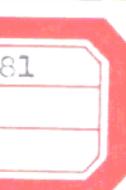




Introduction to Chinese Ecosystem Research Network Chinese Academy of Sciences

中国科学院 中国生态系统研究网络简介

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中国科学院生态网络系统工程办公室



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序

从中国科学院提出建立中国生态系统研究网络(CERN)以来,至今已有 10 年了。在这期间,从 CERN 概念的提出、方案设计,到计划的实施,我们做了大量工作,取得了巨大的成绩。现在,该网络已经成为我院,乃至我国生物科学和地球科学的重要研究基地,并成为全球资源、环境监测系统的重要组成部分。中国科学院具有建立生态系统研究网络的雄厚基础,该网络建成后可为我国可持续发展提供一个强有力的研究、监测和示范方面的支持系统。因此,中国科学院多年来一直将 CERN 的建设和建成后的运行工作列为资源环境领域的一项重要任务,积极予以支持。

CERN 当前的工作涉及建设、监测、研究和示范四方面工作。其中,网络的建设工作是其它各项工作的基础。

“生态网络工程”是国家为支持 CERN 的建立而设立的一项国家“八五”大中型建设项目,总投资 4500 万元。在中国科学院计划财务局和基建局的领导下,经过项目经理、副经理、基建办公室和网络各单位三年多的共同努力,项目已于 1997 年完工。这将为监测我国资源环境动态和农业可持续发展及生态、资源、环境等学科的发展做出重大贡献。

由 CERN 科学委员会秘书处和中国科学院生态网络系统工程办公室联合编辑出版的《中国生态系统研究网络简介》形象地反映了 29 个生态站、5 个分中心和一个综合研究中心在完成该项工程建设后的新面貌和科研实力的充实和完善。它的出版,将为记录、宣传 CERN 的建设成果发挥重要作用。

CERN 目前已由以建设为主转到以研究、监测、示范工作为主的阶段。中国生态系统研究网络所建成的各项设施,必将为出色地完成各项科研任务做出重要的贡献。

中国科学院
副院长 陈宜瑜

1998 年 3 月 31 日

Preface

It has been ten years long since CERN started in 1988. During this period. We have made great achievements on the concept model development, design and implementation of the plan. CERN has become an important basis on the research of bio- and geo-sciences in China, and an essential component of the global ecological networks.

The Chinese Academy of Sciences (CAS) has the strong abilities for the establishment of CERN, which will provide both scientific bases and demonstration models for the sustainable development of China when operated in the near future. CERN, therefore, has been treated as one of the key projects of CAS since late 1980's.

The developments of CERN deal with the aspects of construction, monitoring, research and managerial demonstration, at present. It is obvious that the construction is the base for the implementation of other tasks.

The project "Construction of CERN" was treated as a National Key Project during 1991-1995, and supported by the Chinese government. The total budget of this project is RMB 45 millions (U.S.\$ 5.5 millions) and its duration of implementation was three years from 1993-1995. Through the efficient supports of CAS and the excellent joint work done by all the scientists, technicians and managers, this project had already been finished on the schedule. It will make great contributions to the success of monitoring, research and managerial model of ecosystems and the development of ecology.

The "Introduction to Chinese Ecosystem Research Network", edited by the Secretariat of Scientific Committee of CERN and the Office of CERN Construction, reflects the achievements of the project "Construction of CERN". I would like to pass great thanks to all the staff who made contributions to the edition and publication of this atlas.

CERN is going to focus on the research, monitoring and managerial model of environment and ecosystems as the core tasks from this year. The implementation of the project "Construction of CERN" will provide the solid bases for finishing other tasks of CERN.

Prof. Chen Yiyu
The Vice-President of CAS
March 30, 1998

前 言

经过一年多的努力,《中国生态系统研究网络简介》终于出版了,这是一件值得庆贺的事情。

为了更好地认识并解决区域以上尺度的资源、环境方面的问题,以及发展资源、环境、生态科学,中国科学院从1988年开始建立中国生态系统研究网络(CERN)。目前,该网络由29个农田、森林、草地、湖泊和海湾方面的定位研究站,水分、土壤、大气、生物和水域生态系统5个学科分中心和1个综合研究中心组成。在中国科学院及国家有关部门的领导和支持下,经过一大批科学技术专家和管理专家十年来前赴后继的不懈努力和艰苦卓绝的工作,CERN的各方面工作都取得了巨大的成就。

《中国生态系统研究网络图册》,所反映的是“八五”期间国家大、中型建设工程项目“生态网络工程”所取得的成果。该项目的总投资为4500万元,执行期为1993~1995年。它的目标是为CERN的工作提供基础。

