的海洋影響，氣候與一般亞熱帶地區不同，一年四季的氣溫及濕度差別較明顯，而冬季相對其他亞熱帶地區來說較為乾冷。

香港的氣候雖可大致劃分四季，但其四季的氣候特徵明顯地與溫帶地區不同，有本身獨特之處。一般來說，香港的春秋二季都很短，只有兩個月。3月至4月是香港的春季，氣候和暖且潮濕；10月至11月為秋季，氣候較乾燥；5月至9月是炎熱而多雨的夏季，是一年裏最漫長的季節；而12月至2月則為乾冷的冬季。現把本地四季與週邊氣候情況的關係，分述如下：

all contribute to Hong Kong's distinctly different climate from other subtropical regions. These differences are reflected in the wide variations of temperature and relative humidity during the year. In winter, Hong Kong is comparatively drier and colder than other subtropical regions.

Although Hong Kong's climate can in general be divided into four seasons, the seasonal characteristics differ significantly from those of temperate regions. In general, Hong Kong's spring and autumn are short, each lasting about two months. During the spring months of March and April, Hong Kong is warm and humid, while during the autumn months of October and November, the weather is on the dry side. Summer is the longest of the four seasons and the summer months — May to September — are hot and rainy. The winter months are from December to February and are cold and dry. Hong Kong's four seasons and their relations to the evolution of weather systems in the region are further described below.

When the anticyclone over mainland China weakens in March and April, Hong Kong is less frequently affected by cold air from the north. The weather gets warmer with temperatures hovering around 20°C. There are times when cold air still reaches the south China coast and at these times Hong Kong experiences episodes of cooler weather. The cooler weather will be interrupted when the tropical maritime air mass from the Pacific blows inland. Low clouds and fog are common in these months.

During Hong Kong's summer — May to September — high temperatures induce a quasi-permanent area of low pressure in southwest China. This area of low pressure draws south or southeasterly winds over Hong Kong, and the weather becomes much warmer. Very often, a trough of low pressure lingers over south China and the northern part of the South China Sea, bringing spells of rainy weather to Hong Kong. May to September are the months when most of the rain falls. At about the same time, a ridge of high pressure dominates over the western North Pacific Ocean, coinciding with the typhoon season in the region. When typhoons form in the seas east of the Philippines, they move along the southern or western flank of the ridge of high pressure. When they move in a northwesterly direction, they may hit Hong Kong directly. Sometimes, typhoons move along the eastern side of Taiwan and head northeast towards Japan. When a typhoon comes near Hong Kong, the winds along the coast strengthen and there is heavy rain. When a typhoon moves inland, it usually leaves behind an area of low pressure near Hong Kong, causing continuous heavy rain. Hong Kong is most frequently affected by typhoons from July to October.

春季：3月至4月的香港，主要由於亞洲大陸的反氣旋變弱及北方的寒流威脅減少的緣故，天氣回暖，氣溫徘徊於攝氏20度左右。然而由於北方的冷空氣有時尚會南下，故本港3月份仍會較清涼。當太平洋熱帶海洋氣團逐漸增強，不斷向西北伸延進入亞洲大陸，與亞洲大陸氣團相遇時，香港的天氣便會變得時暖時涼，廣範地區有低雲和霧。

夏季：5月至9月是香港的夏季，亞洲大陸正當暑天，中國西南部孕育着半持久性的低氣壓區。由於大陸低壓籠罩華南地區，香港會吹東南風或南風，天氣炎熱。當華南地區及南海北部有低壓槽徘徊時，香港會有雨；而5月至9月是本港全年降雨量最多的月份。另一方面，太平洋的高壓脊，多盤據於北太平洋海面，這亦是西北太平洋的颱風季節，颱風不斷在菲律賓東邊海面形成，沿着太平洋高壓脊的南側或西側移動，有時會向西北，直吹香港；有時則沿台灣東邊吹向日本。颱風不斷產生，是影響香港天氣的重要因素。當颱風接近香港時，香港沿岸風力加強及會有大雨。颱風吹向大陸後，每每留下低壓，使本港地區有持續暴雨，7月至10月便是颱風出現的高峰期。

秋季：9月中旬以後香港踏入秋季，氣溫開始下降，雨季也突然終止。10月至11月期間，當大陸高氣壓開始形成後，菲律賓東邊海洋所產生的颱風不能北上，改吹向越南，使香港的10月份乾燥少雨。香港秋季時大多吹東北風，月平均氣溫介乎攝氏21至25度。

冬季：10月下旬，源於西伯利亞的冷空氣漸吹向中國沿海地區，11月份香港進入冬季，氣溫明顯下降。這時強大的高氣壓中心盤據於華北、華中一帶，使該區天氣十分寒冷。氣流愈向南移，其影響力愈減，香港天氣相對上述地區亦較和暖。大陸的反旋風時強時弱，故本港地區亦會間歇性回暖，改吹東或東南風。

以上對香港氣候所作的綜述，大都是二十世紀的分析。其實在十九世紀中葉以前，古人對香港地區的氣候特徵，卻有另一套看法。

古籍中香港地區的氣候

香港地處中國邊陲，自然資源匱乏，在清代 (公元1644–1911) 中葉以前從未扮演過舉足輕重的角色。秦代 (公元前221年–公元前206年) 時，香港地區屬南海郡番禺縣，漢代 (公元前206年–公元前220年) 改屬博羅縣，唐代 (公元618–907年) 初年，又改屬廣州府南海郡寶安縣。至唐

By mid-September, Hong Kong enters the season of autumn. The temperature begins to fall and this marks the end of the rainy season. As a ridge of high pressure establishes itself over the continent in October and November, typhoons forming to the east of the Philippines seldom move north but head towards Vietnam instead. In autumn, winds over Hong Kong are usually northeasterly. The monthly mean temperature ranges from 21°C to 25°C.

Cold air originating from Siberia occasionally advances towards the coast of China from the latter half of October onwards. In November, Hong Kong enters its winter, with further drops in temperature. An intense ridge of high pressure dominates over the northern and central parts of China, where temperatures are cold. When this cold air mass moves southwards, it gradually gets warmer. Thus, Hong Kong's winter is milder than the weather further north. When the continental anticyclone weakens, Hong Kong experiences warmer days. Winds will then be mainly from the east or the southeast.

The above description of Hong Kong's climate is mainly based on the weather information gathered after the nineteenth century. Before the mid-nineteenth century, the Chinese description of Hong Kong's climate took a somewhat different approach.

Hong Kong's Climate as Depicted in Old Chinese Texts

Because of its remoteness and lack of natural resources, the region presently known as Hong Kong did not play a significant role in Chinese history before the middle of the Qing Dynasty (AD 1644–1911). During the Qin Dynasty (221–206 BC), the Hong Kong region was part of the Panyu District of Nanhai. During the Han Dynasty (206 BC–AD 220), Hong Kong was known as the Boluo District. In the early Tang Dynasty (AD 618–907), the Guangzhou Prefecture of the Nanhai region was changed to Baoan District. In 757, still under the Tang Dynasty, Baoan District was changed to Dongguan District. This name was used until 1572 in the Ming Dynasty. In 1573, Hong Kong was placed within the newly established Xinan District. Thus, in the collection of climate information on Hong Kong, gazettes of the corresponding districts would be used according to the period in question. Before the 1840s, data on Hong Kong as contained in the old Chinese texts were scanty. Information on Hong Kong's climate was lumped together with that of the neighbouring regions such as Lingnan and southern Guangdong. The following account is a description of the climate of the Lingnan region.

肅宗至德二年 (公元 757 年) 寶安縣改稱為東莞縣，縣屬一直維持至明隆慶六年 (公元 1572 年) 。明萬曆元年 (公元 1573 年) 後，香港隸屬新成立的新安縣。故有關氣候紀錄的蒐集，亦須隨不同朝代，參考不同的地方志。中國古籍中有關香港地區在 1840 年代以前的史蹟，鮮有深入的描述。而就有關香港地區氣候的記敘，多以嶺南、揚粵、五嶺以南、南粵等概括之。現將有關嶺南一帶氣候的文字資料節錄，以供參考。

據乾隆年間《新修廣州府志》所載：

> 嶺南之地，愆陽所稱，暑濕所居，蘊隆不宜；風雨寒燠，罕應其候，故蒸為瘴癘。[1]

《太平御覽》載：

> 嶺南方盛夏，率一日十余陰，十余霽，雖大雨傾注，頃即赫日，已复驟雨。故夏之炎熱，甚于北方土，且以時熱多又蒸鬱，此為甚惡，自三月至九月，皆蒸熱。[2]

又《新安縣志》載：

> 粵為炎服，多燠而少寒，三冬無雪，四時似夏，一雨成秋。其舒早其肅遲邑介歸莞之間，西南濱海厥土塗泥水氣上蒸，春夏淫霖，庭戶流泉，衣生白醭。即秋冬之間，時多南風而礎潤，地濕人腠，理疏而多汗。諺曰：急脫急着，強於服藥，此氣候之大較也。[3]

從上引文可見古書對華南地區氣候的描述，多着墨於當地漫長且炎熱的夏季，並強調潮濕的氣候乃疫病的溫床。而論述南方氣候特色時，每每用與北方比較的角度出發，筆墨之間總隱含着北方人對南方氣候的不滿，甚少稱許南方冬季氣候宜人，反而視冬季少寒為一種怪現象；因此氣候過分濕熱，便成了古代本地氣候的特徵。

至於四季之變化的情況，古人多參考自然界動、植物生長的狀態，作為掌握四時變化的竅門，如《通志》載：

> 嶺南之地……其候有四：青草黃梅，瘴於春夏；新禾黃茅，瘴於秋冬。皆草木之氣，挾毒蟲惡蟄，蒸郁而成。[4]

《廣東新語》載：

> 蓋嶺南陰少陽多，故四時之氣，闢多於闔。一歲間溫暑過半，以日在南，故風自南來者烜煖，噓喁太陽之氣與火俱舒。[5]

From *Xinxiu Guangzhou fuzhi* (New Edition of Guangzhou Gazette), edited in Qianlong's reign, it was recorded that the region is wet in summer, windy and cold in winter and very hot in summer. This is, according to the gazette, not easy to adapt to for a newcomer.[1]

According to the *Taiping yulan* (Taiping Official Records),

> the summer of southern China has changeable weather. Within the span of a single day, there are periods of sunny and overcast weather. Heavy downpours begin and end abruptly. The weather is very hot and humid. It is much hotter than the northern lands, and this makes life uncomfortable. Such conditions last from March to September.[2]

The *Xinan xianzhi* (Xinan District Gazette), records that:

> in Guangdong, there are more hot days than cold days. There is no snow, and it seems that all four seasons are summer. But the weather can become autumn-like after rain. Due to its geographical position, much rain falls in spring and summer. The weather is also very humid, so that clothes often become mouldy. Even during autumn and winter, winds sometimes blow from the south. Then the ground becomes wet and people sweat profusely. There is a proverb which says that putting on and taking off clothes in a timely manner is better than taking strong medicines. This is more or less Guangdong's weather.[3]

From these descriptions one can see that long summers and humid weather have long been part of the climate of southern China — conditions ideal for the spread of disease. The descriptions also sought to compare the south with the north, and indicated the dissatisfaction of northerners with the climate of the south. No or little mention was made of the pleasant winters of the south, and northerners considered it odd for the south to have mild winters. The excessively hot and humid conditions form the dominant impression of the weather in southern China at the time.

Seasonal changes were also recorded, usually by reference to the behaviour of animals and the growth cycles of plants. The *Tongzhi* (General Gazette) records:

> The Lingnan area … has four seasons. When the grass is green and the plums turn yellow, it is spring time. When new rice turns yellow, it is autumn and winter. These are the growing conditions of plants. These, together with the appearance of poisonous worms and frogs, would tell the story of the four seasons.[4]

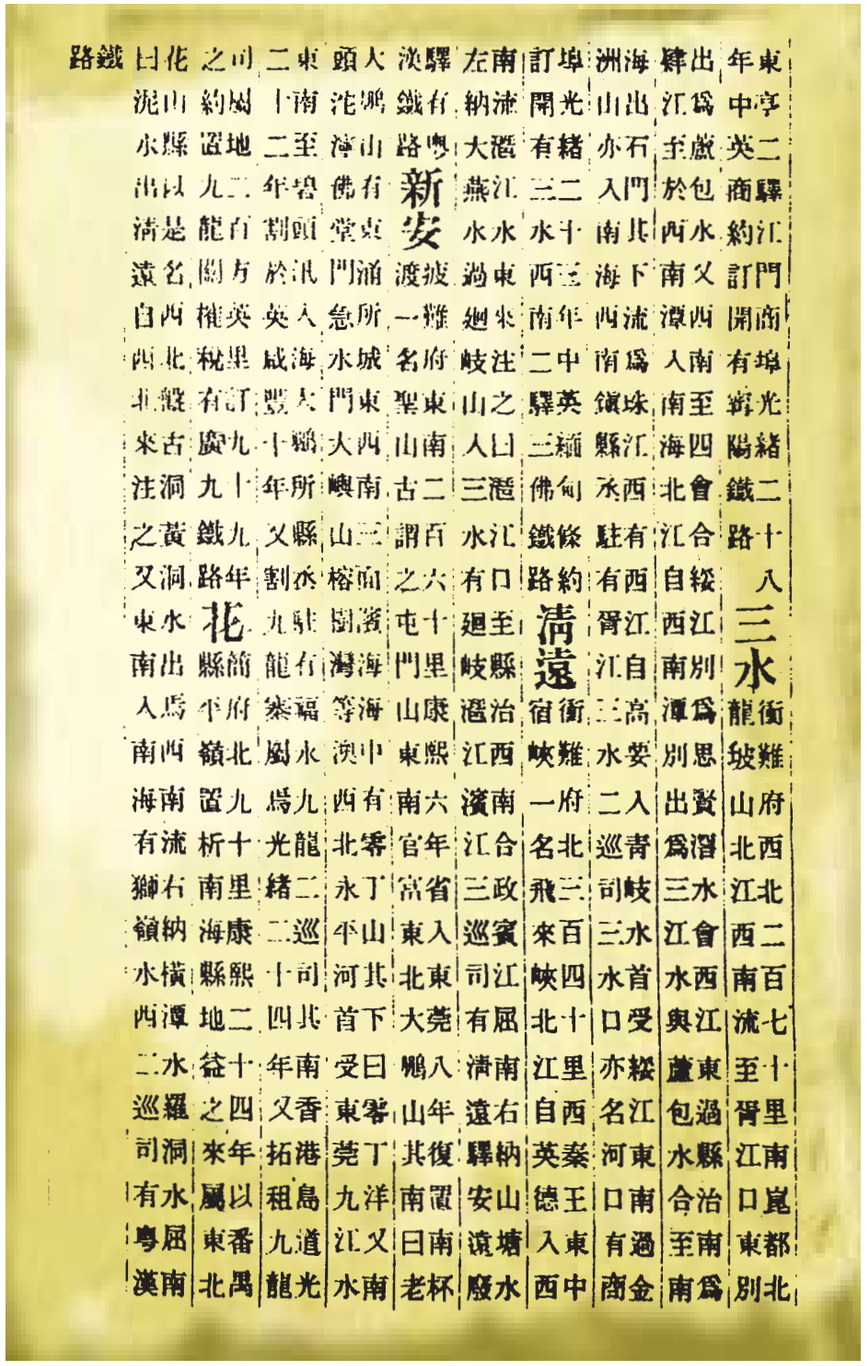


Fig. 1.1 Hong Kong was part of Xinan District from Kangxi to Guangxu, Qing Dynasty. Manuscript of Qing History, Geography Gazette, *Volume 19, Xianggang wenxue yanjuishe, 1960, p. 288.*

圖 1.1 清康熙至光緒年間香港隸屬於廣東省新安縣。《清史稿》，地理志十九，香港文學研究社，1960 年，頁 288 。

Guangdong xinyu (New Interpretations on Guangdong) records that:

> In the Lingnan region, there are more sunny days than overcast days. For the spirit of the four seasons, there are more open than closed times, with over half of the year being warm or hot. The sun is in the south, and therefore winds from the south are warm, and the sun is as hot as fire.[5]

According to *Nanbeitang shuchao* (Written Records of Nanbeitang):

> The Lingnan weather is one of contrast: sunshine and rain, cold and hot, the ebbing and flowing of tides, the blossoming and withering of flowers and fruits.[6]

The *Xinan xianzhi* (Xinan District Gazette),[7] gives a good account of the weather of each month, together with the growth cycles of grain and fruits, in verse form. The months listed in this and the following historical texts are the lunar months of the traditional Chinese calendar.

