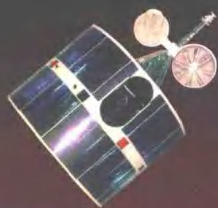


中国气象

METEOROLOGICAL SERVICE IN CHINA





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中国是一个发展中国家,地域辽阔,气候资源丰富,具有热带、亚热带、温带气候和高原高山气候,自然灾害,特别是气象灾害,如暴雨、洪涝、干旱、台风、冰雹、低温冷冻等灾害性天气气候频繁发生。随着社会经济发展,灾害性天气气候造成的损失越来越大。中国政府一贯十分重视气象工作。

新中国诞生以来,气象事业从小到大,蓬勃发展。特别是进入80年代,气象工作贯彻改革开放政策,大力推进气象现代化建设,积极开展气象服务领域,取得令人瞩目的成绩。初步建成了比较完善的气象业务、服务、科研、教育和管理体系。

As a developing country with vast territory and rich climatic resources, China possesses various climates such as tropical, subtropical, temperate, plateau and alpine. Hence natural disasters, especially meteorological disasters, such as torrential rain, flood, drought, typhoon, hail and chilling damage occur frequently. Severe weather and catastrophic climate bring about heavier damages and losses to a more developed society and economy. Therefore, the Chinese Government always attaches great importance to the meteorological service.

The Chinese meteorological service has grown step by step in size since the founding of New China. The 1980s witnessed noteworthy progress thanks to the adoption of the policy of reform and opening to the outside world, the implementation of meteorological modernization program and the extension of meteorological services in the field. As a result, there has emerged a sound meteorological system covering operation, services, research, education and management.

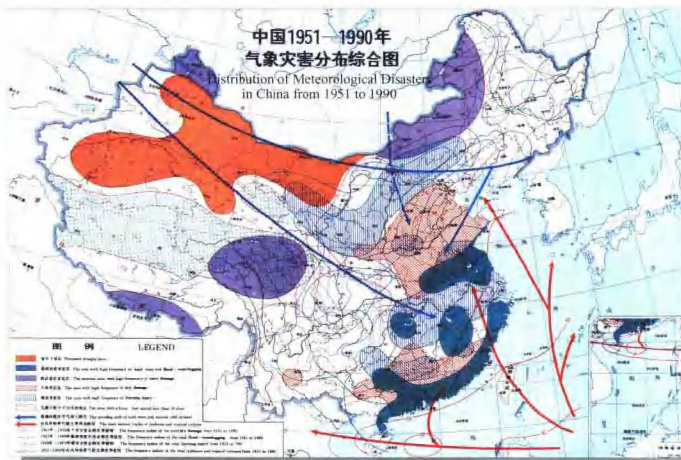
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中国1951—1990年

气象灾害分布综合图

Distribution of Meteorological Disasters
in China from 1951 to 1990



气象灾害造成的经济损失在国民生产总值中所占比例
Percentage of losses caused by meteorological disasters in GDP

中国气候资源图
Map of climatic resources in China



中国政府关心和支持气象工作

The Chinese government always attaches great importance to the meteorological service



1996年1月17日，江泽民主席视察中国气象局。
President Jiang Zemin inspecting CMA on 17 January 1996.



1995年8月31日，国务院总理李鹏、
国务委员宋健和陈俊生等视察中国气象局。
Premier Li Peng, State Councilors Song Jian and
Chen Junsheng inspecting CMA on 31 August 1995.



1997年1月25日，乔石委员长视察中国气象局。
Qiao Shi, Chairman of the Standing
Committee of the National People's Congress
inspecting CMA on 25 January 1997.



1993年10月，国家华副总理和宋健国务委员参加银河II巨型计算机启动数值预报仪式。
Vice-Premier Zou Jiahua and State Councilor Song Jian, were at the inaugural ceremony of the Galaxy-II supercomputer and the medium-range numerical weather prediction system in October 1993.



1995年4月，姜春云副总理视察中国气象局。
Vice-Premier Jiang Chunyun inspecting CMA in April 1995.



1995年1月6日，陈俊生国务委员视察中国气象局。
State Councilor Chen Junsheng inspecting CMA on 6 January 1995.



1995年1月10日，宋健国务委员视察中国气象局。
State Councilor Song Jian inspecting CMA on 10 January 1995.



