



PROCEEDINGS
ICA NATIONAL ATLASES
COMMISSION MEETING

1990 Beijing

ICA 国家地图集委员会会议论文集
北京 1990

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ICA 国家地图集委员会 1990 年北京会议论文集
* 中英文版 *

中国地图出版社出版发行
河北三河艺苑胶印厂印刷

787×1092 毫米 16 开本 14 $\frac{1}{2}$ 印张 365 千字

1991 年 9 月第 1 版 1991 年 9 月第 1 次印刷

印数:1100 册

ISBN 7—5031—0890—8/Z·20 定价:8.00

FORWARD

National Atlases Commission, composed of 13 active members and 28 correspondants, is a subordinate commission of the International Cartographic Association. Under the leadership of the Commission Chairman, Dr. Bengt Restedt, the Commission has made fruitful efforts to conduct various activities. In this term of office, each Commission meeting is held for academic exchange and discussion every year. The first meeting took place in Stockholm / Kiruna in March, 1989 and another meeting was held during Budapest ICA Conference in August, 1989.

The second meeting was inaugurated in Beijing from August 8 to 12, 1990. The third meeting will take place in Leipzig in May, 1991.

The meeting in Beijing, in fact, is an enlarged academic symposium with over 50 participants including 8 members of Commission, 3 other foreign colleagues and more than 40 Chinese colleagues. 35 papers were collected and 26 of them were reported. Most papers deal with national report on national atlas, electronic atlas and national atlas information system. For the purpose of exchange in academic ideas, methodology and techniques, the Commission has formally decided to edit and publish the proceedings of this meeting.

The proceedings were edited by Dr. Timothy Trainor, U.S. Bureau of Census, Senior Engineer Jin Yinchun, Research Institute of Surveying and Mapping, National Bureau of Surveying and Mapping, and Research Assistant Chen Xiaogang, Institute of Geography, Chinese Academy of Sciences, and examined in part by Associate Professor Yan Chongchao, Institute of Geography, Chinese Academy of Sciences. Some individuals from Institute of Geography rendered their assistance to the Proceedings. Professor Liu Yue and me would like to take this opportunity to express our great appreciation to all of them and the authors.

Liao Ke

Professor

Vice-Director of Institute of Geography,
Chinese Academy of Sciences
Active Member of National Atlases
Commission of ICA

FORWARD

The proceedings of the 1990 Meeting of the National Atlas Commission of the International Cartographic Association held in Beijing, China constitute an interchange of technological innovation in atlas production from international participants with national, regional and thematic atlas production achievement in China. The technical papers illustrate advances made by member countries exemplifying the exchange of ideas, methods, technical development, and production techniques among nations in their endeavor to produce atlases useful to their populations.

Authors who contributed to these proceedings should be commended for their efforts to document their respective technological development, philosophical insight, and resourceful themes as they affect the planning, creativity, design, implementation, production, and funding of atlases.

Editing of papers in these proceedings was intended to maintain the flavor and style of the author while adding consistency in the organization and layout of this work. In closing, it is only appropriate that I give special recognition to Ms. Kandy Onsted for her administrative support in preparing these proceedings through her typing, editing, and formatting assistance.

Timothy Trainor
Editor

SPEECH AT THE OPENING CEREMONY OF
THE NATIONAL ATLASES COMMISSION MEETING OF ICA

Liao Ke

Vice-Director of Institute of Geography, Chinese Academy of Sciences,
Active member of the National Atlases Commission of ICA

Ladies and Gentlemen:

As a member of the National Atlases of Commission of International Cartographic Association, I feel much honoured today to have a chance to be the host of the Commission Meeting held in Beijing. First of all, allow me to extend my warm welcome to the distinguished guests, colleagues and old friends of mine who come from afar. Now let me introduce the Chairman and Vice-Chairman of National Atlases Commission, Dr. Bengt Rystedt, Dr. Eva Siekierska.

Today, we specially invite many leaders of the relevant departments and famous geographers and cartographers to attend this opening ceremony.

They are Professor Sun Honglie, Vice-President of the Chinese Academy of Sciences, Chairman of the Editorial Committee of National Physical Atlas of China.

Professor Huang Bingwei, President of the Council of Geographical Society of China, Academic Member of Geoscience, Chinese Academy of Sciences, Honoured Director of the Institute of Geography, Chinese Academy of Sciences.