通过“生态网络工程”的执行,完成了单体工程382项,新增建筑面积23874m²,改造面积3134m²,新增工艺设备512台件。我们共建成水文观测设施85个,养分观测设施9个,小气候站观测设施24个,实验室和住房24栋,使每个定位单位都具备了较好的对生态系统的结构、功能、动态和管理进行研究的能力。

这些设施与通过实施“中国环境技术援助项目(A-1,即CERN建设)”这一世界银行项目一起,为CERN长远目标和各项任务的实现奠定了坚实的基础。

目前,CERN已经基本完成了建设阶段的各项任务,而转入以研究、监测各示范工作为主的新阶段。这只是CERN发展的第一步,今后的路程将更长。我们的长远目标是建立一个跨部门的,有更多的站加入,代表了更多类型生态系统的国家层次生态研究和监测网络。为了实现这一目标,还需要我们几代人做长期不懈的努力。

CERN的建设与发展一直是中国科学院资源、环境领域的一项重要任务,一贯得到中国科学院的高度重视与支持。我坚信,经过承担这一任务的全体科技和管理人员的努力,CERN的长远目标一定能够实现!

中国生态系统研究网络科学委员会主席
中国科学院生态网络系统工程项目经理

孙鸿烈

1998年3月31日

Foreword

Through the efforts in the last years, the "Introduction to Chinese Ecosystem Research Network" was published already. It is an important event and worthwhile for celebration.

In order to meet the challenges of understanding and solving the issues on resources and environment at the regional or other larger scales, supported by the Chinese Academy of Sciences (CAS), the Chinese Ecosystem Research Network (CERN) was started to be constructed in 1988. CERN consists of 29 stations on agriculture, forest, grassland, lake and bay ecosystems, 5 sub-centers on water, soil, atmosphere, biological and aquatic ecosystems and one synthesis research center at present. Under the strong supports of CAS and related governmental organizations, with the efforts of hundreds of scientists, technicians and managers, the great achievements on CERN have been made since then.

The achievements of one of the national key construction plans "CERN Construction" are reflected in this book. The total budget of this project is RMB 45 millions (U.S.\$ 5.58 millions), and its duration is three years from 1993-1995. Its long-term goal is to provide the solid bases for implementing the tasks of CERN.

Through the implementation of this project, 85 sites for hydrological study, 9 lysimeter, 24 meteorological study, and 24 buildings of dorm and labs were finished, and with the CERN construction project (China Environment Assistance Project, A-1) supported by the World Bank loan, the sufficient facilities for the studying of structure, function, dynamics and management of ecosystems have been created, which will provide concrete bases for finishing the tasks of CERN in the future.

After finishing the construction plan, the main task of CERN will concentrate on research, monitoring and managerial demonstration from this year. But considering the continuation of the tasks, we still have long way to cover. Our long-term goal is to link more stations from ministries together and make a perfect national ecological network on monitoring, research and managerial demonstration of ecosystems. In order to touch this goal, the efforts through several generations are needed.

Developing CERN has always been considering as one of major tasks in the fields of natural resources and environment of Chinese Academy of Sciences since late 80's. I strongly believe that the goals and tasks of CERN will certainly be finished on the schedule through the efforts of all the scientists, technicians and managers involved in this project.

Prof. Sun Honglie
The Chair of SC-CERN
The President of Construction Plan of CERN
March 30, 1998

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Changwu Agricultural Ecological Station

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Shapotou Desert Experimental and Research Station

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Beijing Forest Ecosystem Research Station

Huitong Research Station of Forest Ecology

Heshan Hilly Land Comprehensive Experimental Station

Dinghushan Research Station of Forest Ecosystem

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Xishuangbanna Station of Tropical Ecology

Inner Mongolia Grassland Ecosystem Research Station

Haibei Highland Frigid Meadow Ecosystem Experimental Station

Donghu Lake Ecosystem Experimental Station

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Jiaozhou Bay Experimental Station of Marine Ecology