1997年2月7日，中央政治局候补委员温家宝视察中国气象局。
Mr. Wen Jiabao, alternate member of the Political Bureau of CPC inspecting CMA on 7 February 1997.



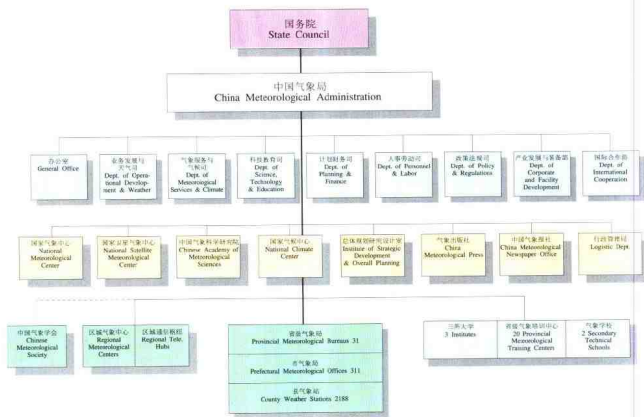
一、机构和管理体制

I. Organizational and Administrative Structures



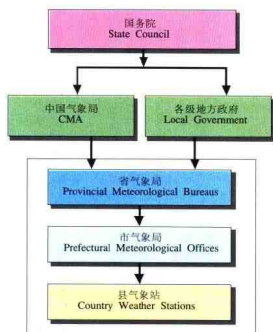
中国气象局是国务院直属事业单位, 经国务院授权, 承担全国气象工作的政府行政管理职能, 负责全国气象工作的组织管理。全国气象部门实行部门与地方政府双重领导, 以部门领导为主的管理体制。除台湾省以外, 31个省、自治区、直辖市设省级气象局。省以下的地区、市(州、盟)也没有气象管理机构, 现有固定职工 63 000 余人。

The China Meteorological Administration(CMA), is a subordinate institution of the State Council with governmental functions. CMA is empowered by the State Council to administer the national meteorological affairs. CMA exercises dual leadership, a management system in which both sectorial offices and local governments function while the former are principal players. Meteorological bureaus are established in 31 provinces, autonomous regions and municipalities except the Taiwan Province. Meteorological offices are also established at the prefecture and city level. There are 63 000 staff in CMA.



中国气象局组织结构图
The organizational structure of CMA

中国气象局主要职责 TERMS OF REFERENCE OF CMA



省及省以下气象部门实行中国气象局与地方政府双重领导，以部门为主的管理体制。省级气象部门既是中国气象局的下属单位，又是同级人民政府的工作部门。

The Chinese Meteorological Service at provincial and lower levels is supervised in the dual leadership system by both CMA and the local government with the former as the core. Provincial meteorological bureaus are not only subordinate offices of CMA, but also functioning departments of provincial government.

- (一) 组织领导全国气象部门贯彻执行党和国家的路线、方针、政策和重大改革方案、措施。
- (二) 组织制订气象事业的发展战略和长远规划，负责组织国家和地方气象现代化系统的建设和管理，负责全国大中型气象项目的统一布局、立项和调整方案的审核，负责对气象行业的宏观管理。
- (三) 组织制订气象工作法规，组织制定并发布气象管理行政规章、技术规范 and 标准，对执行气象法律、法规和气象行政规章、技术规范 and 标准实施监督检查并依法仲裁。
- (四) 会同各省、自治区、直辖市人民政府对省和省以下气象部门实施以部门为主的双重领导，健全和完善双重领导管理体制。
- (五) 统一管理全国陆地和海上天气预报警报、气候公报和气候影响评价的发布，参与同气象有关的防灾减灾决策，组织对重大灾害性天气跨地区、跨部门的气象服务联防，归口管理全国人工影响局部天气的工作。
- (六) 管理与指导国民经济各部门、各行业对气候资源的开发、利用和保护工作，管理对气候和气候变化的诊断、评价、监测、预测工作，组织国家重点建设工程、重大区域性经济开发项目和城乡建设规划中的气象条件评价的论证审查。
- (七) 负责专业（专项）气象服务和气象适用技术、气象技术装备社会化服务的管理、指导与协调，推进气象科技产业的发展，对气象科技市场实施指导和服务。
- (八) 负责组织气象科技领域重大科技研究的攻关和成果的推广应用，规划、指导、协调气象教育工作。负责组织宣传、普及气象科学知识，提高全民气象防灾减灾和气候资源意识。
- (九) 归口管理气象外事工作，代表我国政府参与世界气象组织及其他国际气象机构的活动和与外国政府（气象机构间的全作与交流。负责气候变化有关国际公约履约的协调工作。
- (十) 统一领导、分级管理气象部门的计划财务、基本建设、国有资产、科研教育、业务建设、技术装备、机构编制、人事劳动等工作，协助地方人民政府指导当地气象职工队伍的思想政治工作和精神文明建设工作。
- (十一) 承办国务院交办的其他事项。

