

中国荒漠化和沙化土地图集

Atlas of Desertified and Sandified Land in China

国家林业局

State Forestry Administration, P. R. China



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序

土地荒漠化和沙化是当今全球最严重的环境问题之一，荒漠化和沙化问题一直困扰着中国各级政府和当地的人民群众，严重阻碍着当地经济和社会的发展。

土地荒漠化和沙化监测是科学开展土地荒漠化和沙化防治的基础和前提，没有对荒漠化和沙化状况的清晰了解，没有对荒漠化和沙化动态变化及其原因的准确把握，就不可能做到科学防治。

土地荒漠化和沙化监测是对土地荒漠化和沙化状况及动态变化的跟踪调查与评估。监测结果的真实性和可比性至关重要，而要做到这一点，需要建立一套科学可行、易于操作的监测指标和方法；既要尽可能地采用最新技术，又要保持监测指标、方法以及监测技术队伍的相对稳定和延续性，并且长此以往，坚持不懈。我国荒漠化和沙化监测主管部门根据国内防沙治沙工作和国际履约的需要，依据《中华人民共和国防沙治沙法》的规定，建立土地荒漠化和沙化的定期监测制度，采用科学的监测指标和先进的监测手段，保证了监测结果的可靠性和可比性，且十几年来坚持不懈，是值得肯定和称道的。

编者在对第三次全国荒漠化和沙化监测成果进一步整理、提炼、分析和综合的基础上编制了《中国荒漠化和沙化土地图集》。该图集简明、直观地向读者展示了我国荒漠化和沙化土地的基本状况以及与之相关的丰富信息，清晰地勾勒出荒漠化和沙化平面空间的分布格局。作为咨询专家，我知道第三次全国荒漠化和沙化监测动员了数千名技术人员，历时一年多才完成的，获取的信息量达1.56亿条。监测的简要结果虽于2005年正式发布，但是，这么丰富而珍贵的信息，其中有许多是单纯用文字难以准确表达的。《中国荒漠化和沙化土地图集》的出版，则解决了这一难题，用地图形式直观地将那些单纯用文字描述难以说清的监测成果清晰地展示在我们面前。

《中国荒漠化和沙化土地图集》的出版，不仅为防沙治沙主管部门在制订防治政策、治理规划及治理措施提供了可靠的依据，也为读者搭建了一个全面了解我国荒漠化和沙化状况的平台，对提高公众保护生态环境的意识和参与防沙治沙的积极性将会产生积极的作用，同时也对荒漠化和沙化土地分布区相关行业和部门在土地利用方式决策中具有一定的参考价值。我相信，该图集的出版亦将对荒漠化和沙化土地分布区社会发展和经济建设产生积极的作用。

该图集丰富的内容和活泼简洁的表达方式消除了一般专题图集的枯燥与艰涩，是一本图文并茂的图集文献，值得从事荒漠化和沙化以及生态环境监测、研究、教育和防治技术工作者以及关心我国生态环境状况的人士一读。

石玉林

2009年3月

Foreword

Desertification and sandification are considered as one of the most serious environmental problems threatening the world. In China, they have been baffling the governments at different levels and local people, and gravely hindered the local social and economic development.

Monitoring of desertification and sandification is a foundation and prerequisite for prevention and control of desertification and sandification. Without a clear understanding of the status, trends and causes of desertification and sandification, such prevention and control would be hardly possible.

Monitoring of desertification and sandification is aimed at track surveying and assessing the status and trends of desertification and sandification. The reliability and comparability of the monitoring results are of the prime importance. To achieve this goal, it is necessary to establish a series of feasible and easy-operating monitoring indicators and methods, use the latest technology, and keep the relative stability and sustainability of the monitoring indicators and methods as well as a monitoring team. According to the relevant international convention and *the Law of the People's Republic of China on Prevention and Control of Desertification*, the administrative department in charge of this undertaking has established a periodic monitoring system for desertification and sandification. This system, which adopts the rational monitoring indicators and advanced monitoring measures to guarantee the reliability and comparability of monitoring results, has proved a great success.