The Marine Biology Research Station

Water Sub-Center, CERN

Soil Sub-Center, CERN

Atmospheric Sub-Center, CERN

Biological Sub-Center, CERN

Aquatic Sub-Center, CERN

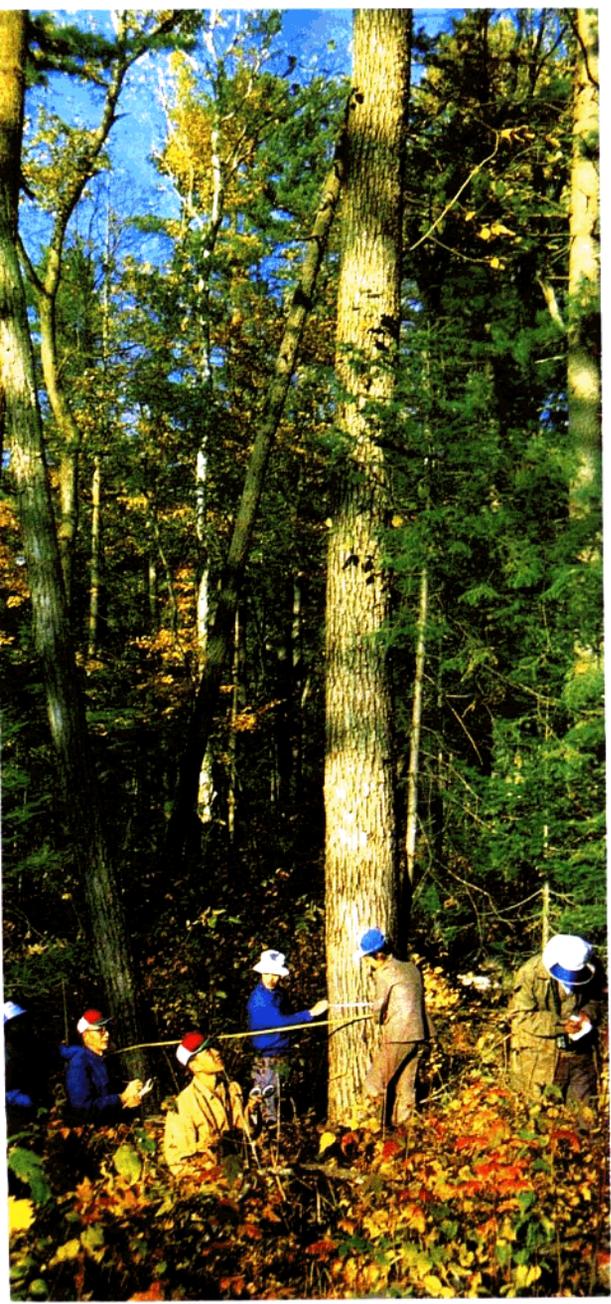
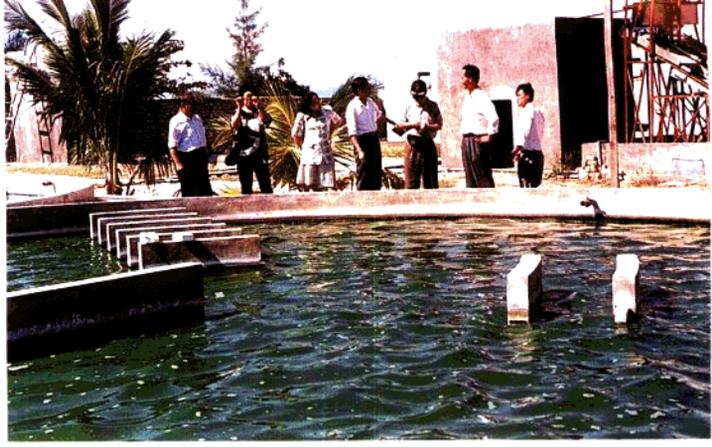
The Synthesis Research Center, CERN



中国生态系统研究网络工作会议及培训活动



分布在全国各地不同类型区的定位研究站





分布在全国各地不同类型区的定位研究站





三江平原沼泽湿地生态试验站

THE ECOLOGICAL EXPERIMENT STATION OF MIRE-WETLAND IN THE SANJIANG PLAIN CHINESE ACADEMY OF SCIENCES

中国科学院三江平原沼泽湿地生态试验站，位于我国东北边陲黑龙江省同江市境内， $133^{\circ} 31' E$ ， $47^{\circ} 35' N$ ，海拔高度 55.40m~56.60m。所在地属温带大陆性季风气候，年均降水量 600mm 左右，年均温度 $1.9^{\circ}C$ ，有效积温 $2300^{\circ}C$ ，无霜期 125 天，植被类型主要有毛果苔草、漂筏苔草、乌拉苔草、甜茅、沼柳、越桔柳、小叶樟、蒙古栎、柴桦等；土壤类型有沼泽土和白浆土。