ix. Organize and direct the national meteorological service in the implementation of the Party and State lines, principles and policies. Initiate and prepare the principles, policies and major reform strategies or measures concerning meteorology.

x. Initiate and prepare the development strategies and long-term plans concerning meteorological service. Organize the construction and management of the national and local meteorological modernization systems. Examine and approve the distribution, establishment and re-adjustment of large and medium-sized meteorological projects. Exercise an overall control of the meteorological service.

xi. Initiate and draft laws and regulations governing meteorology. Initiate, draft and issue executive provisions, technical norms and standards concerning meteorological management. Monitor and supervise the implementation of meteorological acts, regulations and meteorological administrative provisions, technical norms and standards. Act as arbitrator according to law in this connection.

xii. Play the main role in the dual leadership over meteorological organs at or below the provincial level together with the people's governments of provinces autonomous regions and centrally-governed municipalities. Improve the management system of dual leadership.

xiii. Issue the land and sea weather forecasts and warnings, climate bulletins and climate impact assessments. Participate in the decision-making process concerning meteorological-related disasters prevention and reduction. Organize the coordinated preparedness campaigns against significant severe weather affecting more than one area and sector. Take charge of weather modification in this country.

xiv. Control and direct the exploitation and protection of climatic resources by the national economic sectors and trades. Manage the diagnosis, assessment, monitoring and prediction of climate and climate change. Organize the verification and examination of meteorological conditions assessments concerning key national construction projects, major regional economic development programmes and urban and township construction planning.

xv. Control, direct and coordinate special or dedicated meteorological services and socialized services by means of applied meteorological techniques, meteorological technologies and equipment. Promote the development of meteorological science and technology industry. Direct and serve the meteorological science and technology market.

xvi. Organize the solution of key scientific and research problems in the field of meteorological science and technology and the extensive application of the achievements. Plan, direct and coordinate the meteorological education. Organize publicity campaigns to spread the meteorological knowledge and raise the national awareness of meteorological disasters reduction and climatic resources.

xvii. Take charge of foreign affairs in meteorology. Participate in the activities of the World Meteorological Organization(WMO) and other international organizations, cooperate and interact with other national or regional meteorological services on behalf of the Chinese government. Coordinate the implementation of international conventions on climate change.

xviii. Exercise unified leadership and graded management over the meteorological sector in respect of the planning and finance, capital construction, operational construction, technology and equipment, state-owned assets, research and education, organizational establishment, personnel and labour. Assist local people's governments in directing ideological, political and ethical (spiritual civilization) development of the local meteorological staff.

xix. Undertake any other matters assigned by the State Council.

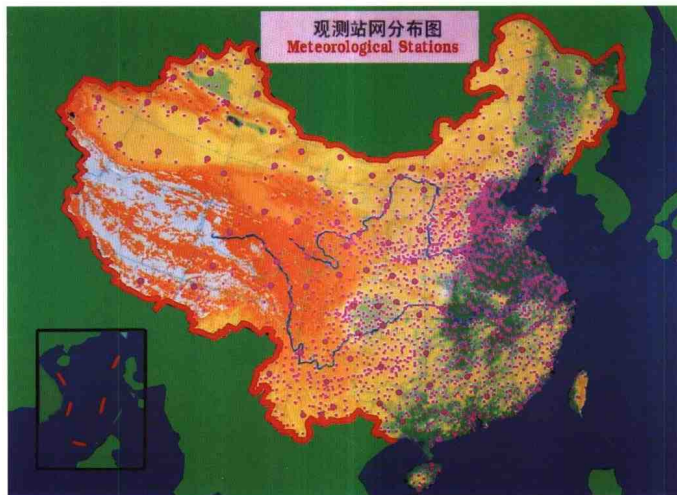


二、业务服务体系 II. Operational Services system



十几年来,中国紧紧依靠科技进步,积极开发、引进和应用高新技术,努力推进气象现代化建设,初步建成了由气象综合探测、气象信息网络、基本气象信息加工分析预测和气象服务四大业务服务系统组成的比较现代化的气象业务服务技术体系框架。

