Selected Papers of the Fourth Conference on

East Asia and Western Pacific Meteorology and Climate

WORLD SCIENTIFIC SERIES ON METEOROLOGY OF EAST ASIA

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FOREWORD

In the past several decades, considerable progress has been made in the study of the meteorology of East Asia and surrounding areas. The progress arises both from the general advancement in the various fields of atmospheric sciences and the increased international exchanges and related activities that have helped to disseminate a significant amount of knowledge of the meteorology of East Asia to the world scientific community. However, the vast majority of East Asian meteorologists are not English-speaking, and countries within East Asia and surrounding regions have different languages. Thus, communications and exchanges are still hampered by language barriers. The purpose of this new Series on Meteorology of East Asia is to provide a medium to help disseminate the meteorological research in East Asia to the English-speaking world, and to facilitate the exchange among all scientists in this field. As part of the effort, World Scientific Company (WSPC) has agreed to assist in the English editing of manuscripts authored by non-English scientists. It is hoped that this book series will encourage the publication of important advances in East Asian meteorology regardless of the native language of the scientists involved, and thereby bring about increased development of East Asian meteorology and related applications.

The plan for the book series is to publish three types of volumes: selected papers from major conferences, invited review articles, and monographs. Volume 1 is an example of the first type. Volume 2, which is a collection of invited reviews on the East Asian monsoon that will be published next, is of the second type. Other volumes of all three types are being planned. All fields of meteorology and related sciences are potential topics for the series. Scientists who are interested in contributing to the series, whether as an editor or an author, are encouraged to contact one of the members of the Editorial board (listed in inside cover).

I wish to thank all members of the Editorial board, from both East Asia and the U.S., for their devotion to the purpose of this endeavor; and to Professor K. K. Phua, Chairman cum Editor-in-Chief of WSPC, whose vision on the importance of meteorological sciences for the

large geographic area and large population of East Asia and the surrounding regions has led to the initiation of this book series.

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PREFACE

When the participants of the Fourth Conference on East Asia and Western Pacific Meteorology and Climate assembled in Hangzhou 26-28 October 1999, they were in effect celebrating the tenth anniversary of an endeavor that had a modest beginning in Hong Kong. The original idea for such a conference germinated in Hong Kong in 1987-88 during visits by Professors Tao Shiyan and Ding Yihui of the Chinese Academy of Sciences, Professor Ching-Yen Tsay of National Taiwan University, and Professor C.-P. Chang of Naval Postgraduate School. They noted that there were language and geographical barriers that prevented efficient exchanges among scientists studying East Asian meteorology. A bilingual conference would help to reduce these barriers. As the discussion progressed, the idea was warmly embraced by several meteorological community leaders, including Mr. Patrick Sham of Hong Kong Observatory, Dr. Richard Anthes of the University Corporation for Atmospheric Research, and the late Professor Zou Jingmeng, then President of the World Meteorological Organization.

In July 1989 the first conference in this series took place in Hong Kong. It was run with the innovative bilingual approach, which allowed both Chinese- and English-speaking scientists from various regions of East Asia and across the Pacific to come together, and share and discuss their research. It also proved to be an invaluable networking opportunity leading to a rapid growth of interaction and cooperation among a diverse group of scientists in the decade that followed. The enthusiastic participation at the fourth conference as well as the breadth and depth of the presentations were a testimony to this series of conferences coming of age.

The Conference in Hangzhou broke new ground in a number of ways. Sessions on remote sensing, atmospheric physics and chemistry as well as the impact of aircraft emissions on atmospheric composition were introduced, on top of the traditional topics like typhoons, rainstorms, monsoon and climate. Part of the conference was held concurrently with the Symposium on the Severe Rainstorm in 1998, a subject of great interest to meteorologists

because of its major impact on China in the previous year. The influence of the Conference was thus amplified as it involved some 200 participants during the joint sessions.

This volume contains a collection of selected papers in English although many were originally presented in Chinese during the Conference. We hope that this would make available to the global scientific community the body of knowledge on the various aspects of the meteorology of the East Asia and Western Pacific region as represented by the transactions at the Conference.