> In the first month, the peach and plum flowers are in full bloom; this is the time for plucking mulberry leaves, the planting of ginger and the cutting of radish. Grains turn yellow in the gardens and this is the beginning of planting work.
>
> In the second month, there is much thundering culminating in the appearance of rainbows; the culturing of fry and shellfish; and the growing of cotton trees in foggy weather. This is the month when planting work is completed.
>
> In the third month, warm winds come; plums and the betel palms become ripe. This is the time to make furrows and hear field insects making the noise of beating drums.
>
> The fourth month is the time when the pomegranates become red as fire; when the banyan trees give shade; when the violet water-chestnuts are mirrored in the water; when trees have leaves that bar the way, decorated with water dews. White-coloured rain comes in time.
>
> In the fifth month, lychees [lizhi] become ripe; coconuts are full of creamy flesh; cicadas make a loud din that sounds like the cutting of grain with hooks. This is the time when the early rice ripens.
>
> In the sixth month, heavy rainfall may accompany typhoons, which may cause big tides. There is also good news: the early ripening of lychees; the harvesting of the early crop; and the planting of the late crop.

又《南北堂書鈔》載：

> 謹按嶺南氣候，若暘雨之遲旱、寒熱之輕重、潮汐之往來、花果之榮落，古今一揆。[6]

對每月天氣變化的紀錄，其中方志中的月令記載得最為詳細。

據清《新安縣志》月令篇所載：[7]

> 正月桃李花盛，柔桑可採，二麥黃老圃，種薑剪韭，田功既興。
>
> 二月雷發聲虹蜺，見魚苗生蜆，降於霧，木棉、橘、柚華；是月也，農功畢作。
>
> 三月溫風至，梅子熟，檳榔苞，坼催耕鳴田蛙鼓吹。
>
> 四月榴火明，榕成蔭，紫菱照水，樹蘭綴珠，白雨以時至。
>
> 五月朱荔熟，椰含漿，蟬大噪，鉤割鳴，早禾登場。
>
> 六月白雨足，西臻至颶風乘潮，荔枝早熟；是月也，新穀既登，亟播晚種。
>
> 七月秧針，碧蓊田浮，蝴蝶營繭；是月也，暑益酷爍，石流金。
>
> 八月木芙蓉花、梨、栗熟，芋可剝，粘始穫，河豚乘潮至。
>
> 九月木樨瘴發，紅薯登、白欖落，喜魚出峽，大粘始穫，菊有黃華。
>
> 十月朔晴一冬暖，風雨主旱，麻子貴。俗以初一日有霧，則明年正月雨；有大風，則明年米貴。初二日有霧，明年二月雨，三、四、五、六、七、八、九、十等月皆然；此日無霧，則明年此月無雨云。
>
> 十一月冬至晴，百物成。
>
> 十二月小寒晴，早禾熟；大寒晴，晚禾熟；雨暗則歉云。

月令一般都記載着每月花果的榮枯、動物生長的情況，它不但代表着季節的轉換，而且也是農民耕作的指標——如農民何時該下種、插秧，禾稻何時會成熟、何時可收成等問題，提供有關農耕的指引。月令除作為觀察當年氣象的變化外，更以某些節令氣候狀況預測來年的天氣。很明顯，在傳統中國人的眼着大自然萬物生長與氣候的變化有直接的關係；全年每一個月動植物活躍的時間與狀態，是預測中長期氣象變化的基礎。

在古代社會，一直缺乏氣象觀測的長期紀錄，[8] 因此，有關香港地區日常天氣記載的資料並不多。翻查地方志書看到一般有關天氣的敘述，均以天氣特變的異象及重大的自然災害如水災、旱災、風暴、酷暑、嚴寒等為紀實的主要對象。

In the seventh month, the green fields encourage butterflies to make cocoons. This is a very hot month when yellowish liquid oozes out of stones.

In the eighth month, flowers, pears and maize ripen; when yam is good for eating; and when fish come in with the tide.

In the ninth month, sweet-scented osmanthus give off miasma, potatoes ripen, olives fall from trees, many fish swim out of gorges, rice grains ripen and the yellow chrysanthemums bloom.

In the tenth month, winter is still warm and sunny. If there is wind and rain, then the harvest of jute will be affected. If the first day is foggy, it will be rainy and very windy in the first month of the following year; if the second day is foggy, it will be rainy from the second month to the tenth month in the following year; if the second day has no fog, then in the following year, there will be no rain for this month.

In the eleventh month, if the winter solstice day is sunny, there will be a good harvest.

In the twelfth month, if the day of moderate cold is sunny, the first crop will be good; if the twenty-eighth day is sunny, the second crop will be good. If the days are dim and rainy, the harvests will be bad.

The monthly verses all recorded the alternate blossoming and withering of flowers and fruits, and the growth of animals. The verses not only recorded the march of the seasons, but also provided guidelines for the peasants, for example, telling them when to sow their seeds and plant their young plants, when grain should ripen and when harvesting should be done. The verses also tried to predict the weather conditions of the following year. Nature, according to Chinese tradition, has a direct relation to changes in the weather. Therefore, the growth cycles of animals and plants during the year can help to predict long-range and medium-range changes in weather.

In ancient Chinese society, there was a dire lack of continuous records of meteorological observations,[8] thus there are few records of Hong Kong's daily weather. In the local gazettes, weather information was limited to descriptions of special phenomena and important natural disasters such as floods, droughts, typhoons, and very hot or cold weather.

The following tables (Table 1.1 to Table 1.5) describe natural disasters and special weather phenomena in Hong Kong, as contained in the local gazettes.

茲將歷年來有關香港地區暴雨、水災、旱災、颶風、雨雹、嚴寒等紀錄分別以表 1.1 至表 1.5 在以下轉載。

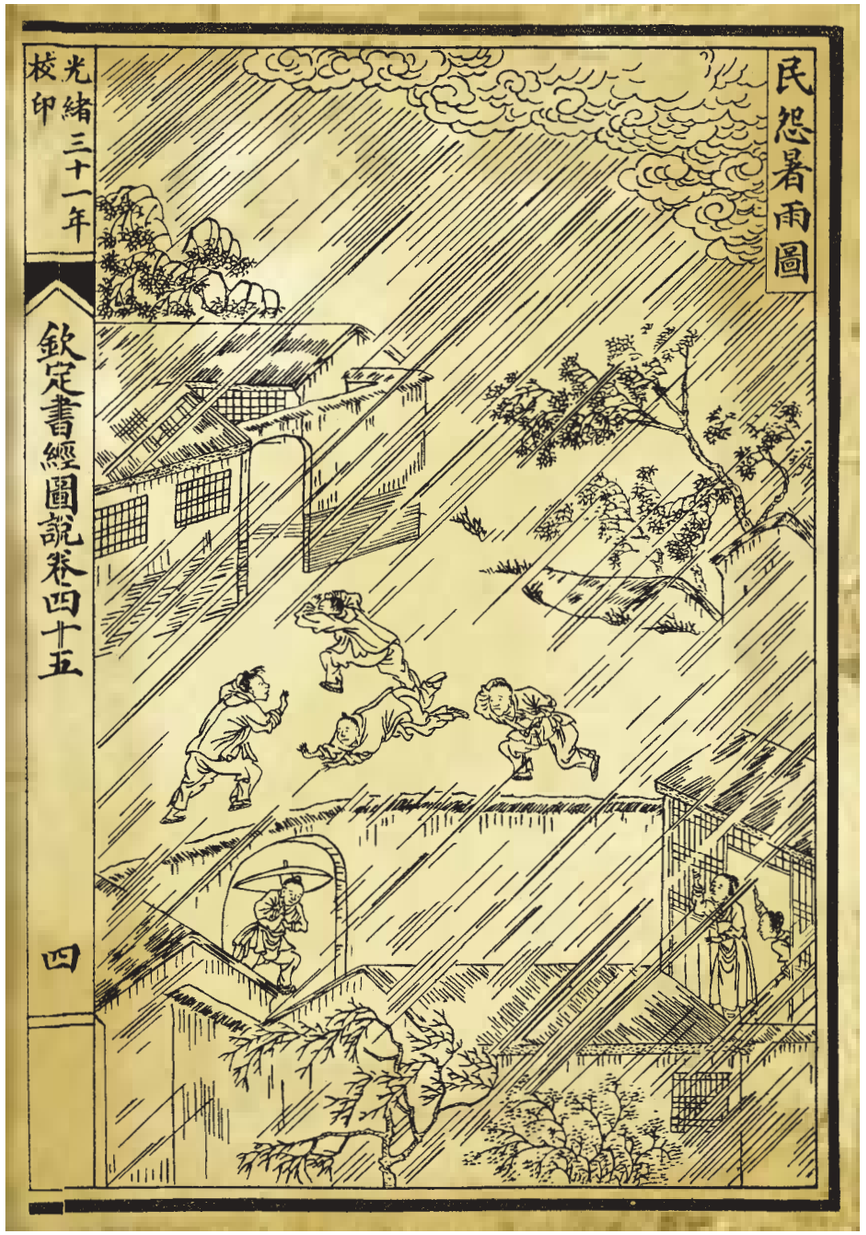


Fig. 1.2 Popular discontent towards summer rain, cf Emperor-Commissioned Pictorial Books, *Volume 45, in Liu Tuo and Meng Bai,* Qingdian banhua huikan *(Collection on Imperial Engraved Pictures of the Qing Dynasty), Volume 16, Xueyuan chubanshe, 1998, p. 701.*

圖 1.2 民怨暑雨圖，《欽定書經圖說》，卷 45，載於劉托、孟白：《清殿版畫匯刊》(十六)，學苑出版社， 1998 年，頁 701 。

Table 1.1 Records of Rainstorms and Floods of the Hong Kong Region From the Song to Qing Dynasties

Date	Comments
Song Yuanyou (1087)	In the fourth month, the overflowing of the Dongjiang embankments occurred. Fields in the neighbouring areas were destroyed.
Yuan Zhiyuan (1282)	In the sixth month, sea tides came over land, and crops were adversely affected.
Yuan Zhizheng (1342)	It was approaching the harvest time in autumn, but the embankments could not hold out the excessive rain and overflowing rivers. The bursting of the embankments occurred in 23 places with half of the places flooded. Eight or nine out of ten of the unemployed people had to seek shelter in other places.
Ming Tianshun (1461)	In autumn there were big floods and food was not available even until spring the following year. To relieve famine, corn had to be borrowed from elsewhere.
Ming Chenghua (1474)	In the seventh month (autumn), there were rainstorms.
Ming Hongzhi (1492)	Rainstorms occurred.
Ming Hongzhi (1503)	In the ninth month (autumn), seas overflowed and damaged grain fields.
Ming Zhengde (1513)	In the fourth month (summer), floodwaters from mountains swelled right up to the south city gate and beyond. Water was five to six feet deep on flat land. Civilian houses at the city gate were all destroyed.
Ming Jiajing (1523)	In the eighth month (autumn) there were rainstorms.
Ming Jiajing (1525)	In the seventh month (autumn) there were rainstorms. Seas overflowed onto land.
Ming Jiajing (1548)	The Dongjiang swelled over its banks and houses nearby were all destroyed.
Ming Jiaqing (1551)	In the sixth month (summer) there was excessive rain.
Qing Shunzhi (1660)	On the eighth day of the eleventh month, thunder and lightning occurred; rain fell continuously for seven days and nights before stopping.
Qing Kangxi (1662)	The Liao river overflowed its banks, forcing the evacuation of villages. Sea tides overflowed and villages had to be evacuated.
Qing Kangxi (1667)	In the seventh month (autumn) there were strong winds and heavy rain.
Qing Kangxi (1669)	In the first month, big tides in the Liao river overflowed onto land, just like in 1662.
Qing Kangxi (1686)	In the fourth month (summer), serious floods occurred, due to continuous heavy rain lasting for days. Water from the mountains poured into the district, and ditches were of no avail to channel the great amount of floodwater. The two gates in the southwest had to be opened to release water, but the situation did not improve. Water in the southwest reached more than ten feet deep. Civilian houses were all destroyed. People scattered and ran for their lives in the heavy rain. Water from above and below forced people to make two big holes in the city wall to let water flow away. The situation was then under control, and people began to regain their confidence. Over 100 houses in the western villages of the district were swept into the sea. In the various villages in the northwest, many houses were nearly covered with water. People had to stay up on rooftops. They tied bamboo and wood to make rafts for travelling during the floods. Many were drowned, as were many domestic animals. A village in the north was surrounded by floodwater in excess of ten feet deep, and people also needed to move around with rafts.

表 **1.1** 宋至清代香港地區暴雨及水災紀錄

發生日期	紀錄內容
宋元祐 2 年 4 月 (1087 年)	四月邑之東江堤夏潦暴漲，瀕江之田罹其害。
元至元 19 年 6 月 (1282 年)	六月海水溢，傷稼。
元至正 2 年 (1342 年)	禾將秋成，雨淫潦漲，堤力不敵，崩潰者二十三所，半為淵潭。失業之民寄舍於他境者十當八九。
明天順 5 年秋 (1461 年)	秋大水。越明年春民不粒食，貸粟賑飢。
明成化 10 年 7 月 (1474 年)	秋七月大雨水。
明弘治 5 年 (1492 年)	大雨水。
明弘治 16 年 9 月 (1503 年)	秋九月海溢壞稼。
明正德 8 年 4 月 (1513 年)	夏四月淫雨，山水暴漲至南城門外，平地深五六尺，城門民居盡毀。
明嘉靖 2 年 8 月 (1523 年)	秋八月大雨水。
明嘉靖 4 年 7 月 (1525 年)	秋七月大雨水。海溢。
明嘉靖 27 年 (1548 年)	東江潦漲，堤岸廬舍皆毀。
明嘉靖 30 年 6 月 (1551 年)	夏六月淫雨。
清順治 17 年 11 月 (1660 年)	十一月初八日夜，雷電作，連雨七日夜乃止。
清康熙元年 (1662 年)	潦水大溢過常，是年移鄉。
清康熙 6 年 7 月 (1667 年)	秋七月大風雨。
清康熙 8 年正月 (1669 年)	正月潦潮大溢，如元年一樣。
清康熙 25 年 4 月 (1686 年)	夏四月大水，時淫雨連日傾注，縣城高處山麓水汎濫洶湧，渠不能泄，丞開西南二門放水，勢獶未減。西南隅水深丈餘，民居盡頹塌，人民冒雨四散投生，上下洶洶，不得已乃決城垛二處消水，水勢始平，人心稍定。城西西鄉村沖缺民房百餘間，皆漂流入海。西北路燕村、水貝、涌頭、黃松崗等處，湧決土寨民房不可勝計，居民皆升屋上，縛竹木為筏桴，浮水而渡，往往溺死，牛畜淹沒甚多。城北新圍村土寨水環丈餘，居民亦皆以木筏渡水而走。北路竹村一帶，沖缺亦如之。
清乾隆 33 年 5 月 (1768 年)	五月初七至十三連日大雨如注。
清乾隆 35 年閏 5 月 (1770 年)	閏五月大雨。
清嘉慶 9 年 2 月 (1804 年)	正二月連雨，鹽大貴，每百觔洋銀十二圓。
清嘉慶 10 年 8 月 (1805 年)	八月朔大雨，潦溢。
清嘉慶 19 年 10 月 (1814 年)	十月大雨。
清嘉慶 23 年 9 月 (1818 年)	九月初九大雨，潦水溢，鎮沙橋岸皆缺，沙河洞等處坡田俱被沖壓崩陷。

資料來源：
《東莞縣志》，卷 2，政治志，事記，明崇禎 12 年版；卷 7，藝文政，明崇禎 13 年版；卷 5，水利，卷 7，藝文政，卷 10，祥異，清雍正 8 年版；卷 41，祥異，1927 年；卷 30，前事略 2，卷 31，前事略 3，卷 32，前事略 4，清嘉慶 3 年版。
《新安縣志》，卷 8，災異，卷 11，災異，清康熙 27 年版；卷 13，災異，清嘉慶 24 年版。
《新修廣州府志》，卷 59，禨祥，清乾隆 24 年版。
《廣州志》，卷 4，事紀下，明嘉靖 6 年版。
《廣州府志》，卷 78，前事略 4；卷 80，前事略 6；卷 81，前事略 7，清光緒 5 年版。
《廣東通志稿》，不分卷，前事略；不分卷，大事紀，1935 年版。
《廣東通志初稿》，卷 11，循史；卷 37，祥異，明嘉靖 14 年版。

Qing Qianlong (1768)	From the seventh to the 13th of the fifth month, heavy rain fell continuously.
Qing Qianlong (1770)	In the fifth month (a leap month), there were rainstorms.
Qing Jiaqing (1804)	In the first and second month, there was continuous rain. Salt became very expensive; for 100 catties, it cost 12 silver dollars.
Qing Jiaqing (1805)	In the eighth month, rainstorms broke out and the Liao river overflowed its banks.
Qing Jiaqing (1814)	Rainstorms occurred in the tenth month.
Qing Jiaqing (1818)	On the ninth of the ninth month, rainstorms broke out and the Liao river overflowed its banks around Zhensha Qiao (Zhensha bridge). Fields around Shahe Dong and other places were flooded and collapsed.