Professor Chen Shupeng, Chairman of the Cartographic and Geographic Information System Commission of the Geographic Society of China, Academic Member of Geoscience, Chinese Academy of Sciences, Honoured Director of the Remote Sensing Application, Chinese Academy of Sciences, Director of the National Laboratory of Resources and Environment Information System, Institute of Geography, Chinese Academy of Sciences.

Professor Zuo Dakang, Director of the Institute of Geography, Chinese Academy of Sciences.

Professor Zhang Xiaorong, Secretary General of the Chinese Society of Geodesy, Photogrammetry and Cartography.

Professor Zeng Shiyong, advanced age of 92, the Vice-Chairman of the Editorial Committee of the National Atlas of China, the older generation of the Cartographic circles of China.

The meeting is supported by following units: the Institute of Geography, Chinese Academy of Sciences, the Editorial Committee of the National Atlas of China, the Cartographic and GIS Commission of the Geographic Society of China and the

Cartographic Commission of the Chinese Society of Geodesy, Photogrammetry and Cartography.

The attendants of the meeting, except eight members of the National Atlases Commission and three foreign colleagues, there are about forty Chinese Cartographers. The Chinese Cartographers regard the meeting as a good opportunity to communicate with foreign colleagues. We would like to communicate with the colleagues from Sweden, Canada, United States, the Netherlands, Spain, India, The Soviet Union, Czech and Slovakia and others on the theory and new techniques of the compilation of the national atlas and other types of atlas.

Now let us welcome Professor Sun Honglie to speak.

Now let us invite Professor Chen Shupeng to speak.

Now let us invite Professor Zhang Xiaorong to deliver the address.

Now let us welcome Professor Zuo Dakang to deliver the address.

Now let us invite Dr. Bengt Rystedt, the Chairman of the National Atlases Commission of ICA, to speak.

**SPEECH AT THE OPENING CEREMONY OF
THE NATIONAL ATLASES COMMISSION MEETING OF
INTERNATIONAL CARTOGRAPHIC ASSOCIATION**

Sun Honglie

Vice President, Chinese Academy of Sciences

Mr. Chairman, Ladies and Gentlemen:

It is a pleasure for me to attend the ICA National Atlases Commission meeting in Beijing. Please allow me, on behalf of the Chinese Academy of Sciences, to express my warm congratulation!

Chinese government pays great attention to the compilation of national atlas. As early as in the 1950's, under the leadership of the late vice president of Chinese Academy of Sciences, Prof. Zhu Kezhen, the compilation of the national atlas was listed as one of the long term key projects in science and technology. Now, a number of institute of Chinese Academy of Sciences are responsible for this project.

For a long time, our Academy has organized a lot of comprehensive scientific investigations in various regions, such as Xinjiang Autonomous Region, Heilongjiang Basin, Inner Mongolia plateau, Qing-Zang Plateau, tropical region, Loess Plateau, etc. These investigations have accumulated valuable materials for compiling national atlas and establishing national geographical information system. In addition, Chinese Academy of Sciences has been paying attention to the application of remote sensing and the establishment of ecological experimental stations. As we know, all these techniques and achievements are of utmost importance for the compilation of national atlas. I believe the Chinese National Atlas will provide scientific basis for resources utilization, environmental protection, economic and social development.

I hope my Chinese colleagues present here will take this opportunity to learn from foreign friends, and our national atlas will get great promotion through this meeting.

Wish the meeting every success and all participants enjoy your stay in Beijing.

Thank you.

GREETINGS TO THE OPENING SESSION OF NATIONAL ATLAS OF SPECIAL COMMITTEE

Chen Shupeng

Special Committee of Cartography and Geographical Information System,
Geographical Society of China

Please let me give my warm congratulations on the opening of the session on behalf of the Special Committee of Cartography and Geographical Information System, and the Special Committee of Environmental Remote Sensing, Geographical Society of China. I Warmly welcome all of you, the well-known experts in cartography from various countries, to Beijing. This session will contribute much to the program of the National Atlas of China under editing and even to the development of Chinese cartography and GIS. At the same time, we will try our best to play host so as to make all of you have deeper understandings of Chinese cartographical development.