Atlas of Desertified and Sandified Land in China is edited based on the released results of the 3rd Monitoring of National Desertification and Sandification. This atlas concisely and directly shows the desertification and sandification status in China with a large amount of the corresponding information, and clearly outlines the 2-dimension distribution of desertification and sandification. To my knowledge, several thousands of technicians participated in this monitoring, and over 156 million sets of data were obtained. The general monitoring results were officially released in 2005, it is really difficult to adequately express the rich and valuable information merely in words and sentences. Here comes *Atlas of Desertified and Sandified Land in China*, which, in the form of maps, gives an explicit explanation to these monitoring results.

The publication of *Atlas of Desertified and Sandified Land in China* not only provides a reliable basis for the administrative department in charge of desertification prevention and control to formulate prevention and control policies, inhibition plan and measures, but also sets up a platform for readers to better understand the desertification and sandification in China, so as to increase the nation's awareness of environmental protection and enthusiasm to take part in prevention and control of desertification and sandification. Meanwhile, this atlas would be helpful to the relevant industries and departments located in the desertified area in determining the land use patterns. I believe that the publication of this atlas will play a positive role in the social and economic development in the affected areas.

Compared with other professional atlases, this atlas presents rich content in a concise but lively way. With delicate pictures and elaborate texts, this would be a good atlas for the technicians working in the field of desertification prevention and control, as well as for the people concerned about the ecological improvement of China.

Shi Yulin

March 2009

前言

中国是受荒漠化和沙化危害十分严重的国家，防沙治沙始终是中国政府和沙区群众的艰巨任务。为给防沙治沙的宏观决策和治理措施提供科学依据，确切把握土地荒漠化和沙化的基本状况及其动态变化，依据《中华人民共和国防沙治沙法》第十四条“国务院林业行政主管部门组织其他有关行政主管部门对全国土地沙化情况进行监测、统计和分析，并定期公布监测结果”的规定，以及我国作为《联合国防治荒漠化公约》缔约国所承担的责任和义务，自20世纪90年代初起我国开始对全国的土地荒漠化和沙化进行监测，并建立了每五年一次的定期监测制度。

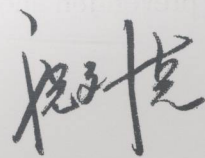
2004年国家林业局组织开展了第三次全国荒漠化和沙化监测，这次监测历时一年多，共区划并现地调查地面图斑(地块)502万个，获取有关荒漠化和沙化土地的各类信息1.56亿条。这些信息不仅是科学制订荒漠化防治和防沙治沙宏观决策及防治措施的基本依据，同时也对荒漠化和沙化分布区经济建设和社会发展具有重要的参考价值。第三次全国荒漠化和沙化监测主要成果已于2005年6月14日公开发布。

《中国荒漠化和沙化土地图集》是在对第三次全国荒漠化和沙化监测成果整理、综合、分析的基础上编制而成的，以图件的形式从两维的平面视角展现了2004年我国荒漠化和沙化土地的现实状况，以及1999年到2004年我国荒漠化和沙化土地动态变化的空间格局及其主要的消长区域。图集以图为主，并附以必要的文字和表格予以解读，力图达到图文并茂且简明易懂的效果。

图集分为序图、全国荒漠化和沙化土地状况、分省(区域)荒漠化和沙化土地状况、荒漠化和沙化动态变化等四个部分。其中全国及分省(区域)荒漠化和沙化状况部分主要包括了荒漠化气候类型区、荒漠化土地类型和程度、沙化土地类型、沙化土地程度、沙化土地分布区土地利用类型、沙化土地分布区植被盖度、具有明显沙化土地趋势的土地等与荒漠化和沙化土地相关的信息。考虑到无论是荒漠化还是沙化都与沙漠有着不可分割的联系，在全国荒漠化和沙化土地状况部分给出了中国沙漠分布图，这也是第三次全国荒漠化和沙化监测的成果之一，是关于我国沙漠的最新宏观信息。荒漠化和沙化土地动态变化部分主要从国家、省区及区域三个层面反映了第二次监测(1999年)以来全国、省区及典型区域荒漠化和/或沙化土地动态变化。