Sources:

Dongguan xianzhi, Volume 2, 'Politics in History', Ming Chongzhen 1639; Volume 7, 'Policy on Literature', Ming Chongzhen 1640; Volume 5, 'Waterworks', Volume 7, 'Policy on Literature', Volume 10, 'Auspicious and Strange Things', Qing Yongzheng 1730; Volume 41, 'Auspicious and Strange Things', Qing Jiaqing 1798; Volume 30, 'Draft History II', Volume 31, 'Draft History III', Volume 32, 'Draft History IV', 1927.

Guangdong tongzhi chugao, Volume 11, 'Famous Provincial Officials', Volume 37, 'Auspicious and Strange Things', Ming Jiajing 1535.

Guangzhou fuzhi, Volume 78, 'Draft History IV', Volume 80, 'Draft History VI', Volume 81, 'Draft History VII', Qing Guangxu 1879.

Guangzhou tongzhi gao, 'Records of Big Events', 1935.

Xinan xianzhi, Volume 8, 'Disasters and Strange Happenings', Volume 11, 'Disasters and Strange Happenings', Qing Kangxi 1688; Volume 13, 'Disasters and Strange Happenings', Qing Jiaqing 1819.

Xinxiu Guangzhou fuzhi, Volume 59, 'Auspicious Things', Qing Qianlong 1759.

Guangzhou zhi, Volume 4, 'Historical Record Section II', Ming Jiajing 1527.

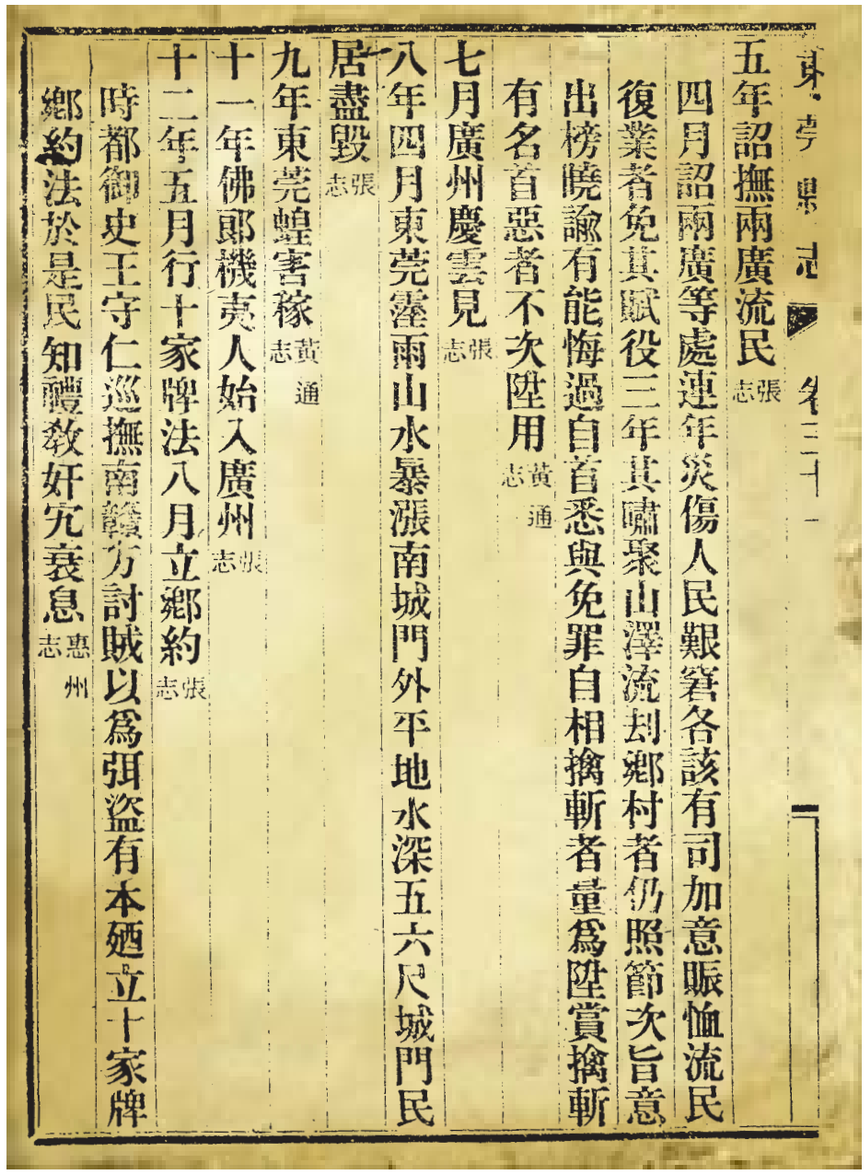
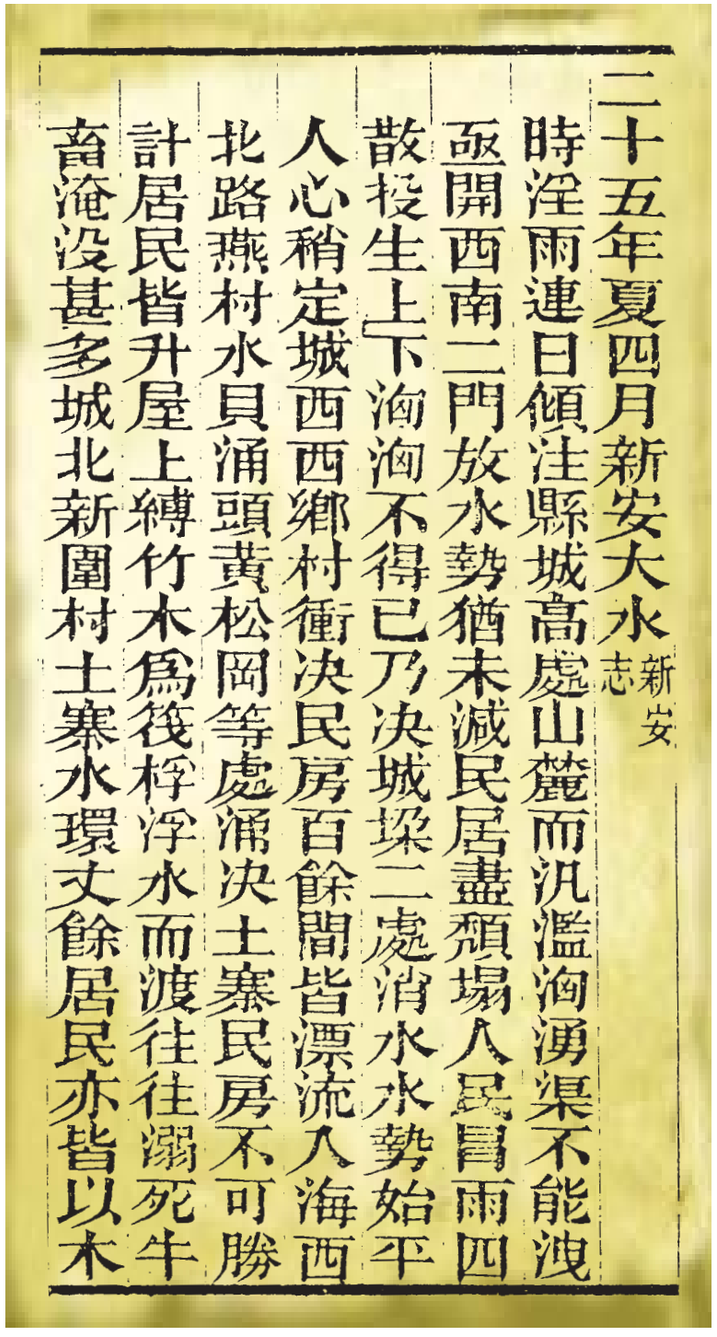


Fig. 1.3 Dongguan District rainstorm disaster records in fourth month of 1513. Hong Kong was part of Dongguan xian from Zhide of Tang Dynasty to Longqing of Ming Dynasty (757–1572). Cf 'Brief Chronology 3', Local Gazette of Dongguan District, *Volume 31, 1927.*

圖 1.3 明正德 8 年 4 月 (1513 年) 東莞縣雨災紀錄。唐至德二年至明隆慶六年 (757–1572年) 香港隸屬東莞縣。參閱《東莞縣志》，卷 31，前事略 3，民國 16 年 (1927) 版。



二十五年夏四月新安大水 新安志

時淫雨連日傾注縣城高處山麓而汎濫洶湧渠不能洩
亟開西南二門放水勢猶未減民居盡頹塌人民冒雨四
散投生上下洶洶不得已乃決城垜二處消水水勢始平
人心稍定城西西鄉村衝決民房百餘間皆漂流入海西
北路燕村水貝涌頭黃松岡等處湧決土寨民房不可勝
計居民皆升屋上縛竹木爲筏桴浮水而渡往往溺死牛
畜淹沒甚多城北新圍村土寨水環丈餘居民亦皆以木

Fig. 1.4　Xinan District rainstorm disaster records in the fourth month of 1686, cf 'Brief Chronology 6', Local Gazette of Guangzhou, *Volume 80, 1879.*

圖 1.4　清康熙 25 年 4 月 (1686 年) 新安縣雨災紀錄，《廣州府志》，卷 80，前事略六 ，清光緒 5 年版。

Fig. 1.5　Displacement due to flooding, cf Emperor-Commissioned Pictorial Books, *Volume 16, in Liu Tuo and Meng Bai,* Qingdian banhua huikan *(Collection on Imperial Engraved Pictures of the Qing Dynasty), Volume 15, Xueyuan chubanshe, 1998, p. 360.*

圖 1.5　蕩析離居圖，《欽定書經圖說》，卷十六，載於劉托、孟白：《清殿版畫匯刊》(十五)，學苑出版社， 1998 年，頁 360 。

Table 1.2 Records of Droughts in the Hong Kong Region From the Song to Qing Dynasties

Date	Comments
Song Shaoxi (1191)	Droughts occurred throughout the year.
Ming Tianshun (1461)	Hunger due to drought was prevalent. The district magistrate asked for relief donations and 50 people donated more than 7,000 qian each.
Ming Jiajing (1558)	Droughts occurred throughout the year.
Ming Wanli (1583)	Droughts occurred in summer and autumn.
Ming Wanli (1596)	A serious drought broke out. One dou of rice cost one qian and eight fen. Many people starved to death.
Ming Chongzhen (1636)	Serious drought occurred. Rice was priced at one qian six fen per dou. The district magistrate supplied hungry people with corn.
Qing Kangxi (1664)	Droughts occurred in spring and summer. Rain came only on 16th day of the fifth month.
Qing Kangxi (1667)	A drought occurred in spring.
Qing Kangxi (1686)	A drought occurred in autumn and there was no rice harvest.
Qing Qianlong (1777-78)	Droughts lasted for two to three years, high rice prices resulted; many people starved to death.
Qing Qianlong (1786)	Droughts occurred in autumn and winter and there was a severe famine.
Qing Qianlong (1787)	As a result of drought, high rice price occurred: one silver dollar per dou. Many people starved to death.

Sources:
Dongguan xianzhi, Volume 21, 'Famous Senior Officials', Qing Jiaqing 1798; Volume 10 Part 2, 'Famine and Relief', Qing Yongzheng 1730; Volume 31, 'Draft History', 1927.
Guangzhou fuzhi, Volume 79, 'Draft History V', Volume 80, 'Draft History VI', Volume 81, 'Draft History VII', Qing Guangxu 1879.
Xinan xianzhi, Volume 11, 'Disasters and Strange Happenings', Qing Kangxi 1688; Volume 13, 'Disasters and Strange Happenings', Qing Jiaqing 1819.
Xinxiu Guangzhou fuzhi, Volume 59, 'Auspicious Things', Qing Qianlong 1759.

表 **1.2** 宋至清代香港地區旱災紀錄

發生日期	紀錄內容
宋紹熙 2 年 (1191 年)	歲旱。
明天順 5 年 (1461 年)	大旱飢。知縣吳中勸賑捐錢至七千以上者五十人。
明嘉靖 37 年 (1558 年)	是歲亢旱。
明萬曆 11 年 (1583 年)	夏、秋大旱。
明萬曆 24 年 (1596 年)	大旱，斗米銀一錢八分，民多飢死者。
明崇禎 9 年 4,5 月 (1636 年)	四、五月旱，斗米銀一錢六分，縣發粟賑飢。
清康熙 3 年春，夏 (1664 年)	春、夏旱，至五月十六日方雨。
清康熙 6 年春 (1667 年)	春旱。
清康熙 25 年秋 (1686 年)	秋旱，禾稻無收。
清乾隆 42,43 年 (1777–78 年)	二、三兩年大旱，米貴，人多餓死。
清乾隆 51 年秋 (1786 年)	秋冬旱，大飢。
清乾隆 52 (1787 年)	大旱，斗米洋銀一圓，人多餓死。

資料來源：
《東莞縣志》，卷 21 ，名宦，清嘉慶 3 年版；卷 10 之 2 ，荒政， 1927 年；卷 31 ，前事略，清雍正 8 年版。
《新安縣志》，卷 11 ，災異，清康熙 27 年版；卷 13 ，災異，清嘉慶 24 年版。
《新修廣州府志》，卷 59 ，禨祥，清乾隆 24 年版。
《廣州府志》，卷 79 ，前事略 5 ；卷 80 ，前事略 6 ；卷 81 ，前事略 7 ，清光緒 5 年版。

Table 1.3 Records of Typhoons in the Hong Kong Region From the Song to the Qing Dynasties

Date	Comments
Song Chunyou (1245)	In the fifth month (summer), a typhoon came, and night tides did not recede even the following day; seawater pounded onto land and the coastal area was flooded with seawater up to four to five feet deep. Over 2,000 houses were destroyed.
Ming Yongle (1415)	In the autumn a typhoon came accompanied by flood.
Ming Chenghua (1475)	A typhoon occurred in the autumn; seawater flooded the rice fields and half of the rice harvest was destroyed.
Ming Jiajing (1523)	A typhoon came and the east, west and south city walls collapsed. It also caused over 100 cracks to both sides of the building that housed cannons.
Ming Chonghen (1643)	On the 24th day of the fourth month, a typhoon came with heavy rain. The typhoon uprooted trees and destroyed houses for two consecutive days and nights before it calmed down. Big waves made ships capsize, and many people were drowned.
Qing Kangxi (1669)	Typhoons came in the sixth, seventh and eighth months. On the 26th day of the eighth month, a typhoon struck. Newly built houses of the village were all destroyed.
Qing Kangxi (1671)	On the 21st day of the eighth month, a typhoon struck at night. The city walls, schools, yamen offices and civilian houses were all destroyed. Trees were uprooted. In a village near the sea, many head of cattle were blown to the sea and drowned.
Qing Kangxi (1673)	On the 21st day of the fifth month, a typhoon struck. Overflowing tides flooded and destroyed houses and rice fields.
Qing Kangxi (1676)	During a typhoon, the district office's front door, drum tower, and government offices were pulled down.
Qing Kangxi (1677)	On the night of the 21st day of the eighth month, a typhoon struck. The city walls, government offices, temples and residential houses collapsed in great numbers. Many people and much livestock were killed.
Qing Kangxi (1681)	A school collapsed due to a typhoon.
Qing Kangxi (1686)	The district office and other offices and yamen collapsed as a result of a typhoon.
Qing Qianlong (1760)	On the ninth day of the eighth month a typhoon blew.
Qing Jiaqing (1797)	In the sixth month (a leap month) four typhoons struck. Many trees were uprooted and houses collapsed.