China is one of ancient countries of cartography. The exquisite maps about 2,000 years ago were either colorfully drawn on spun silk or inlaid in copper plates. Their material objects have been preserved up to now. A general map of China carved on stone plate about 800 years ago is still appropriately collected in Beilin, Xi'an. China is also one of active participants in national atlas. The Great General Atlas was published in the 1930's. In the 1960's, the Natural Atlas of China, an atlas of more than 20 provinces and regions, and the Atlas of Geology, Climate, and Hydrogeology had been compiled. In the 1980's, the national atlas program, including eight volumes of atlases, was reformulated. Of these atlases, the agricultural atlas was the first one coming into being. Many provincial territory resource atlases, economic atlases, or general geographical atlases have been published successively.

The requirements of national construction have prepared a good environment for the development of cartography in the 1990's. The basic topographic map is under updating for the third time based upon aerial photogrammetry. Serial thematic mapping by satellite and aerial remote sensing is fairly common in many professional institutions. The construction of geographical information system and map database had begun to take shape. The atlas has been accepted by people more and more extensively. In the fields of teaching and learning, tourism, agriculture, medical science, environmental science, engineering science, space science, history, culture, economics and religion, the map has been a favorable information carrier and transmission tool. Various kinds of national atlases have been published or are under editing. Their active participation not only has broadened the application fields of cartography, but is helpful for the intersection among disciplines and international exchange. As a cultural media for the progress of human beings, the future of maps is promising and boundless.

We are warmly expecting the cooperation of the international and national cartography experts. I wish the convention success!

**SPEECH AT THE OPENING CEREMONY OF
THE NATIONAL ATLASES COMMISSION MEETING OF
INTERNATIONAL CARTOGRAPHIC ASSOCIATION**

Zuo Dakang

Director of the Institute of Geography,
Chinese Academy of Sciences

Commission Chairman. Ladies and Gentlemen:

First of all, allow me on behalf of the Institute of Geography, Chinese Academy of Sciences to extend our warm welcome to our distinguished guests who attend the meeting of the National Atlases Commission of ICA and offer my sincere congratulation on the meeting held in Beijing.

The Institute of Geography is a comprehensive geographic research center of China. The major research fields of our Institute are the rational utilization of national water and soil resources, the evolution law of environment and its forecast, the regional comprehensive development and treatment, complex mapping and geographic information system. The compilation of national atlas, thematic atlas, regional comprehensive atlas and the establishment of national and regional geographic information system are one of the important research projects in our Institute. Twenty five years ago, We compiled and published the National Physical Atlas of the People's Republic of China. In recent years, We also published the Population Atlas of China and the Atlas of Endemic Diseases and Their Environments in the People's Republic of China. And we will publish the Drinking Water Atlas of China, Ecological Environment Atlas of Beijing and Tianjin, Qinhai-Xizang Plateau Atlas of China, and Land Use Map of China at the scale of 1 : 1,000,000 etc. Now we are compiling the National Physical Atlas of China and National Economic Atlas of China. We also have made a distinct progress on the research of national and regional geographic information system.

We will celebrate the 50th anniversary of the founding of our Institute in August. All of you, our colleagues are welcome to our Institute.

At last, my best wishes to the complete success of the meeting.

**SPEECH AT THE OPENING CEREMONY OF
THE NATIONAL ATLASES COMMISSION MEETING OF
INTERNATIONAL CARTOGRAPHIC ASSOCIATION**

Zhang Xiaorong
Secretary General of CSGPC

Respectful Chairman Mr. Rystedt,
Distinguished Guests,
Dear Ladies and Gentlemen:

On behalf of the Chinese Society of Geodesy, Photogrammetry and Cartography, I am honoured to express my cordial welcome to you to participate the thematic symposium being held in Beijing, sponsored by the National Atlases Commission of ICA.

The compilation and publication of the national atlas are the great project which shows the scientific and technical level of the nation's economy, geography, cartography, printing and many other aspects. The rapid development of new technology, such as remote sensing, computer and information system as well as the theory of cartography, brings the compiling and printing technology of national atlas to a new stage. We are now working on the compilation of new China's National Atlases. I have ever seen some excellent national atlases produced by the national members of ICA. I am sure that the symposium would promote the technical development in concern with national atlas compilation and printing and will certainly give a good influence over the Chinese National Atlas compilation.

I would like to express my best wishes to the complete success of the symposium and wishes everyone a good health!