全国30个省、自治区、直辖市的4000多名技术人员直接参加了第三次全国荒漠化和沙化监测的各项工作，全国荒漠化和沙化监测专家咨询组的专家在监测总体方案及各技术环节给予了把关和指导，自20世纪90年代初起财政部将荒漠化和沙化监测列入国家财政专项并不断加大支持力度，其他有关行政部门也以不同方式给予了巨大支持，许多科研院所及大学的专家学者直接或间接地参与了相关专题的监测和研究。正是这些支持和大家的同心协力，使我国荒漠化和沙化监测得以顺利开展，并取得如此丰富的成果；也由于全体编制人员的辛勤劳动，才使得本图集得以顺利完成。因此，这本图集也是大家共同劳动的成果。石玉林院士和申元村研究员对本图集进行了审读，并提出了宝贵意见。在此，一并表示诚挚的谢意。

由于编者水平所限，如有不妥之处，敬请批评指正。



2009年3月

Preface

China is a country facing serious desertification and sandification, so sandy land management persists as an arduous task for both the government and the affected population. To fulfill the obligations as a contracting party of *United Nations Convention to Combat Desertification*, and in line with Article 14 of *the Law of the People's Republic of China on Prevention and Control of Desertification*, I.e., "The forestry authority of the State Council shall organize its relevant administrative departments to monitor, prepare statistics and make analysis of land desertification throughout the country, and release the monitoring results periodically", the 5-year periodic nationwide monitoring system was established in early 1990s to track the status and trends of desertification and sandification and to serve for policy and decision making.

Under the guidance of the State Forestry Administration, the 3rd Monitoring of National Desertification and Sandification was launched in 2004. This monitoring lasted more than one year, with over 5.02 million plots site surveyed, 156 million sets of data obtained. This not only forms a scientific basis for policy and plan formulation, but helps the socio-economic development in the locality. The main results of the monitoring were publicized on June 14, 2005.

Atlas of Desertified and Sandified Land in China is an outcome of the collection, analyses and assembly of the results of the 3rd Monitoring of National Desertification and Sandification. With a large number of maps and attachments, this atlas denotes the status of national desertification and sandification in 2004 in plane visual dimensions, as well as the distribution trend of desertified areas and the main areas with major changes from 1999 to 2004. Maps as the main part and accompanied with necessary descriptions and tables make the atlas vivid and easily understandable.

The publication of *Atlas of Desertified and Sandified Land in China* is divided into four parts: Background Maps, Status Quo of Desertification and Sandification in China, Status Quo of Desertification and Sandification by Provinces (Regions), Dynamic Changes of Desertification and Sandification. In part 3, the information presented mainly covers the climatic type of desertification, land type and degree of desertification, land type of sandification, sandification degree, land use type in the sandified areas, vegetation coverage percentage in the sandified areas, and the land most vulnerable to sandification. Considering that both desertification and sandification are closely related with deserts, a distribution map of deserts in China is included. This map as one achievement of the 3rd Monitoring of National Desertification and Sandification provided the latest macro-information concerning the deserts in China. Part 4 at the national, provincial and regional level, shows the variation trends of desertification and sandification after 1999 the 2nd Monitoring of National Desertification and Sandification, in individual provinces and typical regions.

Over 4000 technicians from different provinces, municipalities and autonomous regions participated in the 3rd Monitoring of National Desertification and Sandification, and the experts from the Advisory Committee for this monitoring supervised the general plan and technical linkages. Besides the special fund allocation from the Ministry of Financial which began in early 1990s has then been stable and kept increasing. The monitoring also enjoyed direct or indirect support from other numerous experts from research institutions and universities, and thereby gained great achievements. In addition, the editorial group of this atlas made an important contribution to its publication. Academician Shi Yulin, and Prof. Shen Yuancun contributed to the atlas by reviewing with valuable comments. I would like to take this opportunity to express my heartfelt gratitude to the whole team.

Due to the limited knowledge and ability of the authors, there is still much room for improvement. We are awaiting your criticism and corrections.