Sources:
Dongguan xianzhi, Volume 41, 'Auspicious and Strange Things', Qing Jiaqing 1798; Volume 16, 'City Gate', Volume 31, 'Draft History III', 1927.
Guangzhou fuzhi, Volume 79, 'Draft History V', Volume 80, 'Draft History VI', Qing Guangxu 1879.
Xinan xianzhi, Volume 5, 'Records of Palaces', Volume 10, 'Disasters and Strange Happenings', Volume 11, 'Disasters and Strange Happenings', Qing Kangxi 1688; Volume 13, 'Disasters and Strange Happenings', Qing Jiaqing 1819.
Xinxiu Guangzhou fuzhi, Volume 59, 'Auspicious Things', Qing Qianlong 1759.

表 **1.3** 宋至清代香港地區颶風紀錄

發生日期	紀錄內容
宋淳祐 5 年 5 月 (1245 年)	夏五月颶風大作，夜潮不退，晝潮汨之，瀕海室廬水深四五尺，溺二千餘家。
明永樂 13 年秋(1415 年)	秋颶風，大水。
明成化 11 年秋 (1475 年)	秋颶風，鹽水上田，禾半壞。
明嘉靖 2 年秋 (1523 年)	颶風，倒塌東西南三城樓，並左右炮樓周圍城牆百餘處。
明崇禎 16 年 4 月 (1643 年)	四月二十四日颶風作，大雨如注，其風拔木毀屋二晝夜乃息，巨浪覆舟，溺死者甚眾。
清康熙 8 年 8 月 (1669 年)	颶風六、八、九月凡三作。八月二十六日颶風大作，民復鄉初歸所有新蓋房屋盡行吹毀。
清康熙 10 年 8 月 (1671 年)	八月二十一日颶風大作，自辰起至申止，城垣、學宮、衙宇、民房盡吹頹毀，大樹盡拔。近海旁沙頭尾村，牛成群被風飄去海中溺死。
清康熙 12 年 5 月 (1673 年)	五月二十一日颶作，海潮大溢，沒屋浸禾。
清康熙 15 年 (1676 年)	縣治頭門鼓樓、官房、衙宇遭颶風傾圮。
清康熙 16 年 8 月 (1677 年)	八月二十一夜颶風大作，闔邑城垣、衙宇、廟祠暨民間房舍頹塌甚眾，男女、牛畜，多壓死焉。
清康熙 20 年 (1681 年)	學衙又遭颶風傾圮。
清康熙 25 年 (1686 年)	縣治門樓、官房、衙宇遭颶風傾圮。
清乾隆 25 年 8 月 (1760 年)	八月初九日颶風。
清嘉慶 2 年閏 6 月 (1797 年)	閏 6 月颶風一連四作，拔木倒屋甚多。

資料來源：
《東莞縣志》，卷 41 ，祥異，清嘉慶 3 年版；卷 16 ，城池；卷 31 ，前事略 3 ， 1927 年版。
《新安縣志》，卷 5 ，宮室志；卷 10 ，災異；卷 11 ，災異，清康熙 27 年版；卷 13 ，災異，清嘉慶 24 年版。
《新修廣州府志》，卷 59 ，禨祥，清乾隆 24 年版。
《廣州府志》，卷 79 ，前事略 5；卷 80 ，前事略 6 ，清光緒 5 年版。

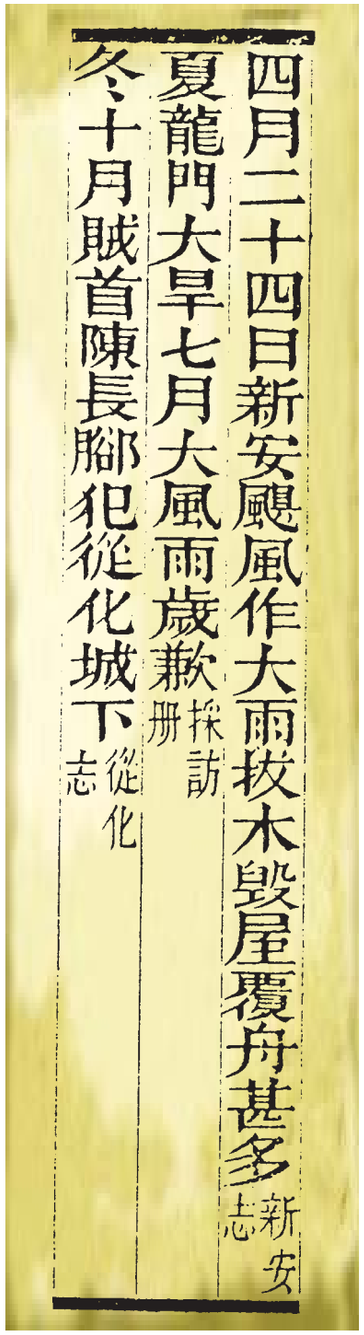


Fig. 1.6　Typhoon records in the fourth month of 1643, cf 'Brief Chronology 5', Local Gazette of Guangzhou, *Volume 79, 1879.*

圖 1.6　明崇禎16年4月 (1634年) 颶風紀錄，《廣州府志》，卷 79 ，前事略五， 清光緒 5 年版。

Fig. 1.7　Typhoon records in the second month of 1671, cf 'Brief Chronology 6', Local Gazette of Guangzhou, *Volume 80, 1879.*

圖 1.7　清康熙10年2月 (1671年) 颶風紀錄，《廣州府志》，卷 80 ，前事略六， 清光緒 5 年版。

Fig. 1.8　Lightning and thunderstorms, cf Emperor-Commissioned Pictorial Books, *Volume 26, in Liu Tuo and Meng Bai,* Qingdian banhua huikan *(Collection on Imperial Engraved Pictures of the Qing Dynasty), Volume 16, Xueyuan chubanshe, 1998, p. 496.*

圖 1.8　雷電以風圖，《欽定書經圖說》，卷26 載於劉托、孟白：《清殿版畫匯刊》(十六)，學苑出版社， 1998 年，頁 496 。

Table 1.4 Records of Hailstorms in the Hong Kong Region From the Song to Qing Dynasties

Date	Comments
Song Xiangxing (1278)	The 'yellow dragon' [the sucking of seawater up to the sky] appeared.
Ming Hongwu (1373)	In the sixth month (summer) hailstorms struck.
Ming Jiajing (1559)	Hail as big as duck eggs fell.
Qing Shunzhi (1655)	On the 24th day of the tenth month (winter) between nine in the morning and three in the afternoon, a heavy hailstorm struck. Houses were destroyed. People in the streets who could not find shelter were hit and injured.
Qing Kangxi (1668)	In the fifth month, hailstones as big as pots fell, houses and rice fields were destroyed.
Qing Kangxi (1669)	On the first day of the seventh month between seven and nine in the morning, in a village, three dragons appeared: two white and one black. They came out from the sea in the west, and flew off to the south of the city. Inside the city, many residential houses had their roofs blown off.
Qing Kangxi (1686)	On the 15th day of the eighth month a hailstorm struck, with hail as big as marbles.
Qing Qianlong (1788)	In the second month hail fell.
Qing Jiaqing (1805)	In the second month a black current rose from the sea south-west of the city and moved off to the city's east. The storm sucked people on the street up to over ten feet in the sky and dropped them, leaving them unconscious.
Qing Jiaqing (1807)	In the second month (spring) Xiangshan and Xinan had hailstorms. On the 10th and the 11th day of the second month, hail fell in the Kowloon Ho Chung area. A great many livestock were killed.
Qing Jiaqing (1814)	In the eighth month hailstorms broke out.
Qing Jiaqing (1818)	In the second month (spring) Xiangshan and Xinan had hailstorms.

Sources:

Dongguan xianzhi, Volume 10, 'Auspicious and Strange Things', Qing Yongzheng 1730; Volume 41,'Auspicious and Strange Things', Qing Jiaqing 1798; Volume 31, 'Draft History III', 1927.

Guangzhou fuzhi, Volume 80, 'Draft History VI', Volume 81, 'Draft History VII', Qing Guangxu 1879.

Qingshi gao (Manuscript of Qing History), 'Disasters and Strange Happenings', Xianggang wenxue yanjiushe, 1960.

Xinan xianzhi, Volume 11, 'Disasters and Strange Happenings', Qing Kangxi 1688; Volume 13, 'Disasters and Strange Happenings', Qing Jiaqing 1819.

表 **1.4** 宋至清代香港地區雨雹紀錄

發生日期	紀錄內容
宋祥興元年 (1278 年)	黃龍現於海。
明洪武 6 年 6 月 (1373 年)	夏六月雨米。
明嘉靖 38 年 (1559 年)	天雨雹，如鴨卵。
清順治 12 年 10 月 (1655 年)	冬十月二十四日大雨雹，自巳至未時止。屋瓦皆撲破，人在途中遇之無所避，渾身腫痛。
清康熙 7 年 5 月 (1668)	雨雹大如甑，屋舍禾稼盡傷。
清康熙 8 年 7 月 (1669)	是年復村七月一日壬辰有三龍，二白一黑，自西邊海起，飛騰城南而去，城內民房捲去瓦屋甚多。
清康熙 25 年 8 月 (1686 年)	八月十五日，落雹如彈丸大。
清乾隆 53 年 2 月 (1788 年)	二月雨雹。
清嘉慶 10 年 2 月 (1805 年)	二月有黑氣起於城西南海上，至城東而去，暴風飛卷路上行人，有忽高丈餘，昏迷不知人事。
清嘉慶 12 年 2 月 (1807)	春二月香山、新安雨雹。二月初十、十一等日，九龍蠔涌一帶雨雹，牛畜多被擊死。
清嘉慶 19 年 8 月 (1814 年)	八月雨雹。
清嘉慶 23 年 2 月 (1818 年)	春二月香山、新安雨雹。

資料來源：

《東莞縣志》，卷 10，祥異，清雍正 8 年版；卷 41，祥異，清嘉慶 3 年版；卷 31，前事略 3，1927 年版。

《清史稿》，災異志一，香港文學研究社，1960 年。

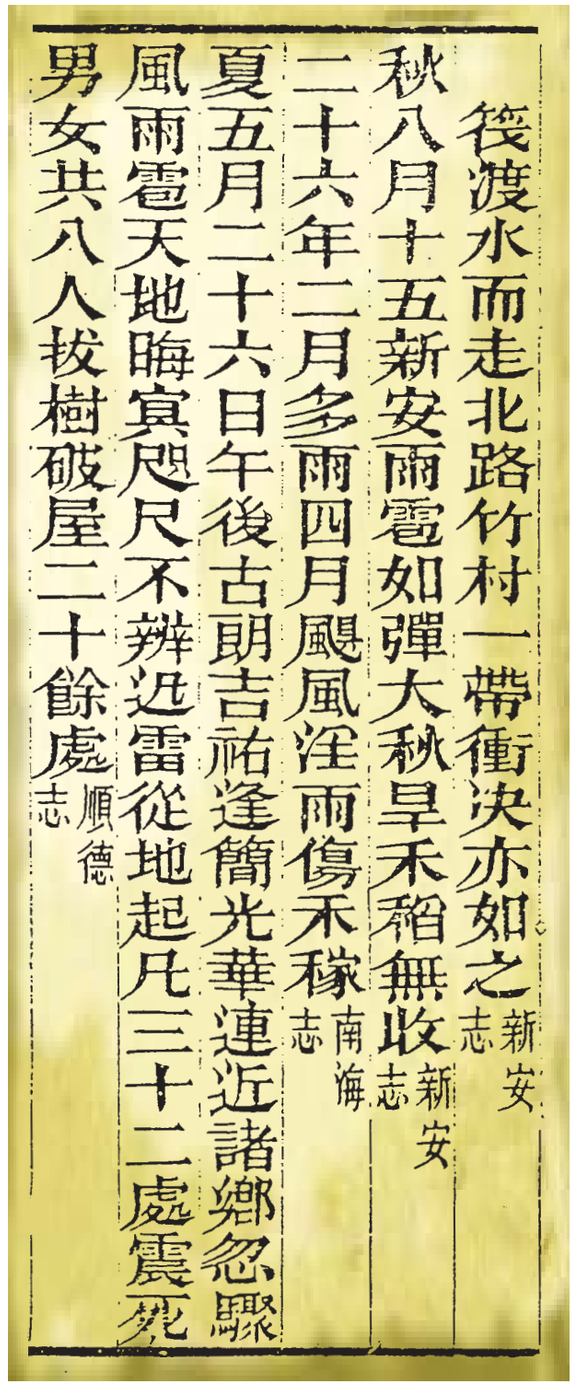
《新安縣志》，卷 11，災異，清嘉慶 24 年版；卷 13，災異，清康熙 27 年版。

《廣州府志》，卷 80，前事略 6；卷 81，前事略 7，清光緒 5 年版。

雹其狀或方或圓或如犂屋瓦皆碎八月懷安雨雹大如雞卵厚盈尺冬清澗雨雹大如鵝卵有徑尺者積數尺康熙元年三月二十一海甯大雨雹河間雨雹大如斗五月懷安大雨雹人畜有傷龍門大雨雹榆社大雨雹人畜多傷二年正月二十八望江雨雹二月要陸雨雹三月朔襄陽雨雹四月十六日鎮洋大雨雹六年六月香河雨雹大如碗平地深數尺田禾盡傷屋瓦皆碎遠近數十里八月保安州大雨雹傷人畜宣化大雨雹傷禾懷來大雨雹傷人畜七年五月新安雨雹大如甑屋舍禾稼盡傷十二年三月行唐大雨雹七月盧龍雨雹大如斗十七年三月連山雨雹大如拳擊死牛畜十八年正月惠州雨雹大如拳十九年七月陽曲雨雹大如雞卵有大如磁碾者擊死人畜甚多二十六

Fig. 1.9　Xinan District hailstorm records in the fifth month of 1668, cf Manuscript of Qing History, *Disasters 1, Xianggang wenshe yanjiushe, 1960, p. 196.*

圖 1.9　清康熙 7 年 5 月 (1668 年) 新安縣雨雹紀錄，《清史稿》，災異志一，香港文學研究社，1960 年，頁 196。



筏渡水而走北路竹村一帶衝決亦如之新安志
秋八月十五新安雨雹如彈大秋旱禾稻無收新安志
二十六年二月多雨四月颶風淫雨傷禾稼南海志
夏五月二十六日午後古朗吉祐逢簡光華連近諸鄉忽黑風雨雹天地晦冥咫尺不辨迅雷從地起凡三十二處震死男女共八人拔樹破屋二十餘處順德志

Fig. 1.10　Xinan xian hailstorm records in the eighth month of 1686, cf 'Brief Chronology 6', Local Gazette of Guangzhou, *Volume 80, 1879.*

圖 1.10　清康熙 25 年 8 月 (1686 年) 新安縣雨雹紀錄，《廣州府志》，卷 80，前事略六，清光緒 5 年版。

Table 1.5 Records of Very Cold Weather in the Hong Kong Region From the Song to Qing Dynasties

Date	Comments
Song Chunyou (1245)	In the 12th month (winter), over one foot of snow fell within a period of three days.
Ming Yongle (1415)	There was snow in winter.
Qing Qianlong (1757)	On 15th of the first month, snow of over one foot thick fell during the night.