In the past decade while relying on the scientific and technological progress and promoting meteorological modernization by developing, introducing and applying hi-tech, China has initially established a modern system or structure of meteorological operation, services and technologies that include four operational service components: integrated meteorological observing system, meteorological information network system, basic meteorological information processing, analysis and forecasting system and meteorological service system.



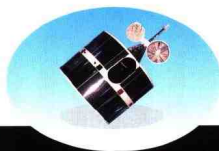
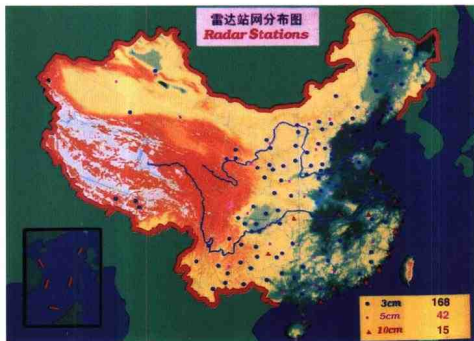
地面气象观测站网(其中基本天气站 575 个, 基准气候站 143 个, 气候站 1816 个, 辐射站 98 个, 酸雨站 82 个, 农气站 672 个, 农试站 70 个, 人工本底站 4 个) 和高空观测站(120 个)

Surface Observation Stations(including 575 synoptic stations, 143 reference climate stations, 1816 climate stations, 98 solar radiation stations, 82 acid rain stations, 672 agrometeorological stations, 70 agrometeorological experimental stations and 4 GAW stations) and Upper Air Stations(120).

1. 气象综合探测系统 The Integrated Meteorological Observing System

初步建成了门类比较齐全, 布局合理的气象综合探测系统。遍布高山、海岛、荒漠及全国各地的2600多个各种气象台站, 组成独具特色的气象台站网。结构比较合理的各种地面观测站、高空探测站、天气雷达站、卫星云图接收和各种专业、特种探测站网覆盖全国。特别是两颗“风云一号”极轨试验卫星已经成功发射, 中国的静止气象卫星不久也将发射。国家卫星气象中心和3个卫星地面接收站以及由各种型号的天气雷达组成的全国天气雷达网的建成, 标志着我国天气探测开始进入一个新阶段。

A comprehensive and well-distributed integrated meteorological observing system has been initially set up. As many as 2 600 meteorological stations of various types, scattered nationwide including mountains, islands and deserts form a unique station network. Surface weather stations, upper-air stations, weather radars, satellite imagery receivers and specialized or dedicated sounding stations are well-structured and distributed in the country. Two experimental polar-orbiting FY-1 satellites were successfully launched and a geostationary meteorological satellite will be launched soon. The establishment of the National Satellite Meteorological Centre (NSMC) and three satellite ground receiving stations together with National Weather Radar Network composed of various weather radars symbolize that atmospheric sounding in China has been brought to a new high.

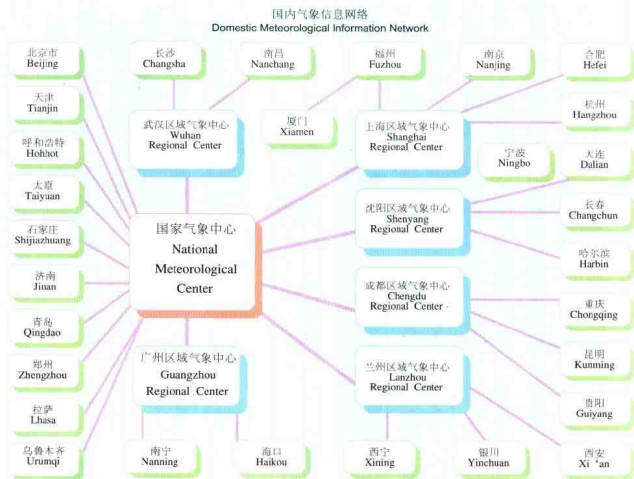


中国于1988年9月和1990年9月先后成功发射了两颗“风云一号A、B”极轨试验卫星。图为1988年9月7日极轨气象卫星在发射中。
China successfully launched two polar-orbiting experimental meteorological satellites named “FY-1A” and “FY-1B” in September 1988 and September 1990 respectively. The picture shows the launch of FY-1A on 7 September 1988.