The Conference owed its success to the able work of the Organizing Committee headed by Professor Ma Henian. It also had the benefit of financial support from the Natural Science Foundation of China and the University Corporation for Atmospheric Research, U. S. A. Many scientists served as anonymous referees to review and select the papers; they devoted much time to work with the editors in suggesting ways to improve the papers accepted for this publication. Colleagues of the Hong Kong Meteorological Society led by Mr. Y. K. Chan helped with the technical and language editing. The contributions of all these parties are gratefully acknowledged.

Finally, I wish to thank the World Scientific Publishing Company (WSPC), who extended its tradition of publishing the Proceedings of the previous conferences one step further and made this collection of selected papers the first volume of the new World Scientific Series on Meteorology of East Asia.

C Y Lam
Chairman
Hong Kong Meteorological Society

CONTENTS

Foreword	v
Preface	vii

Monsoon Observations

The Global Monsoon Systems	3
<i>Qingcun ZENG</i>	
The SCSMEX/GAME Sounding Networks and the Onset of the 1998 Asian Summer Monsoon	6
<i>Richard H. JOHNSON and Paul E. CIESIELSKI</i>	
Relationship between the Planetary-scale Circulation over East Asia and the Intensity of the South Asian Summer Monsoon	17
<i>Jianjun XU and Johnny C. L. CHAN</i>	
Wind Changes over the Western Pacific	27
<i>W. Timothy LIU, Xiaosu Xie, Wenqing TANG and Son V. NGHIEM</i>	
Interannual Variability of the Timing of the South China Sea Summer Monsoon Onset and Its Possible Mechanisms	38
<i>Mong-Ming LU and Yun-Lan CHEN</i>	

Climate

Mechanism of ENSO-Monsoon Interaction during Mature-Decay Phases of ENSO Cycle	49
<i>Bin WANG, Renguang WU and Xiouhua FU</i>	
Impact of Land Surface Processes on Summer Climate	64
<i>Guoxiong WU, Lan SUN, Yimin LIU, Hui LIU, Shufen SUN and Weiping LI</i>	
Impact of ENSO on the Variability of the Asian-Australian Monsoons	77
<i>Ngar-Cheung LAU</i>	
Simulation and Prediction of the Regional Climate and Stream-flow in Taiwan	86
<i>Ming-Chin WU, Shyh-Chin CHEN and Ching-Pin TUNG</i>	

Summary of COSMIC and Applications to Meteorology and Climate	91
<i>Richard A. ANTHES and Ying-Hwa KUO</i>	
ENSO Occurrence and Anomalies of Sub-surface Ocean Temperature in the Pacific Warm Pool	108
<i>LI Chongyin and MU Mingquan</i>	
Impact of El Nino and La Nina on Precipitation and Air Temperature of Macao	122
<i>LOU Mei Meng, FONG Soi Kun and HAO I Pan</i>	
Relationship between SSTA in the Western Pacific and the June Precipitation in the Mid and the Lower Changjiang Valleys	131
<i>QIAN Yongfu, WANG Qianqian, WANG Yehong and ZHAO Yuchun</i>	
Analysis on Correlation and Causes of Monthly Precipitation and Droughts/Floods on Both Sides of the Strait from 1951 to 1998	143
<i>CHEN Juying, WANG Yuhong and XIONG Minquan</i>	
Pacific Climate Information and Prediction System (PCIPS) — A New Project in the U.S. Climate Prediction Center	151
<i>Yuxiang HE and Anthony G. BARNSTON</i>	
Theoretical Studies	
Tropical Tropospheric Biennial Oscillation and ENSO	167
<i>C.-P. CHANG and Tim LI</i>	
Nonlinear Equatorial Kelvin Waves and CISK	180
<i>Han-Ru CHO</i>	
Using the Equivalent Geopotential and Geo-streamfunction to Represent the Pressure Gradient Force in Terrain-following Coordinates over Mountainous Area	193
<i>Qiu-shi CHEN</i>	
Typhoon	
A Statistical Analysis of Typhoons Affecting Taiwan in 1897–1996	211
<i>Shinn-Liang SHIEH and Shin-Ting WANG</i>	
On the Formation of the Hurricane Eye	219
<i>Da-Lin ZHANG, Yubao LIU and M. K. YAU</i>	