Sources:
Dongguan xianzhi, Volume 10, 'Auspicious and Strange Things', Qing Yongzheng 1730; Volume 41, 'Auspicious and Strange Things', Qing Jiaqing 1798; Volume 31, 'Draft History III', 1927.
Guangzhou fuzhi, Volume 80, 'Draft History VI', Qing Guangxu 1879.
Xinan xianzhi, Volume 13, 'Disasters and Strange Happenings', Qing Jiaqing 1819.

In traditional Chinese sources on Hong Kong's meteorological information from the Song to Qing Dynasties,[9] there were short written records on natural disasters, such as exceptionally heavy rain, typhoons, droughts, hailstorms and very cold weather. Altogether there were 64 such reported cases of which 23 cases were related to rainstorms and floods, 12 to typhoons and 12 to hailstorms. There were three recorded cases of very cold weather. For over 1,000 years, there was on average only one report of severe weather every 15 years. These figures appeared to seriously understate the magnitude of the actual problem, and the commentaries on the major disasters were extremely brief. The records were never comprehensive and were confined to stating the nature of the disasters; for example, heavy rain, flooding, no rice harvest as a result of drought, rice harvest destroyed by typhoons, extremely hot or cold weather, wilting of vegetation, etc. Comparatively more detailed recordings were made of human and animal casualties, but even the longest record was merely around ten sentences in length. Changes in climatic conditions or the time of an event were not included. The records were mainly found in local gazettes under the sections on calamitous and propitious phenomena. A small portion of such information was found in chronologies and historical records. Natural disasters were regarded as abnormal phenomena, and were rarely considered as important parameters in monitoring weather changes. These records, regardless of their contents or the quoted sources, paled in comparison to the amount of details contained in records of political events or personalities.

From the examples above, it is clear that ancient Chinese texts on Hong Kong's climate placed emphasis on the impact adverse weather had on society. There was little analysis on climatic phenomena. Reporting was mostly made at the macro level, sketching out the general characteristics of meteorological

表 **1.5** 宋至清代香港地區嚴寒天氣紀錄

發生日期	紀錄內容
宋淳祐 5 年 12 月(1245 年)	冬十二月大雪三日，深尺餘。
明永樂 13 年冬(1415 年)	冬有雪。
清乾隆 22 年 1 月(1757 年)	正月十五夜霜厚尺許。

資料來源：
《東莞縣志》，卷 10，祥異，清雍正 8 年版；卷 41，祥異，清嘉慶 3 年版；卷 31，事略 3，1927 年版。
《新安縣志》，卷 13，災異，清嘉慶 24 年版。
《廣州府志》，卷 80，前事略 6，清光緒 5 年版。

Fig. 1.11 Popular discontent towards very cold weather, cf Emperor-Commissioned Pictorial Books, *Volume 45, in Liu Tuo and Meng Bai,* Qingdian banhua huikan *(Collection on Imperial Engraved Pictures of the Qing Dynasty), Volume 16, Xueyuan chubanshe, 1998, p. 702.*

圖 1.11 民怨祁寒圖，《欽定書經圖說》，卷 45，載於劉托、孟白：《清殿版畫匯刊》(十六)，學苑出版社，1998 年，頁 702。

conditions, while weather changes were treated as closely linked with the growth of all life forms in nature, particularly those related to the needs of the agricultural economy. Natural disasters and climate changes were, to the Chinese people in those days, unpredictable phenomena. These brief weather records demonstrate the reverence the Chinese people showed towards nature, and their belief that nature could not be controlled. From the helplessness and neglect shown by the authorities towards weather observation one can imagine how difficult it must have been for the ordinary people to make use of the official information to gain a deeper understanding of changes in weather.

Hong Kong Meteorological Reports After the Mid-Nineteenth Century: Forerunner of Microscopic Reporting

In 1842 when the colonial government started to rule Hong Kong, it introduced into the colony Western weather observation and recording methods: this turned a new leaf for meteorological observation and investigation in Hong Kong.

In 1844, for the first time, the Hong Kong government published Victoria Gaol's meteorological reports in *The Hong Kong Government Gazette,* demonstrating Westerners' skills in meteorological observation and investigation. From the scope and methods of reporting, it can be seen that Westerners' grasp of changes in weather patterns was vastly different to that of the traditional Chinese. Rather than providing a general description of the weather events, Westerners regarded the recording of up-to-date atmospheric pressure, temperature and wind direction as critical elements in meteorological observations.[10] Apart from conforming to established observation procedures and methods, the colonial government also placed emphasis on the need for regular and comprehensive records. Measurements were performed regularly in the morning and in the afternoon at stipulated times. Readings taken included the highest, the lowest and the average values. Air pressure measurements were made to two decimal places. In 1874, the Harbour Master's Office (now the Marine Department) began to monitor typhoons in Hong Kong waters and issued typhoon warnings.[11] Assessments of the destruction caused by every typhoon were made by the Surveyor General's Office and the Police Force.[12] This method of using scientific equipment to carry out microscopic observation of atmospheric changes and making records contrasted sharply with the macroscopic description of the weather events by the Chinese earlier. From 1844, the detailed meteorological records served the sole purpose of facilitating the operations of

根據上述自宋代至清代有關香港地區的地方志資料，[9] 可閱讀到氣候變遷的文字，包括對暴雨、水、旱、颶風、雨雹、嚴寒等自然災害的簡短記載，共有64段。其中以記敘暴雨及水災的文字最多，達23條；颶風次之，共有13條紀錄；再次是旱災有12條，繼而是雨雹有12條，嚴寒的紀錄有3條。在千多年的歷史中，平均約每15年才有一次紀錄，數字明顯嚴重偏低，似未能反映實際情況。另一方面，這些重要自然災害的紀錄的統計，都非常的精簡：如大雨、潦溢；大旱無禾；大風損禾；酷暑、天寒，草木皆萎等 。有關人畜損傷的文字，雖相對來說比較詳盡，但最長的亦只有短短的十多句文字。一些與氣候變遷相關的事件，甚至連發生的月份也欠奉。這些自然災害的紀錄主要被歸納入志書中的災異、祥異類，有小部分資料被列入紀事、前事，可見自然災害一般被視為異象，很少被用作觀測日常氣候變化的指標。而所紀錄的事件，無論是內容抑或徵引資料，均遠不及有關政治事件或政治人物的記載般詳盡。

從以上的例子可見，中國古籍對香港地區氣候的紀錄，多側重報導惡劣氣候對社會所造成的影響，少分析自然氣候的現象。報導多從宏觀角度概括氣候的特徵，而氣候變遷的報導，每與大自然萬物的生長緊密扣連，主要是配合農業社會的需要。天氣變化對古代的中國人來說，是變幻莫測、無法掌握的現象。惡劣天氣的出現，是不可預知及不可避免的，透過有關概覽形式的氣象紀錄，可顯示中國人敬畏大自然及相信大自然有不可駕馭的特性。從官方對氣象觀測的無奈及忽視，可想像一般老百姓是很難利用這些官方資訊對氣候的變化有更深的認識。

十九世紀中葉以後的香港氣象觀測——微觀報導的先河

1842年香港殖民地政府管治香港地區後，把西方觀察及紀錄天氣的方法引入，氣象監測工作遂開展了嶄新的一頁。

1844年香港政府首次將其在域多利監獄所作的氣象紀錄資料在《政府公報》發表，展示了西方人觀測氣象的技巧。從資料報導的範圍及陳述方式，可看到西方人對天氣變化規律的掌握與中國傳統方法大相逕庭。西方觀測氣象，有一套基本理論，大氣的氣壓、溫度、風向等的即時狀況，都是西方人探測氣象的關鍵，[10] 而不是對過去氣象資料的綜合。除了使用固定測量的方法外，氣象紀錄更非常着重監測的持久性及詳盡性。量度一般是在每天的早上及下午指定的時間進行，量度包括最高、最低讀數及平

government departments, and were not widely used by the general public. Nevertheless, they were the only detailed meteorological data for Hong Kong prior to the setting up of the Observatory in 1883.

In 1845, the government began to publish recent weather records in *The Hong Kong Government Gazette* for the benefit of mariners. The government also standardised the terminology used in weather reports. Specific terms were used to describe the weather, terms such as overcast, sunny, rainy, foggy, showers, thunderstorms, lightning, humid, snow, hail, dew, visibility, etc. As to wind strength, there was another set of terms, including words like calm, light wind, moderate wind and breezes (divided into five grades), strong winds (divided into four grades), storm force winds and hurricane force winds.[13]

In the early 1850s, newspapers in Hong Kong regularly published meteorological data issued by the government,[14] mainly monthly summary reports of the overall weather conditions. The contents of such reports included barometer (then known in Chinese newspapers as the wind-and-rain pointer), thermometer, hydrometer and rain gauge readings. From 1867, records of wind directions were kept. The instrument that measured air pressure was a vacuum glass tube, using the pressure exerted on mercury as an indicator of the weather conditions. The unit of measurement was inches. The general rule was that the lower the air pressure, the worse the weather would be.[15] For air temperature measurement, a mercury thermometer was used and the unit was degrees Fahrenheit. Temperature readings included monthly temperature range, and the temperature of the hottest and coldest days. Relative humidity readings indicated how dry or wet the atmosphere was, and included the two days with the largest diurnal variation in relative humidity, as well as the two days with the smallest range of diurnal variation. The main reason why the government was concerned about the relative humidity was that Hong Kong's weather was hotter and more humid than that of Europe. For the Europeans who were used to less humid and cooler weather, such weather was not considered suitable and many colonial officials fell ill. Their habit of taking annual home leave in the summer was directly related to the hot and humid conditions of Hong Kong at this time of the year.[16]

In the 1850s, in addition to the monthly weather reports published in the newspapers, the annual calendars also listed the special characteristics of each of the 12 months. Generally speaking, forecasts of the monthly highest and lowest atmospheric pressure and temperature based on previous records were made available to the public for reference purposes. This way of reporting was similar to the traditional Chinese calendar, which also made use of the meteorological

均數值，氣壓的測量更臻至小數後的兩位數字。1874年船政署 (即現在的海事處) 開始負責監測香港水域範圍以內的颱風，並發出預報警告。[11] 每次颱風過後的損毀情況，則由量地官署及警署負責提交報告。[12] 這種透過科學儀器對大氣變化的微觀監測及記錄的方法，一改中國傳統對氣象的宏觀評估。雖然自1844年起有關氣象的詳細的紀錄，只是香港政府為方便部門運作而作的官方紀錄，未被當時社會廣泛應用，卻已是1883年香港天文台成立以前有關香港氣象較具體及詳盡的資料。

1845年為方便航海人士，政府開始在《政府公報》公佈香港氣候的最近紀錄，並將天氣報告的用語加以統一。對天氣好壞的描述，大抵以陰、晴、雨、霧、驟雨、雷暴、閃電、潮濕、雪、冰雹、露、能見度等為主要的術語，而有關海港風力的情況則用另一套指定的詞彙，包括平靜、微風、和風 (分五級)、大風 (分四級)、暴風和颶風等。氣象報告的用語，亦大抵於此時制定。[13]

1850年代初，香港報章定期發佈由政府提供的氣象資料，[14] 主要是每月整體天氣狀況的總結，報導內容包括氣壓計 (當時的中文報章稱「風雨針」) (barometer)、溫度計 (thermometer)、濕度計 (hydrometer) 及雨量計 (rain gauge) 所量度到的讀數。1867年開始有風向紀錄。氣壓量度儀器，一般來說，是一玻璃做的真空管，利用水銀的受壓程度來反映天氣狀況的好壞，量度的單位以英吋為本，氣壓愈低，天氣一般愈差；[15] 氣溫量度則利用水銀溫度計量度大氣的溫度，用以反映天氣的冷暖，量度單位為華氏，有關溫度的報導包括每月溫度的差距，最冷及最熱日子的溫度。濕度的報導則表示了天氣的乾濕程度，報導包括了每月濕度相差最多的兩天與相差最少的兩天。對天氣的變化除了有透過溫度及氣壓的量度，觀察該月份的天氣冷暖的變化外，政府對空氣潮濕的程度亦十分關注，主要是因為香港的天氣較歐洲的天氣炎熱及潮濕；對一向生活在較乾燥而寒冷的歐洲人來說，並不易適應，許多殖民地官員因而病倒。他們每年夏季必須離港回國度假的習慣，亦與氣溫及相對濕度有直接關係。[16]

1850年代，除報章上的天氣月報外，每年的年曆，亦載有各月份天氣特徵的資料。一般來說，這些資料大都依據過往紀錄，預測來年每月的最高及最低氣壓、最高及最低氣溫的狀況，以供市民參考。這類報導與中國傳統年曆，將一年四季每月過往的氣候特徵作一綜述報導的做法有點相似。從年曆處理氣象資料的方式，可見在十九世紀中期，除航海人士以外，一般人對氣象資料的要求並不高，甚少注意每日氣壓及氣溫的變化。

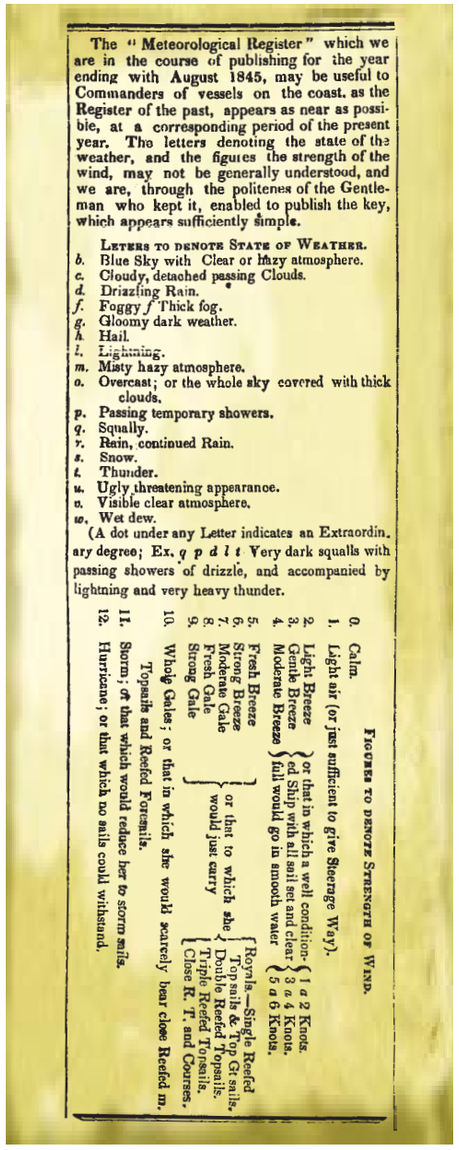
Meteorological Table from 15th July 1844 to 13th April 1845. 89

Chinese day of Month	Day of Week	Day of Month	Mean of Barom.	Thermom. May	Thermom. Min.	Mean	Winds	Remarks
1	Mon	15	29	73.0	86	84	84.5	E. mod
2	Tues	16	"	69.5	86	83	84.6	S.E. fresh
3	Wed	17	"	70.2	87	83	85	N.N.E. mod
4	Thurs	18	"	71.0	87	84	85.3	E. mod
5	Fri	19	"	74.0	88	85	86.7	E. mod
6	Sat	20	"	73.0	90	86	87.5	E. light
7	Sun	21	"	64.2	90	85	86.8	Vble
8	Mon	22	"	62.5	89	85	86.2	E. light
9	Tues	23	"	58.	88	84	86.	Vble
10	Wed	24	"	56.5	90	85	86.75	E. mod
11	Thurs	25	"	56.25	88	84	85.75	E. light
12	Fri	26	"	56.25	88	84	84.33	E. mod
13	Sat	27	"	53.25	87	83	84.5	E. calm
14	Sun	28	"	54.75	87	83	85.25	E
15	Mon	29	"	55.5	88	84	85.7	E. fresh Vble	Fine clear
16	Tues	30	"	56.6	86	82	83.5	E.
17	Wed	31	"	49.0	87	83	85.2	NE. fresh Vble
18	Thurs	Augt 1	"	43.5	87	83	84.2	NE.	rain at night
19	Fri	2	"	41.5	87	84	85.6	E. fresh Vble
20	Sat	3	"	48.0	86	83	85.7	NE
21	Sun	4	"	51.2	83½	82	82.6	E. fresh Vble Cont. rain
22	Mon	5	"	60.2	85	81	82.7	Variable Winds	Mod heavy rain during day gusty at night

Frederick W. A. Bruce

Fig. 1.12 Meteorological Table from 15th July 1844 to 13th April 1845, CO 133/1, pp. 89–90.