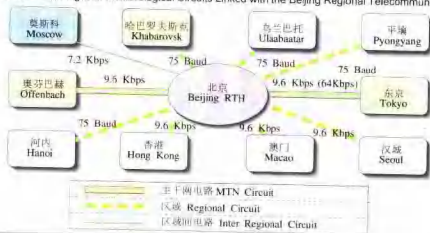
2. 气象信息网络系统 Meteorological Information Network System

建成以国家气象中心为枢纽的自动化通信系统, 中国气象通讯系统作为世界气象组织世界天气监测网的区域通信枢纽, 位于世界气象组织全球通讯系统主十网, 与有关国家和地区的气象通信枢纽及气象中心相联。在国内连接六大区域中心和31个省级气象台, 并由计算机控制, 现代化技术装备得到广泛应用。能及时收集、加工和分发全球气象资料和产品。这一通信网的建成, 使大量气象信息产品向基层延伸, 为提高天气预报准确率, 实现预报的客观化、定量化, 及时提供气象服务创造了有利条件。为适应大气探测资料和预报服务产品信息量的迅速增加, 中国新一代气象信息网络——卫星通讯系统工程(VSAT)的建设正在进行。该系统将极大地提高中国气象信息网络的传输能力。

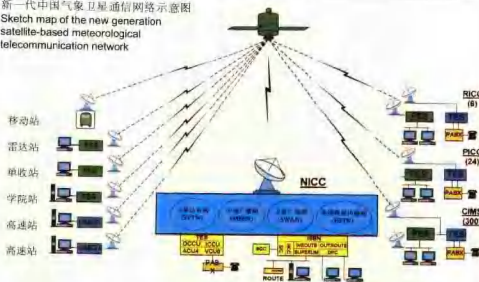
An automated telecommunication system has been established, in which the National Meteorological Centre(NMC) serves as the hub. Being a Regional Telecommunication Hub in the World Weather Watch of the World Meteorological Organization(WWW/WMO), China's meteorological telecommunication system operates in the main network of the Global Telecommunication System of the World Meteorological Organization(GTS/WMO) and is linked with other Regional Telecommunication Hubs (RTHs) and National (regional) Meteorological Centres concerned. The system is domestically connected with six regional meteorological centres(RMCs) and 31 provincial offices. As a RTH equipped with computers and available technologies, it collects, processes and disseminates global meteorological data and products in a timely manner. This telecommunication network is in a position to carry and transmit large volumes of meteorological messages and products to the grassroots level, making it possible to improve the accuracy of weather forecast, issue objective and quantitative forecasts and provide timely services. To accommodate the exploding information in atmospheric sounding data and forecast service products, the construction of VSAT – a new generation satellite based meteorological information network – is underway. When the project is completed, the transmission capabilities of the existing network will be enhanced.



与北京区域通信枢纽相连的国际及地区气象电路
International and Regional Meteorological Circuits Linked with the Beijing Regional Telecommunication Hub



新一代中国气象卫星通信网络示意图
Sketch map of the new generation satellite-based meteorological telecommunication network