Zhu Lieke

March 2009

说 明

[1] 本图集所称的“荒漠化”，是指包括气候变异和人为活动在内的种种因素造成的干旱、半干旱和亚湿润干旱区的土地退化。发生在这些气候类型区的退化土地为荒漠化土地。

[2] 本图集所称的“沙化”，是指在各种气候类型区，由于各种原因形成的、地表呈现以沙(砾)物质为主要特征的土地退化。具有这种明显特征的退化土地为沙化土地。

[3] 本图集所称的“具有明显沙化趋势的土地”，是指由于土地不合理利用或水资源匮乏等因素导致的植被严重退化，生产力下降，虽然尚不具有显著的沙化特征，但已存在明显的沙化趋势，是临界于沙化与非沙化土地之间的一种退化土地。具有明显沙化趋势的土地目前还不是沙化土地，如果任其继续恶化，就有可能变成沙化土地。第三次全国荒漠化和沙化监测将其列为独立的土地类型，以起警示作用。

[4] 本图集所称的“沙化土地分布区”，是指沙化土地分布范围内所有类型的土地，包括沙化土地、具有明显沙化趋势的土地及非沙化土地。

[5] 本图集沙化土地分布区植被盖度图中所称的“其他”，是指不宜用植被盖度表示的土地利用类型，如耕地、居民工矿交通用地、水域等，这里的沙化土地面积仅指沙化耕地的面积。

Explanation

[1] In this atlas, *desertification* refers to land degradation in arid, semi-arid and sub-humid area due to climate change and human activities. The degraded land which occurred in these area is called desertified land.

[2] In this atlas, *sandification* refers to land degradation in climatic zones owing to various reasons, and it is featured mainly by sand (gravel) on the surface. The degraded land of this characteristic is sandified land.

[3] In this atlas, *land most vulnerable to sandification* refers to serious vegetation degradation and degraded productivity resulting from unreasonable land use and water resources shortage. This kind of land has no distinct features of sandification, but has a tendency towards sandification. Thus it is a transitional type of degraded land between sandified land and non-sandified land. Although land most vulnerable to sandification is not sandified land, it tends upwards if deteriorated without measures. As a warning, it was classified as a special type of land during the third national desertification and sandification monitoring.

[4] The *sandified land area* refers to all types of lands within the sandified land distributed range, including sandified land, land most vulnerable to sandification and non-sandified land.

[5] The *other* refers to land that is not proposed to be measured by vegetation coverage, such as arable land, water bodies and lands used for residential, industrial, mining and transport purposes, etc. The area of sandified land denotes the area of sandified arable land.

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图 例

基础地理要素

序图组、全国图组			
◎	首都		国界、未定国界
⊙	省级行政中心	-----	省、自治区、直辖市界
⊙	地级行政中心	-----	特别行政区界
○	县级行政中心		常年河、常年湖
			运河
分省(区域)图组			
⊙	省级行政中心		国界、未定国界
⊙	地级行政中心		省、自治区、直辖市界
哈密	州、盟、地区行政中心	- . - . - .	地区界
○	县级行政中心		县界
○	乡、镇、村		常年河、常年湖
▲	山峰		运河
×	关隘、山口		
动态变化图组			
○	县级行政中心	○	乡、镇、村

Legend

Geographical Features

Background Maps and China Maps			
◎	Capital		National boundary, undefined national boundary
⊙	Province-level administrative centre	-----	Boundary of province, autonomous region or municipality
⊙	Administrative centre of prefecture-level city	-----	Boundary of special administrative region
○	County-level administrative centre		Perennial river, perennial lake
			Canal
Provinces (Regions) Maps			
⊙	Province-level administrative centre		National boundary, undefined national boundary
⊙	Administrative centre of prefecture-level city		Boundary of province, autonomous region or municipality
哈密	Administrative centre of autonomous prefecture, autonomous league or prefecture	- . - . - .	Boundary on prefecture-level
○	County-level administrative centre		Boundary on county-level
○	Town or village		Perennial river, perennial lake
▲	Peak		Canal
×	Pass		
Dynamic Change Maps			
○	County-level administrative centre	○	Town or village