圖 1.12 1844年7月15日至1845年7月15日氣象報告，《殖民地政府書函》CO133/1，頁89–90。



The "Meteorological Register" which we are in the course of publishing for the year ending with August 1845, may be useful to Commanders of vessels on the coast, as the Register of the past, appears as near as possible, at a corresponding period of the present year. The letters denoting the state of the weather, and the figures the strength of the wind, may not be generally understood, and we are, through the politeness of the Gentleman who kept it, enabled to publish the key, which appears sufficiently simple.

LETTERS TO DENOTE STATE OF WEATHER.

b. Blue Sky with Clear or hazy atmosphere.
c. Cloudy, detached passing Clouds.
d. Drizzling Rain.
f. Foggy *f* Thick fog.
g. Gloomy dark weather.
h. Hail.
l. Lightning.
m. Misty hazy atmosphere.
o. Overcast; or the whole sky covered with thick clouds.
p. Passing temporary showers.
q. Squally.
r. Rain, continued Rain.
s. Snow.
t. Thunder.
u. Ugly threatening appearance.
v. Visible clear atmosphere.
w. Wet dew.

(A dot under any Letter indicates an Extraordinary degree; Ex. *q p d l t* Very dark squalls with passing showers of drizzle, and accompanied by lightning and very heavy thunder.

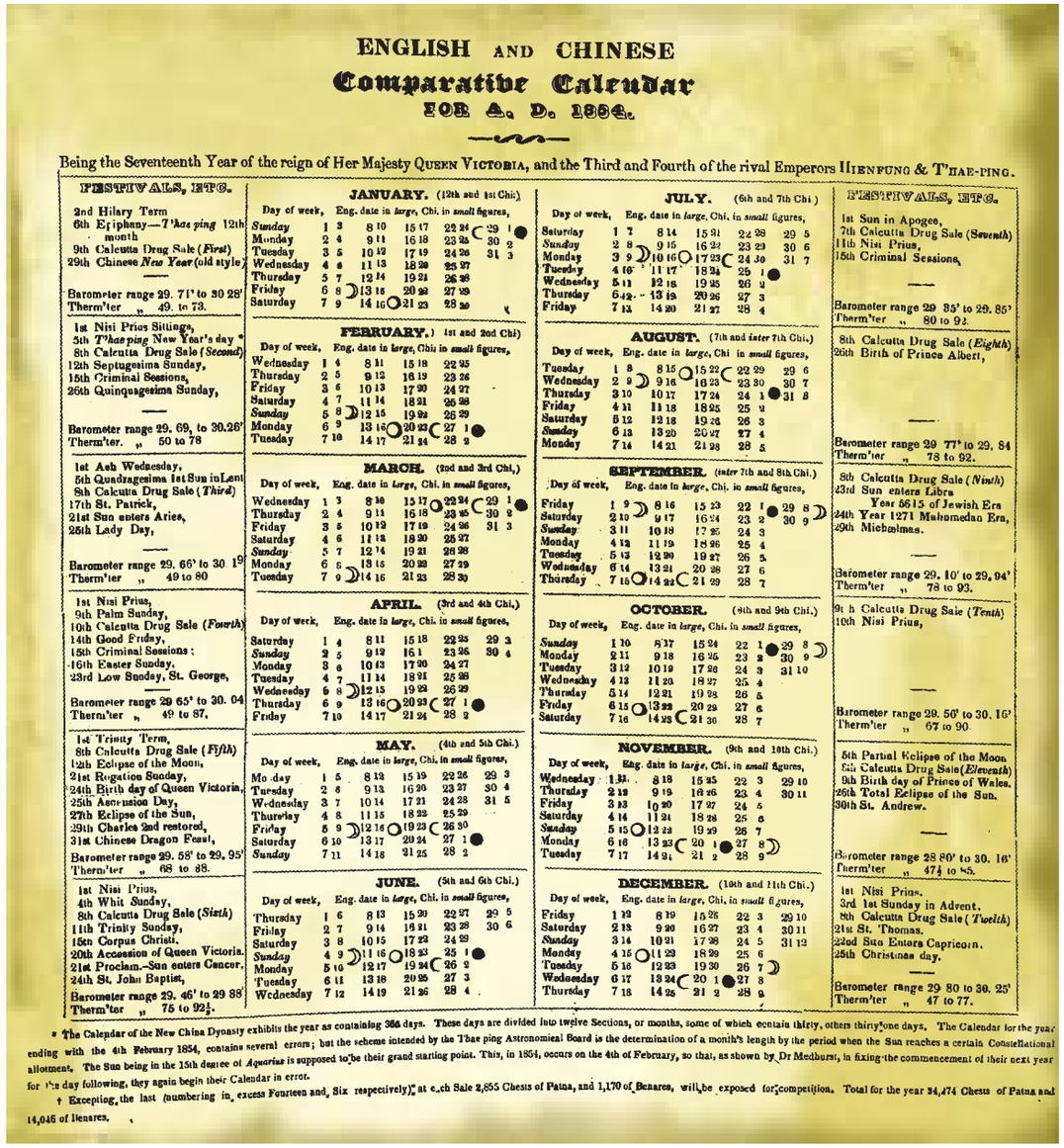
FIGURES TO DENOTE STRENGTH OF WIND.

0. Calm.
1. Light air (or just sufficient to give Steerage Way).
2. Light Breeze — or that in which a well conditioned Ship with all sail set and clear full would go in smooth water { 1 a 2 Knots. 3 a 4 Knots. 5 a 6 Knots.
3. Gentle Breeze
4. Moderate Breeze
5. Fresh Breeze — Royals.—Single Reefed Topsails & Top Gt sails.
6. Strong Breeze — Double Reefed Topsails.
7. Moderate Gale — Triple Reefed Topsails.
8. Fresh Gale — Close R. T. and Courses.
9. Strong Gale — or that to which she would just carry
10. Whole Gales; or that in which she would scarcely bear close Reefed m. Topsails and Reefed Foresails.
11. Storm; or that which would reduce her to storm sails.
12. Hurricane; or that which no sails could withstand.

Fig. 1.13 Meteorological expressions and terms used by the Meteorological Register. Cf The Friend of China and Hong Kong Gazette, *28 November 1845.*

圖 1.13 《氣象紀錄》常用氣象術語。參閱《香港政府公報》，1845 年 11 月 28 日。

records in the past to compile a summary of the weather characteristics for each of the 12 months. From the way meteorological data were compiled in the annual calendars, it can be seen that, with the exception of mariners, ordinary people in the mid-nineteenth century did not have a demand for meteorological data. They seldom paid attention to daily changes in temperature and air pressure.



ENGLISH AND CHINESE
Comparative Calendar
FOR A. D. 1854.

Being the Seventeenth Year of the reign of Her Majesty QUEEN VICTORIA, and the Third and Fourth of the rival Emperors HIENFUNG & T'HAE-PING.

FESTIVALS, ETC.

2nd Hilary Term
6th Epiphany—*T'hae ping* 12th month
9th Calcutta Drug Sale (*First*)
29th Chinese *New Year* (old style)

Barometer range 29. 71' to 30 28'
Therm'ter „ 49. to 73.

1st Nisi Prius Sittings,
5th *T'hae ping* New Year's day *
8th Calcutta Drug Sale (*Second*)
12th Septugesima Sunday,
15th Criminal Sessions,
26th Quinquagesima Sunday,

Barometer range 29. 69, to 30.26'
Therm'ter. „ 50 to 78

1st Ash Wednesday,
5th Quadragesima 1st Sun in Lent
8th Calcutta Drug Sale (*Third*)
17th St. Patrick,
21st Sun enters Aries,
25th Lady Day,

Barometer range 29. 66' to 30 1[9]
Therm'ter „ 49 to 80

1st Nisi Prius,
9th Palm Sunday,
10th Calcutta Drug Sale (*Fourth*)
14th Good Friday,
15th Criminal Sessions:
16th Easter Sunday.
23rd Low Sunday, St. George,

Barometer range 29 65' to 30. 04
Therm'ter „ 49 to 87.

1st Trinity Term,
8th Calcutta Drug Sale (*Fifth*)
12th Eclipse of the Moon,
21st Rogation Sunday,
24th Birth day of Queen Victoria,
25th Ascension Day,
27th Eclipse of the Sun,
29th Charles 2nd restored,
31st Chinese Dragon Feast,

Barometer range 29. 58' to 29. 95'
Therm'ter „ 68 to 88.

1st Nisi Prius,
4th Whit Sunday,
8th Calcutta Drug Sale (*Sixth*)
11th Trinity Sunday,
15th Corpus Christi.
20th Accession of Queen Victoria.
21st Proclam.—Sun enters Cancer,
24th St. John Baptist,

Barometer range 29. 46' to 29 88'
Therm'ter „ 75 to 92½.

JANUARY. (12th and 1st Chi.)

Day of week	Eng. date in *large*, Chi. in *small* figures,					
Sunday	1 3	8 10	15 17	22 24	☾ 29	1 ●
Monday	2 4	9 11	16 18	23 25	30	2
Tuesday	3 5	10 12	17 19	24 26	31	3
Wednesday	4 6	11 13	18 20	25 27		
Thursday	5 7	12 14	19 21	26 28		
Friday	6 8 ☽	13 15	20 22	27 29		
Saturday	7 9	14 16 ○	21 23	28 30		

FEBRUARY. (1st and 2nd Chi)

Day of week	Eng. date in *large*, Chi in *small* figures,					
Wednesday	1 4	8 11	15 18	22 25		
Thursday	2 5	9 12	16 19	23 26		
Friday	3 6	10 13	17 20	24 27		
Saturday	4 7	11 14	18 21	25 28		
Sunday	5 8 ☽	12 15	19 22	26 29		
Monday	6 9	13 16 ○	20 23	☾ 27	1 ●	
Tuesday	7 10	14 17	21 24	28	2	

MARCH. (2nd and 3rd Chi.)

Day of week	Eng. date in *large*, Chi. in *small* figures,					
Wednesday	1 3	8 10	15 17 ○	22 24	☾ 29	1 ●
Thursday	2 4	9 11	16 18	23 25	30	2
Friday	3 5	10 12	17 19	24 26	31	3
Saturday	4 6	11 13	18 20	25 27		
Sunday	5 7	12 14	19 21	26 28		
Monday	6 8	13 15 ☽	20 22	27 29		
Tuesday	7 9 ☽	14 16	21 23	28 30		

APRIL. (3rd and 4th Chi.)

Day of week	Eng. date in *large*, Chi. in *small* figures,					
Saturday	1 4	8 11	15 18	22 25	29	3
Sunday	2 5	9 12	16 1	23 26	30	4
Monday	3 6	10 13	17 20	24 27		
Tuesday	4 7	11 14	18 21	25 28		
Wednesday	5 8 ☽	12 15	19 22	26 29		
Thursday	6 9	13 16 ○	20 23	☾ 27	1 ●	
Friday	7 10	14 17	21 24	28	2	

MAY. (4th and 5th Chi.)

Day of week	Eng. date in *large*, Chi. in *small* figures,					
Mo day	1 5	8 12	15 19	22 26	29	3
Tuesday	2 6	9 13	16 20	23 27	30	4
Wednesday	3 7	10 14	17 21	24 28	31	5
Thursday	4 8	11 15	18 22	25 29		
Friday	5 9 ☽	12 16 ○	19 23	☾ 26	30	
Saturday	6 10	13 17	20 24	27	1 ●	
Sunday	7 11	14 18	21 25	28	2	

JUNE. (5th and 6th Chi.)

Day of week	Eng. date in *large*, Chi. in *small* figures,					
Thursday	1 6	8 13	15 20	22 27	29	5
Friday	2 7	9 14	16 21	23 28	30	6
Saturday	3 8	10 15	17 22	24 29		
Sunday	4 9 ☽	11 16 ○	18 23	☾ 25	1 ●	
Monday	5 10	12 17	19 24	☾ 26	2	
Tuesday	6 11	13 18	20 25	27	3	
Wednesday	7 12	14 19	21 26	28	4	

JULY. (6th and 7th Chi.)

Day of week	Eng. date in *large*, Chi. in *small* figures,					
Saturday	1 7	8 14	15 21	22 28	29	5
Sunday	2 8	9 15	16 22	23 29	30	6
Monday	3 9 ☽	10 16 ○	17 23 ☾	24 30	31	7
Tuesday	4 10	11 17	18 24	25 1 ●		
Wednesday	5 11	12 18	19 25	26 2		
Thursday	6 12	13 19	20 26	27 3		
Friday	7 13	14 20	21 27	28 4		

AUGUST. (7th and *inter* 7th Chi.)

Day of week	Eng. date in *large*, Chi in *small* figures,					
Tuesday	1 8 ☽	8 15 ○	15 22 ☾	22 29	29	6
Wednesday	2 9	9 16	16 23	23 30	30	7
Thursday	3 10	10 17	17 24	24 1 ●	31	8
Friday	4 11	11 18	18 25	25 2		
Saturday	5 12	12 18	19 26	26 3		
Sunday	6 13	13 20	20 27	27 4		
Monday	7 14	14 21	21 28	28 5		

SEPTEMBER. (*inter* 7th and 8th Chi.)

Day of week	Eng. date in *large*, Chi. in *small* figures,					
Friday	1 9 ☽	8 16	15 23	22 1 ●	29	8 ☽
Saturday	2 10	9 17	16 24	23 2	30	9
Sunday	3 11	10 18	17 25	24 3		
Monday	4 12	11 19	18 26	25 4		
Tuesday	5 13	12 20	19 27	26 5		
Wednesday	6 14	13 21	20 28	27 6		
Thursday	7 15 ○	14 22 ☾	21 29	28 7		

OCTOBER. (8th and 9th Chi.)

Day of week	Eng. date in *large*, Chi. in *small* figures,					
Sunday	1 10	8 17	15 24	22 1 ●	29	8 ☽
Monday	2 11	9 18	16 25	23 2	30	9
Tuesday	3 12	10 19	17 26	24 3	31	10
Wednesday	4 13	11 20	18 27	25 4		
Thursday	5 14	12 21	19 28	26 5		
Friday	6 15 ○	13 22	20 29	27 6		
Saturday	7 16	14 23 ☾	21 30	28 7		

NOVEMBER. (9th and 10th Chi.)