中国气象局INTERNET网
CMA INTERNET System



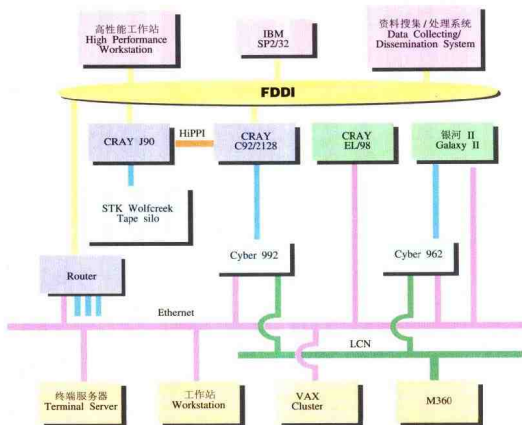
3. 基本气象信息加工分析预测系统

Basic Meteorological Data Processing, Analysis and Forecasting System

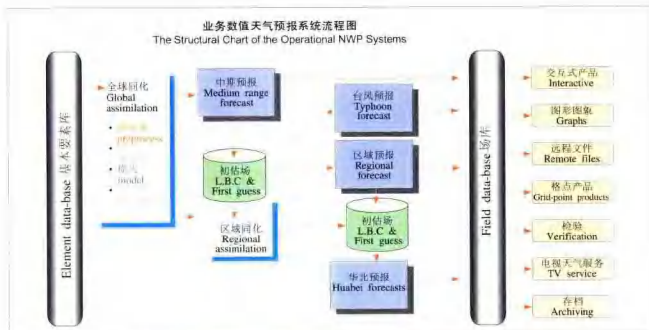
建立了合理的预报业务技术体系。已形成国家气象中心、区域气象中心到省、地、县气象台站五级分工合理，自下而上采集信息，自上而下逐级技术指导，上下结合，以数值天气预报为基础的基本气象信息的加工、分析预测系统。中国自行研制的巨型计算机银河-II和引进的Cray C92巨型计算机和SP2大规模并行计算机，把中国中期数值预报能力提高到了一个新水平，1996年6月国家气象中心T63L16中期数值天气预报业务系统正式投入运行，1997年T106L19中期数值天气预报系统投入业务，从而使重大灾害性天气的监测和预报能力有了明显增强。国家气候中心于1995年1月正式挂牌运行，开展业务工作，标志着我国气候诊断、短期气候预测和应用工作将进入一个新阶段。

A sound operational forecasting system has been established. The systematic structure for basic data processing, analysis and forecasting based on numerical weather prediction(NWP) has taken shape, in which information is collected at and transmitted between five levels from lower to higher including NMC, RMC and provincial, prefectural offices and county stations. Technical guidance is provided level by level from higher to lower. The work is reasonably divided and the efforts of all levels are well coordinated. The installation of the China-made Supercomputer Galaxy II, the imported Supercomputer Cray C92 and the Massive Parallel Computer SP2 have brought China's medium range NWP capability to a new high. T63L16 medium range NWP system was put into operation in NMC in June 1996 while T106L19 will be put into operation in 1997. All this has led to a marked improvement in major severe weather monitoring and forecasting. The National Climate Centre(NCC) was officially set up in Beijing in January 1995, suggesting a new stage for climate diagnosis, short-term climate prediction and its application in China.

国家气象中心计算机配置图
Computer Network at National Meteorological Center

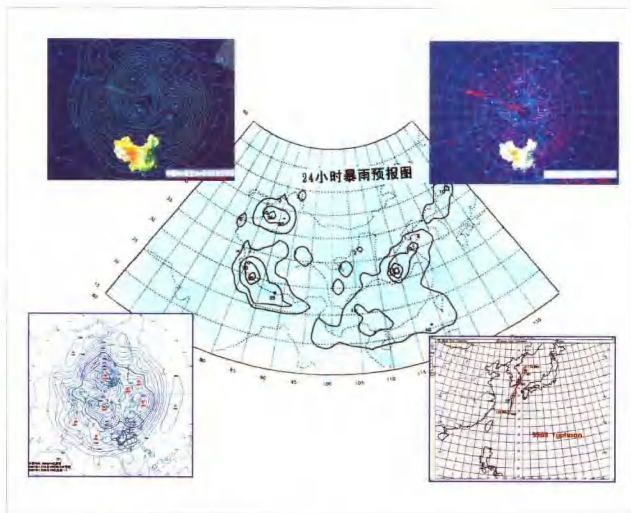


业务数值天气预报系统流程图
The Structural Chart of the Operational NWP Systems



中国气象局使用的银河-II 巨型机、克雷计算机和 SP2 计算机
The Galaxy-II, Cray C-92, and SP2 Supercomputers in CMA





短期气候预测产品
Products of short term climate prediction