LETTER OF CONGRATULATIONS

Mr. Chairman,
Prof. Liao Ke,
Dear Colleagues:

On behalf of the ICA Executive Committee, I feel much honored to express warm congratulations to the opening of the International Cartographic Meeting sponsored by ICA Commission on National Atlases. After the ICA Executive Committee Meeting held in Wuhan in last April, this is another meaningful academic activity taking place in China in the same year. The compilation and publication of national atlases are important undertaking in the systematic engineering of mapmaking. I firmly believe that the exchange of views and ideas in cartographic theories and practice among different countries will surely promote the advancement of the world atlas cartography.

I wish you every success of the meeting.

Hu Yuju
Professor
Vice-President of ICA

**SPEECH AT THE CLOSING CEREMONY OF
THE NATIONAL ATLASES COMMISSION MEETING OF
INTERNATIONAL CARTOGRAPHIC ASSOCIATION**

Liao Ke

Vice-Director of Institute of Geography,
Chinese Academy of Sciences,
Active Member of the National Atlases Commission

Mr. Chairman, Ladies and Gentlemen:

From August 8th to now, we have finished all academic activities of the National Atlases Commission Meeting held in Beijing except the working plan of the commission members. I take this opportunity to express my sincere appreciation to our colleagues and guests from home and abroad. The exhibitions and papers of this meeting show that we have made great achievements on the national atlases and other kinds of atlases. They also show the importance and bright future of the electronic atlas and national atlas information system.

We regard this meeting as an important exchange on cartography between China and other countries, and we hope we will further the exchange and cooperation between Chinese cartographers and other countries' cartographers.

I also take this opportunity to send some atlases compiled recently by our Institute to every foreign colleague.

At last, please excuse us for our deficient reception and arrangement.

I wish all of you a good journey

CLOSING REMARKS

Bengt Rystedt
Chairman, National Atlas Commission

We have just reached the end of the paper sessions. Before we close that part of the meeting of the ICA Commission on National Atlases in Beijing, I would like to make a short summary and to express my impression of the meeting so far.

We started with a well timed opening ceremony chaired by our main host Professor Liao Ke, where our sponsoring organization welcomed us. The speeches gave the meeting the right atmosphere of friendship and openness. They really gave us the feeling that we were deeply welcomed.

After the opening ceremony, we had the favor to visit an exquisite exhibit of not less than 68 atlases of China. When I first discussed the possibility to have a commission meeting in China with Professor Liao Ke, I only had a feeling that there were a lot of atlas activities going on in China. However, I hadn't the slightest idea that such tremendous work was going on. We saw a lot of cartographic art, with excellent use of colors. We were all impressed and as long as the exhibition was open, all breaks were used for further visits. You have good reason to be proud of your work.

The first paper session, National Reports was opened with three papers, where the General Atlas, the Agricultural Atlas and the Economic Atlas of China were described in more detail. After that, we got short views of the current atlas work in the following countries:

- * Spain (Fernando Aranaz)
- * Chechoslovakia (Tomas Beranek)
- * India (R.K. Banerjee)
- * USSR (Oleg A. Evteev)
- * Sweden (Bengt Rystedt)
- * USA (Timothy Trainor)
- * The Netherlands (Ferjan Ormeling) and
- * Canada (Eva Siekierska)

In addition, the chairman summarized the report from Israel, whose delegate was not able to attend the meeting. Altogether, these reports gave us a good overview of the current activities in national atlas production. The presentations gave us a common platform for the following sessions. These were:

- * Complication and design of thematic and regional atlases
- * Electronic atlases
- * Production Systems

- * National Atlas Information Systems
- * Production of Regional Atlases

All sessions ran very smoothly with educational and informative papers. Also, new ideas were brought to the audience, which resulted in fruitful discussions. I will not reference all papers. I want to pick only one, which in my opinion was the highlight of the meeting. I don't think it is a surprise that my choice is:

"The Statistic Cartography Expert System and it's Application in Compiling the Economic Atlas of China," by Zhou Yingming. The Institute of Geography Chinese Academy of Sciences.

His paper is in the front of the development of expert systems in cartography. My congratulations to both of you and to the Institute, who obviously recognize your work as an exquisite one.

We had also the pleasure to visit the Academy of Science in Beijing and their Institute of Remote Sensing Application, and the Lab of Resources and the Environment Information System, which included the Lab of Computer Aided Cartography at the Institute of Geography.