The Ecological Experiment Station of Mire-Wetland in the Sanjiang Plain, Chinese Academy of Sciences is located at Tongjiang County, Heilongjiang Province, northeast China, $133^{\circ} 31'E$, $47^{\circ} 31'N$, 55.40-56.60m above sea level. It belongs to humid monsoon climate of temperate zone. The mean annual precipitation is 600mm, the mean annual temperature is $1.9^{\circ}C$, the accumulated temperature is $2300^{\circ}C$, and the length of the non-frost period is 125 days. The main types of vegetation include *Carex pseudocurica*, *C. lasiocarpa*, *Glyceria spicilosa*, *Salix brachypoda*, *S. myrtilloides*, *Deyeuxia*

综合实验楼

Integrated experimental building



沼泽观测场
mire observation field



三江平原沼泽湿地生态试验站以三江平原湿地为对象，研究湿地及其开垦后农业生态系统的结构、功能和湿地的环境效应，为湿地的保护和开发利用提供科学依据。

主要研究内容：

沼泽湿地生态系统的结构、功能和系统生产力研究。

沼泽湿地开垦后的农田生态系统研究。

区域农业可持续发展能力和对策(战略)研究。

该站自 1989 年运转以来，承担了国家科技攻关、国家自然科学基金、院重点和基础研究特别支持项目等多项，取得了许多成果：(1)“中国沼泽研究”，获中科院科技进步二等奖；(2)在国内外刊物发表论文 40 余篇，并出版了《三江平原沼泽研究》文集；(3)建立了三江平原湿地生态系统研究数据库。

angustifolia, Betula fruticosa, Quercus mongolica etc..

The main soil types are marshy soil and baijiang earth.

The research object of the Ecological Experiment Station of Mire-Wetland in the Sanjiang Plain, Chinese Academy of Sciences is the wetland in the Sanjiang Plain, including the structure, function, environmental effects of natural wetland and farmland, with the aim of providing the scientific basis for protection, development and utilization of wetland.

The main study subjects include:

- * Study on the structure, function and productivity of wetland ecosystem.

- * Study on the farmland ecosystem derived from mire wetland reclamation.

- * Study on the capacity and policy for sustainable development of regional agriculture.

The Ecological Experiment Station of Mire-Wetland in the Sanjiang Plain was set up in 1989. It has



水分、养分循环试验小区

Experimental plot on water and nutrient cycling



气象观测场

Meteorological observatory

实验室

Laboratory

该站现已建成 930 m² 的水、电、热齐备的综合楼，楼内有水、土、植物分析化验室、微机室。有野外实验地 105 hm²，包括天然沼泽湿地试验场，综合试验场和农田试验场。

该站以我国现代化国营洪河农场为依托。场区水、电、煤气、俱乐部、宾馆、商店、医院等与应俱全，离最近的火车站仅 35km。同时，三江站还有自己的客房及食堂，可接待客座研究人员十多人。

瑞典学者来站交流

Exchange with Sweden Scholars



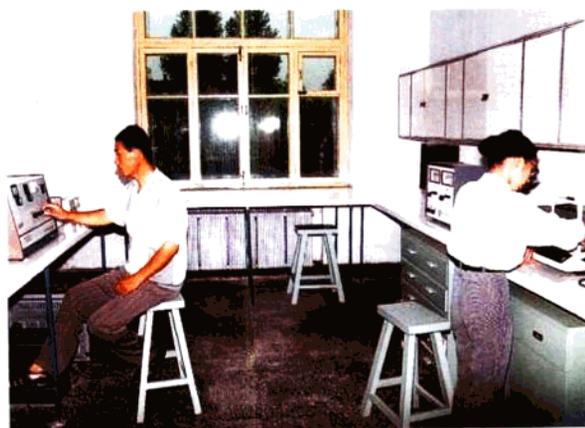
undertaken eleven projects since then, including the key project of national science and technology, the projects of National Natural Science Foundation of China, the key project of Chinese Academy of Sciences and the basic research project with special support, and obtained many achievements. The main achievements are as follows:

The project of "Study on mire in China" won the second prize of scientific and technologic progress of Chinese Academy of Sciences;

Forty papers have been published in domestic or overseas journals, and the symposium of "Study on Mire in the Sanjaing Plain" has been published;

The database of "Study on Wetland Ecosystem in the Sanjaing Plain" has been established.

The Ecological Experiment Station of Mire-Wetland in the Sanjiang Plain has a building with the construction area of 930m² equipped with water,



electricity and heating, where involve water, soil and plant analysis laboratories and a computer room. The station has 105 hm² of experiment field, including natural mire-wetland field, comprehensive ecological field and farmland test field.

The experiment station is supported by modernized Honghe State Farm. Hotel, shopping center, hospital and culture palace are available in the resident area, with electricity and gas supply. It is only 35 km away from the nearest railway station. Meanwhile, the station has its own guestroom and dining room, which can provide accommodation for 11 visiting researchers simultaneously.