Day of week	Eng. date in *large*, Chi. in *small* figures,					
Wednesday	1 11	8 18	15 25	22 3	29	10
Thursday	2 12	9 19	16 26	23 4	30	11
Friday	3 13	10 20	17 27	24 5		
Saturday	4 14	11 21	18 28	25 6		
Sunday	5 15 ○	12 22	19 29	26 7		
Monday	6 16	13 23 ☾	20 1 ●	27 8	☽	
Tuesday	7 17	14 24	21 2	28 9		

DECEMBER. (10th and 11th Chi.)

Day of week	Eng. date in *large*, Chi. in *small* figures,					
Friday	1 12	8 19	15 26	22 3	29	10
Saturday	2 13	9 20	16 27	23 4	30	11
Sunday	3 14	10 21	17 28	24 5	31	12
Monday	4 15 ○	11 22	18 29	25 6		
Tuesday	5 16	12 23	19 30	26 7		
Wednesday	6 17	13 24 ☾	20 1 ●	27 8		
Thursday	7 18	14 25 ☾	21 2	28 9		

FESTIVALS, ETC.

1st Sun in Apogee,
7th Calcutta Drug Sale (*Seventh*)
11th Nisi Prius,
15th Criminal Sessions,

Barometer range 29 85' to 29. 85'
Therm'ter „ 80 to 92

8th Calcutta Drug Sale (*Eighth*)
26th Birth of Prince Albert,

Barometer range 29 77' to 29. 84
Therm'ter „ 78 to 92.

8th Calcutta Drug Sale (*Ninth*)
23rd Sun enters Libra
Year 5615 of Jewish Era
24th Year 1271 Mahomedan Era,
29th Michaelmas.

Barometer range 29. 10' to 29. 94'
Therm'ter „ 78 to 93.

9th Calcutta Drug Sale (*Tenth*)
10th Nisi Prius,

Barometer range 29. 50' to 30. 16'
Therm'ter „ 67 to 90

5th Partial Eclipse of the Moon
5th Calcutta Drug Sale (*Eleventh*)
9th Birth day of Prince of Wales.
26th Total Eclipse of the Sun.
30th St. Andrew.

Barometer range 28 80' to 30. 16'
Therm'ter „ 47½ to 85.

1st Nisi Prius.
3rd 1st Sunday in Advent.
8th Calcutta Drug Sale (*Twelfth*)
21st St. Thomas.
22nd Sun Enters Capricorn.
25th Christmas day.

Barometer range 29 80 to 30. 25'
Therm'ter „ 47 to 77.

* The Calendar of the New China Dynasty exhibits the year as containing 366 days. These days are divided into twelve Sections, or months, some of which contain thirty, others thirty-one days. The Calendar for the year ending with the 4th February 1854, contains several errors; but the scheme intended by the Thae ping Astronomical Board is the determination of a month's length by the period when the Sun reaches a certain Constellational allotment. The Sun being in the 15th degree of *Aquarius* is supposed to be their grand starting point. This, in 1854, occurs on the 4th of February, so that, as shown by Dr Medhurst, in fixing the commencement of their next year for the day following, they again begin their Calendar in error.

† Excepting, the last (numbering in excess Fourteen and Six respectively), at each Sale 2,855 Chests of Patna, and 1,170 of Benares, will be exposed for competition. Total for the year 34,474 Chests of Patna and 14,046 of Benares.

Fig. 1.14 Calendar for 1854, cf The Friend of China and Hong Kong Gazette, *31 December 1853.*

圖 1.14 1845年年曆，見《香港政府公報》，1853 年 12 月 31 日。

From the 1850s, Hong Kong's population grew rapidly as a result of the outbreak of the Taiping rebellion in mainland China. Weather conditions — whether good or bad — especially in the typhoon season, directly posed a threat to the safety of humans and properties. The hot and humid summer was also the peak season for the spreading of epidemic diseases in the densely populated City of Victoria. For this reason, the responsibility for issuing weather reports was given to the Medical Department. The Colonial Surgeon had to submit a report at the end of each year to the governor, listing the weather conditions from January to December, month by month. The report included information on the monthly highest and lowest temperatures, air pressure, the amount of rainfall, and the overall weather conditions. Hospitals were the main places where such recordings were made. They included Sailors' Hospital, Government Civil Hospital, Lockhart Hospital and Government Temporary Hospital. Some other government offices also made weather observations that were required for their work. One example was the Waterworks Office (now the Water Supplies Department), which has been keeping records of rainfall since 1877.[17]

From the 1860s to the early 1880s, the procedures for meteorological observations were standardised, and recorded data became more consistent and stable. From the meteorological data of this period, it can be seen that atmospheric pressure continued to be the basic indicator of the weather situation. Air temperature and relative humidity were also key elements of measurement. As to the amount of rainfall and the number of sunny and cloudy days, the way these were measured in this period followed the practice of the 1850s, and coincidentally resembled that of the modern day weather observations. Without knowing the precision of the measuring instruments used, it is difficult to judge the accuracy of the meteorological data, but from the consistency and the amount of detail in the records, it is clear that the relevant authorities had fairly strict requirements regarding the standard of these records.

Since its establishment in 1883, the Observatory has assumed the responsibility for meteorological observation and reporting. Initially, the places where observations were carried out, apart from its headquarters in Tsim Sha Tsui, were the four out-stations situated at the top of Victoria Peak, Cape d'Aguilar , Green Island and Stonecutters Island.[18] From the twentieth century onwards, weather observation stations were established at Victoria Peak, Waglan Islands, Kai Tak airport, Ping Shan, King's Park, Shek Kong, Stanley, Cheung Chau, Ta Kwu Ling, Sai Kung, Tai Po, Deep Water Bay, Sha Tin and other places. The collection of meteorological data not only became increasingly precise, but a series of summary reports were also issued regularly.

自1850年起，香港人口因中國發生太平天國動亂而有迅速的增長，天氣的好壞——尤其是在颱風襲港的季節，不但直接威脅香港居民生命與財產的安全，在炎熱而潮濕的夏季，更是人口稠密的維多利亞城的傳染病高峰期，故氣候狀況的紀錄改由醫務署負責。當時的殖民地醫官，每年年終均須以部門報告的形式，將每年從1至12月，每月最高及最低氣溫、氣壓、降雨情況，以及整體天氣狀況向港督匯報。記錄天氣地點也以醫院為主，曾作過氣象紀錄的醫院包括海員醫院、政府國家醫院、洛克醫院和政府臨時醫院。此外，一些個別的政府部門也會因應工作需要而進行天氣監測，如水務署自1877年起便就全港的降雨量作紀錄。[17]

1860年代至1880年代初，氣象觀測的方法及規格如探測的時間、地點、方式等，基本上已有定制，故所錄得資料的連貫性及穩定性更強。根據1860至1880年代氣象紀錄的資料，可看到氣象觀測的方法仍以氣壓為探測天氣好壞的基礎，而溫度及濕度亦是量度的主要指標，其餘有關降雨量、陰天與晴天的統計，大抵上繼承1850年代的方法而與現代的觀測重點相約。由於未能確定量度儀器的精密程度，故很難判斷所提供有關氣象的資料的準確性。然而，從紀錄的持久性及細緻性看，可知道當時有關部門對氣象紀錄已有相當嚴格的要求。

1883年香港天文台成立以後，有關氣象觀測的報告改由天文台負責。氣象觀測除以尖沙嘴天文台總部為據點外，還包括太平山頂、鶴咀、青洲及昂船洲等四個外站。[18] 二十世紀以後，氣象監測站分設於太平山頂、橫瀾島、啟德機場、屏山、京士柏、石崗、赤柱、長洲、打鼓嶺、西貢、大埔、深水灣、沙田等地區，氣象資料的蒐集不但愈來愈精密，而一系列縱覽式的報導也有定期的發佈。

氣象資料的詮釋

1844至1883年氣象資料的初步評估

香港政府雖然於1844年開始觀測香港的天氣，但1844至1883年間，無論是氣象監測的地點、記錄的時間，抑或量度的方法均尚未統一。以氣象觀測的地點為例，1844年曾以海事處或域多利監獄為氣象紀錄的據點，1861至1875年有以政府國家醫院為量度基地，1876至1883年的

An Interpretation of Meteorological Data

A Preliminary Evaluation of Meteorological Data for the 1844 to 1883 Period

Although the Hong Kong government began to make weather observations as early as 1844, no unified approach was adopted with regard to the observation locations, times or the methods used before 1883. Taking the observation location as an example, in 1844 the Harbour Master's Office and Victoria Gaol were used as observation bases. Between 1861 and 1875, the base was changed to Government Civil Hospital. From 1876 to 1883, meteorological records came from Lockhart Hospital. Although there were records stating the locations and their heights above sea-level where data were collected,[19] the frequent changes in such locations reduced the data to a mere reflection of the conditions at certain specified areas at certain time periods. The data were quite different from that gathered by the Hong Kong Observatory since 1884 and detailed comparisons and analyses were not possible.

Of the period 1844 to 1883, the pre-1861 years provided only piecemeal data. Apart from the different places of observation, the times for observation were completely different. These data were the only extant records before the Observatory was established in 1883. They were invaluable in seeking to obtain a better understanding of Hong Kong's weather conditions during that period. A preliminary interpretation of such data during the periods of 1853 to 1856, 1858 to 1859, 1861 to 1873 and 1875 to 1883, totalling 28 years, is tabulated below.

Temperature

Table 1.6 shows the temperature records between 1853 and 1883, where the monthly mean minimum and maximum temperatures are listed.[20] The information in the years 1857, 1860 and 1874 is missing, and is not included in the table. For the 1853 to 1883 period, the distribution of monthly mean maximum and minimum temperatures is shown.

紀錄來自洛克醫院。雖然所記錄的氣象資料，均註明紀錄地點及其離海拔的高度，[19] 但由於紀錄地點不同，因此，有關資料只能反映某特定地區與時段的狀況，不能與1884年以後在天文台以尖沙嘴總部為氣象紀錄地點的資料相提並論，作深入的比較分析。

1844至1883年間的氣象資料中，又以1861年以前的資料較為零碎；除了觀測地點不同以外，觀測的時間則亦完全不同。不過這些資料是1883年香港天文台成立以前僅存的氣象報告，倘若要對早期香港的氣候狀況作進一步了解，現存有關1861至1883年的資料就變得彌足珍貴。現試將1853至1856，1858至1859，1861至1873，1875至1883年共28年所錄得的數據，作一初步的解說。

氣溫

有關1853至1883年的氣溫紀錄，主要是每月最低氣溫及最高氣溫的讀數，[20] 其中缺乏1857年、1860年以及1874年的資料，故未有包括上述年份在表內。1853至1883年每月平均最高及最低的氣溫分佈狀況以攝氏計算以表1.6轉載。

表 **1.6**　平均月最高及最低的氣溫 (1853–1883)

月份	溫度(攝氏)	月份	溫度(攝氏)
1	13.9–17.6	7	27.5–30.3
2	13.8–17.9	8	27.3–30.1
3	15.9–20.0	9	26.6–29.5
4	20.4–24.7	10	23.6–27.1
5	24.6–27.9	11	19.4–23.1
6	26.8–29.7	12	16.0–19.8

1853至1883年年間，28年的平均溫度是攝氏23度。這28年裏年均溫度基本上沒有多大的變化，一直介乎攝氏22至24度之間。最寒冷的月份為1月及2月，月平均最低氣溫約為攝氏14度；最炎熱的月份為7月，月平均最高氣溫約為攝氏30度。28年來錄得的最高月平均氣溫為1854年9月的攝氏33.9度，而最低月平均氣溫的月份則以1856年3月所錄得的攝氏5度為代表。根據天文台1961至1990氣溫平均資料，月平均溫度最低為攝氏13.6度。值得注意的是，1856年3月的平均最低氣溫為攝氏5度的紀錄，與天文台氣候資料的月平均溫度相差太大，反映當時計算氣溫或數據處理的方法可能有所偏差。

Table 1.6 Mean Monthly Highest and Lowest Temperatures (1853–1883)

Month	Temperature Range (°C)	Month	Temperature Rang(°C)
Jan	13.9–17.6	Jul	27.5–30.3
Feb	13.8–17.9	Aug	27.3–30.1
Mar	15.9–20.0	Sep	26.6–29.5
Apr	20.4–24.7	Oct	23.6–27.1
May	24.6–27.9	Nov	19.4–23.1
Jun	26.8–29.7	Dec	16.0–19.8

Between 1853 to 1883, the mean temperature for the 28 years was 23°C. The coldest months were January and February. The monthly mean minimum temperature was about 14°C. The hottest month was July, with a monthly mean maximum temperature average of about 30°C. During that period, the highest recorded monthly average was 33.9°C in September 1854. The month with the lowest monthly mean minimum temperature was 5°C in March 1856. According to the 1961 to 1990 records, the lowest monthly mean minimum temperature was 13.6°C. This is much higher than the 5°C record of March 1856. A probable explanation is that the measurement procedures or the data management process at that time could have given rise to errors.

Rainfall

Rainfall data between 1861 and 1883 were obtained from Government Civil Hospital. The average annual rainfall for the 1861–1883 period was 2,141.2 mm. In that period, the rainfall for 1883 was the heaviest, with 2,976.9 mm. This was 835.7 mm more than the averages for the 23 years. The driest year was 1870 when only 1,424.2 mm of rainfall was recorded. This was 718.9 mm less than the average of the 23 years. For single months, the highest average was in July 1862 with 785 mm. There were few dry years. Those years with annual rainfall over 2,000 mm made up 65% of the period, and 78% of those years were with annual rainfall in excess of 1,900 mm. The rainy months spanned from May to September. The month with the heaviest average rainfall was June, with over 373.4 mm. The average rainfall for the other months was: August, with 366.3 mm; July, 355.6 mm; May, 317.5 mm, and September, 304.8 mm. The dry season ran from October to April of the following year, with an average monthly rainfall of less than 127 mm. Of these months, the period from November to February had the least rainfall, with only around 25.4 mm of rainfall.

降雨量

1861 至 1883 年年間有關降雨量的資料主要源自政府在國家醫院所錄得的雨量紀錄。1861 至 1883 年間，全年平均總降雨量為 2,141.2 毫米，其中又以 1883 年的降雨量最多，有 2,976.9 毫米，較 23 年來年均降雨量高出 835.7 毫米。而最乾旱的年份為 1870 年，只有 1,424.2 毫米，較 23 年的年均降雨量少了 718.9 毫米。單月降雨量則以 1862 年 7 月的 785 毫米為最多。乾旱的年份並不多見，其中年降雨量多於 2,000 毫米的年份佔 65%，而多於 1,900 毫米的年份佔 78%。雨季分佈於 5 月至 9 月，全年平均降雨量最多的月份為 6 月，達 373.4 毫米；而其他月份平均降雨量的分佈依次為 8 月 366.3 毫米，7 月 355.6 毫米，5 月 317.5 毫米，9 月 304.8 毫米；而每年的 10 月至翌年的 4 月雨量較少，每月平均降雨量不超過 127 毫米，其中又以 11 月至 2 月為少，只有 25.4 毫米左右的降雨量。

相對濕度

1861 至 1883 年間香港政府曾於每天的上午 9 時及下午 3 時利用濕球溫度計及乾球溫度量度氣溫。按現時計算相對濕度的方法，利用濕球溫度計及乾球溫度計量度的溫度應可推算當時的相對濕度，但計算後發現資料的疑點頗多，如每月的相對濕度差距不大，而現在較為乾燥的月份看似相當潮濕，故無法在此就 1883 年以前相對濕度的紀錄作出綜述。

1884 至 2002 年氣象資料的重點

1884 年起，香港天文台開始全面地監測本地氣候並作有系統的紀錄。天文台公開發佈有關氣溫、降雨量和相對濕度的資料，主要以天文台總部為量度的地點。1884 至 2002 年本地氣候的特徵大抵如下。[21]

Relative Humidity

Between 1861 and 1883, the government had carried out temperature measurements at 9 AM and 3 PM each day, using wet bulb and dry bulb thermometers. Using the present day relative humidity calculation methodology, the temperature readings of the wet and dry bulb thermometers are supposed to yield the relative humidity figures of that period. Calculations made have cast doubt on the validity of the data. For example, there were no large variations of relative humidity between months. Months that are relatively dry nowadays were found to be quite humid. It is thus not possible to perform an overview of the pre-1883 relative humidity records.