Systematic Approach for Tropical Cyclone Track Forecasting with Dynamical Model Selective Consensus	228
<i>Russell L. ELSBERRY and Lester E. CARR, III</i>	
Performance of NOGAPS on the Predictions of Tropical Cyclones Using different Convective Parameterization Schemes	237
<i>Melinda S. PENG and Timothy F. HOGAN</i>	
An Empirical Orthogonal Function Analysis of the Characteristics of Typhoon Rainfall in the vicinity of Taiwan	244
<i>Tien-Chiang YEH</i>	
A Numerical Simulation of the Rainfall Associated with Typhoon Herb (1996) Using the PSU/NCAR MM5	252
<i>Chun-Chieh WU, Tzu-Hsiung YEN, Ying-Hwa KUO and Wei WANG</i>	
A Preliminary Study of Environmental Momentum Influences on Tropical Cyclone Formation	261
<i>Cheng-Shang LEE and Chii-Horng LEE</i>	
Mesoscale Meteorology	
Convection and Local Circulation under the Influence of Meiyu Front over Northern Taiwan	275
<i>George Tai-Jen CHEN</i>	
Numerical Simulation of the Mesoscale Convective System Observed over Taiwan Strait on 7-8 June 1998	293
<i>ZHANG Qinghong, Kai-Hon LAU, CHEN Jay-chung and CHEN Shoujun</i>	
Doppler Radar Observations of a Quasi-Stationary Mesoscale Convective System and the Associated Vortex	302
<i>Ben Jong-Dao JOU</i>	
Mesoscale Phenomena Observed by Wind Profiler during HUAMEX IOP608	311
<i>LI Chenguang, LI Yaping and TAO Zuyu</i>	
The Application of GPS Data to Synoptic Analysis	317
<i>YANG Hongmei, XU Baoxiang and ZHOU Xiuji</i>	
Test of the Application of Satellite Remote Sensing Land Vegetation Data in Mesoscale Simulation of Heavy Rainfall of Southern China	323
<i>WANG Pengyun and Xiao Qianguang</i>	

Preliminary Study on the Flow Structure of the Strong Precipitation on June 9, 1998 in Changle Area during HUAMEX IOP#6	331
<i>JIANG Haiyan, GE Runsheng and ZHU Xiaoyan</i>	

The Results of Different Cumulus Parameterizations in the Rainstorm Process Simulation	340
<i>YUEN Iek Chong, HAO I Pan, KU Chi Meng and Antonio VISEU</i>	

Torrential Rain

The System Distribution and the Circulation Features of the Rainstorms during the South China Rainstorm Experiment in 1998	353
<i>WANG Yongming, SU Baixing and CHANG Yue</i>	

A Synoptic Study of Heavy Rainfall over Taiwan	360
<i>Chia-Chung YU</i>	

Short-term Rainfall Forecasts Using the Regional Spectral Model (RSM): Performance and Verification	369
<i>W. K. WONG, H. LAM, C. C. LAM and C. K. CHOW</i>	

A Study of Heavy Precipitation in Taiwan during the Mei-yu Season	379
<i>Koung-Ying LIU and Pei-Chen CHANG</i>	

Preliminary Analysis of Ground-Based GPS Observations in Huanan Torrential Rainfall Experiment	386
<i>XU Baoxiang, ZHOU Xiuji, LI Yanxing, HE Ping, WANG Rong and SONG Chunmei</i>	

Preliminary Performance Evaluation of a Rainstorm Nowcasting System	390
<i>Edwin S. T. LAI and P. W. LI</i>	

Air Pollution

Emission Inventory of Civil Aircrafts over Taiwan	403
<i>Po-Shiung LIN, Wei-So SUN and Jen-Ping CHEN</i>	

Numerical Simulation of the Seasonal Variation of Troposphere Ozone and Future Scenario Forecast in China	423
<i>YANG Jian, LI Weiliang and Zhou Xiuji</i>	

Author Index	437
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