Together with the papers, the study visit gave the Commission valuable knowledge for the further work.

I must admit that I'm more than satisfied with the meeting so far. Many thanks to Professor Liao Ke and his staff for their preparatory work, which has paved the way for the success.

Before we go to the closing ceremony, I want to give you some information of the work of the commission. The commission was established at the ICA conference in Morelia, Mexico in 1987. It has a four year mandate of work with a promise to deliver a final report at the next conference in Bournemouth 1991. This report is supposed to have an educational and informative approach. It will also serve as a sourcebook for those who are in the transition from analogue to digital technique in atlas production. The present members of the commission will meet tomorrow morning and decide the contents of the report and the measurements which would be taken to fulfill the mandate of the commission.

VOTE OF THANKS

ICA National Atlas Commission Meeting

Beijing, China

August 11, 1990

I have been asked by our Chairman of the National Atlas Commission to give a vote of thanks to our hosts here in Beijing, China. I will give a hypermedia vote of thanks.

The earth from space looks small. Geographic relationships are closely linked together. As we zoom in on the earth we can see more and more detail until we reach our destination.

The destination of this, the third working meeting of the ICA National Atlas Commission was Beijing, China. The work of the commission could not be possible without the exchange of ideas and technology between representatives of nations.

Early on in our work, Professor Liao Ke offered the hospitality of China to host one of our working meetings. The Commission graciously accepted the invitation. Our stay in China has been productive, interesting, and enjoyable.

The productivity began with inspiring words from Professor Sun Honglie, Professor Chen Shu Peng and other Chinese dignitaries. They emphasized the importance of the work of the National Atlas Commission. Holding our meetings in different countries gives Commission members an opportunity to hear about our hosts' work and to see examples.

The researchers, compilers, geographers and cartographers of the vast number of Chinese atlases are to be commended for their high standard of quality and the significant number of atlases. To say we are impressed is an understatement. Every opportunity of time was spent by attendees at this conference to page through the volumes of printed geographic information. Many of the papers were contributed by our Chinese colleagues. All of us learned from one another.

The technical visit to the Institute of Remote Sensing Application, the Lab of Resources and Environment Information System, and the Lab of Computer Aided Cartography were noteworthy. The productive use of technical equipment by qualified staff was proven by the number and variety of products displayed throughout this conference.

Our stay in China was more than productive. It was interesting and enjoyable. All of us were touched by the long and impressive history of the Chinese people: by climbing the Great Wall built over 2,000 years ago; by journeying into the tomb of emperors past; and by enjoying the serene gardens, lakes, rock formations and beautiful architecture of the Summer Palace.

We shared a traditional and finely prepared banquet with our hosts. The Peking duck was delicious as well as the other 24 courses served to us. We walked among the residents of Beijing as they enjoyed their annual celebration in Beihai Park. Bright lights, a carnival atmosphere, and smiling children added to our entertainment.

In all of this we did our best to acclimate to the Chinese way of life during our brief stay. Our greatest achievement was the mastering of the chopsticks. There is a rumor that our Commission Chairman is replacing his knives, forks and spoons in Sweden with chopsticks that he purchased at the Great Wall.

How can we summarize all of this without special thanks to our hosts here in China. Our hats are off to you and our hearts are open for offering this opportunity to exchange and share technical information so important to our work, and at the same time, experience the Chinese hospitality.

A special thanks must be mentioned to Professor Liao Ke. He has been a very active member of the Commission and represents his nation well at our meetings. He has attended all of the working meetings and has contributed his knowledge and experience accordingly. We say to, Professor Liao, a special thank you for arranging such a fine meeting. The program was full, our minds are full, our tummies are full, and our feet hurt. You did well! At this time I ask you to join with me in showing our thanks in the usual way.

We have a special gift for Professor Liao Ke. This is the first complete version of training material compiled by the ICA Commission on Education and Training in Cartography which is chaired by one of our members, Dr. Ferjan Ormeling. This technical work is a series of exercises that accompanies the textbook entitled "ICA Basic Cartography for Students and Technicians." At this time I ask the Chairman of the ICA National Atlas Commission, Dr. Bengt Rystedt, to make the presentation of this fine work to Professor Liao Ke. *Timothy Trainor*