Main Features of Weather in the 1884 to 2002 Period

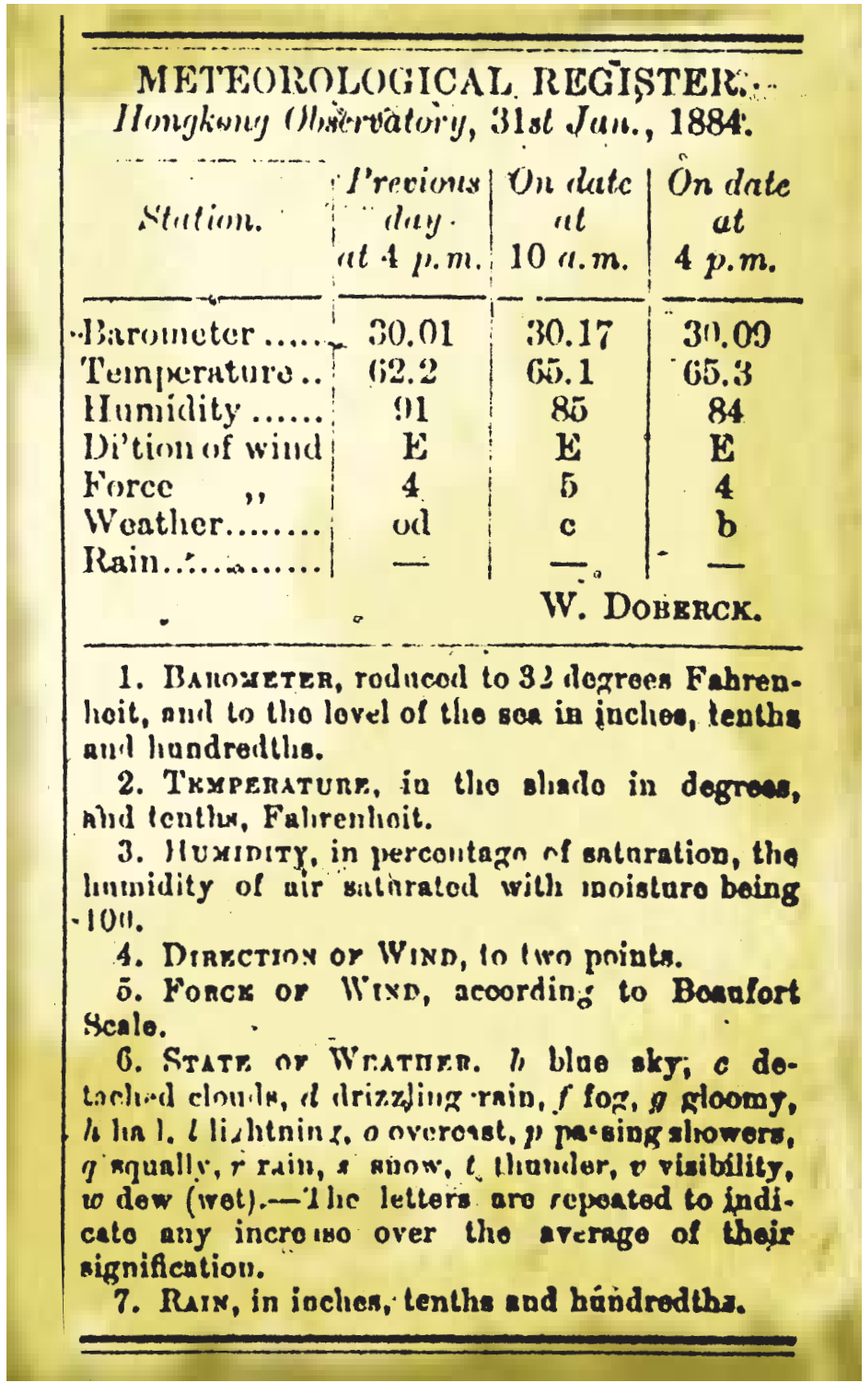
Since 1884, the Observatory has carried out comprehensive measurements and observations of local weather and made systematic recordings. The Observatory has publicised data on temperature, rainfall and relative humidity, using principally its headquarters for the place of measurements. The meteorological data for this period are given below.[21]

Temperature

Since the establishment of the Observatory, measurements of temperature have been made at more frequent intervals and higher standards. At present, temperature data are available at one-minute intervals. The following figures are based on the monthly averages for the 112-year period of 1884 to 2002, with a break of seven years from 1940 to 1946 as a result of the war.

Table 1.7 Records of Mean Temperatures for the Period 1884–2002

Month	Range of Monthly Mean Temperature (°C)	Month	Range of Monthly Mean Temperature (°C)
Jan	12.2–18.3	Jul	26.7–29.7
Feb	11.7–19.2	Aug	26.4–29.5
Mar	13.9–21.3	Sep	25.8–29.0
Apr	18.5–24.8	Oct	23.5–26.4
May	23.8–28.2	Nov	19.1–23.2
Jun	25.5–28.8	Dec	14.5–21.3



METEOROLOGICAL REGISTER.
Hongkong Observatory, 31st Jan., 1884.

Station.	*Previous day at 4 p.m.*	*On date at 10 a.m.*	*On date at 4 p.m.*
Barometer	30.01	30.17	30.09
Temperature ..	62.2	65.1	65.3
Humidity	91	85	84
Di'tion of wind	E	E	E
Force ,,	4	5	4
Weather.....	od	c	b
Rain.....	—	—	—

W. DOBERCK.

1. BAROMETER, reduced to 32 degrees Fahrenheit, and to the level of the sea in inches, tenths and hundredths.
2. TEMPERATURE, in the shade in degrees, and tenths, Fahrenheit.
3. HUMIDITY, in percentage of saturation, the humidity of air saturated with moisture being 100.
4. DIRECTION OF WIND, to two points.
5. FORCE OF WIND, according to Beaufort Scale.
6. STATE OF WEATHER. *b* blue sky, *c* detached clouds, *d* drizzling rain, *f* fog, *g* gloomy, *h* hail, *l* lightning, *o* overcast, *p* passing showers, *q* squally, *r* rain, *s* snow, *t* thunder, *v* visibility, *w* dew (wet).—The letters are repeated to indicate any increase over the average of their signification.
7. RAIN, in inches, tenths and hundredths.

Fig. 1.15 The first meteorological report published by the Hong Kong Observatory on 31 January 1884, cf China Mail, *31 January 1884.*

圖 1.15 以香港天文台名義公開發表的第一份天氣報告，《中國郵報》，1884年1月31日。

February was generally the coldest month of the year. The lowest monthly mean minimum temperature ever recorded was 11.7°C in 1886. The hottest month was July. The highest monthly mean temperature ever recorded was 29.7°C in July 1967. For the entire 112-year period, the mean annual temperature was 22.6°C. When the 1853 to 1883 period is compared to the two periods of 1884 to 1939 and 1947 to 2002, it shows a similar distribution in the mean temperature. The coldest and the hottest months were also February and July respectively, with the annual mean temperatures ranging from 21.4 to 24.0°C.

Rainfall

According to the 112 years of records of the Observatory, from the period of 1884 to 1939 to the period of 1947 to 2002, the average yearly rainfall was 2,221 mm.[22] The distribution of the annual rainfall was not uniform. The rainy season was from May to September, and June had the largest amount of rainfall (404.1 mm). August was the second wettest month, with 388.7 mm, followed by July's 367.4 mm and May's 294.4 mm. The rainiest month was May 1889 when 1,241 mm of rain fell. This was higher than the annual rainfall of 1895 (1,164 mm) and 1963 (90l mm). The dry season lasted from November to February. The average monthly rainfall for these four months was less than 50 mm. The 112-year records show that the highest recorded annual rainfall was 3,343 mm in 1997. The lowest recorded annual rainfall was the 901 mm in 1963. In 52 years of the period, rainfall was less than the annual average of 2,221 mm. That means 54% of the years had above average annual rainfall. Eighty-two years had annual rainfall in excess of 1,900 mm (73%), and 75 of those years had yearly rainfall of more than 2,000 mm (67%).

When there is too much rain during the rainy season, it is a common phenomenon for rice fields to be flooded or damaged. As much of the Hong Kong's rock structure is made up of granite, rainwater drains easily away. In addition, Hong Kong has no important rivers or lakes, so when rainfall is low, crops will require artificial irrigation. Apart from hindering agricultural development, the uneven distributions of rainfall also has a direct impact on the daily lives of the ordinary people.

Relative Humidity

Records of relative humidity were quite detailed for the years of 1884 to 2002, except for the war period of 1940 to 1946, when there was a break in such records. The average monthly relative humidity in the pre-war period of 1884 to

氣溫

自天文台成立以後，有關氣溫的量度變得更加仔細；量度的次數增加了，量度的要求也提高了，現今氣溫的量度是每分鐘進行的。以下表1.7的資料只取每月的平均數作分析，1884至2002年的氣象紀錄顯示(其中1940至1946年因戰爭關係資料闕如)，112年來本港每月氣溫的概況。

表 **1.7** 每月平均氣溫 (1884–2002)

月份	溫度 (攝氏)	月份	溫度 (攝氏)
1	12.2–18.3	7	26.7–29.7
2	11.7–19.2	8	26.4–29.5
3	13.9–21.3	9	25.8–29.0
4	18.5–24.8	10	23.5–26.4
5	23.8–28.2	11	19.1–23.2
6	25.5–28.8	12	14.5–21.3

整體來說，全年每月平均氣溫以2月最冷，紀錄中最低月平均溫度為攝氏11.7度；最炎熱的月份為7月，最高月平均氣溫為攝氏29.7度。個別月份的平均氣溫以1968年2月的攝氏11.7度最低，以及1967年7月的攝氏29.7度為最高。1884至1939年及1947至2002年期間的平均溫度為攝氏22.6度。倘將兩段時間與1853至1883年的紀錄比較，則看到不同時期的平均氣溫分佈的情況相約：2月及7月同樣是平均氣溫最寒冷及最炎熱的月份，全年平均氣溫同樣是介乎攝氏21.4至24.0度之間。

降雨量

香港的氣候溫濕多雨，又據香港天文台1884至1939年，1947至2002年的紀錄，112年間年均降雨量為2,221毫米，[22] 年降雨量的分佈並不平均，一般雨季集中於每年的5月至9月，而雨季中又以6月的平均降雨量最多，達404.1毫米；其次是8月，有388.7毫米；7月367.4毫米；5月294.4毫米。最多雨量的月份最高紀錄為1889年5月，該月降雨量竟高達1,241毫米，較1895年全年降雨量1,164毫米及1963年的901毫米為多。每年的11月至翌年的2月為旱季，降雨量明顯偏低，這四個月的月平均降雨量均不超過50毫米。根據這112年的紀錄，年降雨量最高的是1997年的3,343毫米，最少雨的是1963年的901毫米。年降雨量低於平均數2,221毫米以下的有52年，佔46%，即54%的年降雨量較平均數為多。而多於1,900毫米者有82年，佔73%；多於2,000毫米的有75年，佔67%。

1939 and the post-war period of 1947 to 2002 was studied. For the first period, the driest month was January 1918 when the monthly mean relative humidity was 51%. The most humid month was March 1884, with a monthly mean relative humidity of 92%.

For the period of 1947 to 2002, the average monthly relative humidity ranged from 69% to 84%. The average relative humidity was lowest in December at 69%, while the months of April and May had the highest relative humidity of 84%. For the period of 1947 to 2002, the average yearly relative humidity was between 75% to 83%. During these 56 years, the most humid month was April 1954 with a reading of 91%, while January 1963 was driest with a mean monthly relative humidity of 45%.

Conclusion

From the available meteorological data, it can be seen that Hong Kong's climate is largely humid and rainy. Although it is not entirely pleasant all year round, it is nevertheless bearable for the people in southern China. For Hong Kong's long-term development, the major impediments were posed by typhoons and the numerous rainstorms in summer. In a society where fishery and agriculture underpinned the economy, severe losses were inflicted when the typhoon and rainy season began. Harvests were badly affected and fisherman had to stop fishing, not to mention the loss of human lives.

At a time when economic conditions and natural science were not fully developed, society was very much dependent on the blessings of nature. Due to the inability to foretell natural disasters and the damage that such disasters could inflict on society, natural disasters have all along been regarded as punishments from Heaven. In Chinese history, records and discussions of natural disasters were made in an indirect manner, and were often treated as a taboo. Reporting of natural disasters placed emphasis on their horrible nature and destructiveness; little attention was paid to their impact on social development. With the advance of science, the ability to take preventive measures against natural disasters has increased, which has helped to mitigate damages caused by such calamities. Memories of past suffering are being forgotten gradually. The way people overcome the challenges of nature to maintain sustainable development in society is a reflection of social evolution. Natural disasters are not simply a manifestation of misfortune, they also lead to opportunities for future success. A summary of the major natural disasters that occurred in the nineteenth and twentieth centuries, presented in the next chapter, should not be taken at their face value, but should be considered in the context of the meanings and revelations they can offer.

雨季雨量太多，使農田被淹沒或損毀的情況相當普遍。由於本港的土壤大多屬花崗岩，汛期間的雨水極易流失，不能儲存，加上本地沒有主要的河流及湖泊，故旱期雨水稀少時，農作物只能依賴人工灌溉，方能生長正常。雨量分佈不均的情況，除不利農業發展外，對一般市民的日常生活亦有直接的影響。

相對濕度

1884至2002年相對濕度的紀錄，除1940至1946年間因戰爭關係而資料缺乏外，其餘有關紀錄均相當詳盡。為方便作一整體報導，現只就每月平均相對濕度分析。由於資料在1940年中斷，故分析亦分為兩部分：1884至1939年為上半部，1947至2002年為下半部。1884至1939年間，最乾燥的月份為1918年1月的51%，最潮濕的月份則以1884年3月的92%為代表。1947至2002年間，本港月平均相對濕度介乎69至84%之間，其中又以12月的月均濕度69%最為乾燥；而4月及5月的84%最為潮濕。1947至2002年各年全年平均相對濕度大抵為75至83%。1954年4月為1947至2002年56年來單月最潮濕的月份，相對濕度高達91%，而1963年1月的45%則為單月最乾燥的月份。

小結

縱觀香港自然氣候的資料，大部分時間溫濕多雨，氣候雖不算四季宜人，但仍頗易為久居南方的中國人接受。對香港長遠發展最為不利的客觀自然條件，為 每年夏季吹襲本地的颱風及連場暴雨。以漁農業為經濟主導的社會，每逢暴風雨季節，必面臨相當嚴重的損失：農作物歉收、漁民停止捕魚作業，而人命傷亡，更不計其數。在社會經濟狀況及自然科學尚未完全發達的年代，人類的生存，仰賴着上天的恩賜；自然災害的不可預知性及其對人類社會所帶來的破壞，一直被視為上天對人類的懲罰。史書對天災的記載及討論，多用隱晦忌諱之詞，而有關自然災害資料的記述亦主要集中在災難的恐怖性及破壞力，甚少關注其與社會發展的關係。隨着科學的進步，人類預防自然災害的能力日漸提高，災難的可怕性亦相對減低，大家也漸漸忘記了這些痛苦的回憶。其實人類如何戰勝大自然的挑戰，使社會能繼續不停的前進，正是社會進步的寫照。自然災難不應只代表不幸，同時亦揭示了成功的契機，因此，以下有關十九世紀中葉至二十世紀末葉歷次自然災害的綜述，就蘊含着多重意義。