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# 中國歷史地震圖集



ATLAS OF THE HISTORICAL  
EARTHQUAKES IN

CHINA

The Ming Dynasty Period

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ATLAS OF THE HISTORICAL  
EARTHQUAKES IN CHINA

The Ming Dynasty Period

国家地震局地球物理研究所 编辑  
复旦大学中国历史地理研究所

Compiled by  
INSTITUTE OF GEOPHYSICS, STATE SEISMOLOGICAL BUREAU  
and  
INSTITUTE OF CHINESE HISTORICAL GEOGRAPHY, FUDAN UNIVERSITY

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中国历史地震图集

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# 序

我们国家自古至今是多地震的。历史上的地震记载，大都分散在各种历史文献中。

新中国成立不久，为考虑国家建设地区的地震活动问题，中国科学院在两年余的时间内从各类史料中摘录了地震记载数万条，经过考证选编成《中国地震资料年表》，又经李善邦教授等将所有破坏性地震，用现代地震学的方法一一核定其基本参数，编成《中国地震目录》。这两项工作及其成果提供了我国地震活动性研究的基础，并为进一步分析和研究中国历史地震资料开辟了道路。

由于历史的演变，历史地震所涉及的地名以及其它地理内容现在与过去不同，诸如震中位置、地震破坏程度和范围有些受到歪曲；其次，历史地震记载详简不一，因此考虑应从多方面来反映大地震。国家地震局地球物理研究所、复旦大学中国历史地理研究所和地图出版社合作，共同编辑出版《中国历史地震图集》。将我国历史上发生的破坏性地震，以等震线和其它形式尽可能地表现在当时的地理图上，一次地震一幅图，并附简要文字说明和部份记载地震的历史文物。

此项工作，是历史地震、历史地理和地图制图科学合作的一个成果。具有比较准确的历史地震震中位置、地震破坏的规模。

《图集》的编制，是在前人工作基础上进行的，是叙述历史地震的一次新尝试。

顾功叙 一九八三年

## PREFACE

China is a country of abundant earthquakes, both in history and at present. Written historical records are scattered in all kinds of literatures.

Immediately after the founding of the People's Republic of China, it became a necessity to examine the degree of seismic activity for the various regions undergoing economic constructions. So within the Chinese Academy of Sciences, for more than two years, tens of thousands of earthquake records were found from many kinds of literatures. In carefully examining the events, a book called the "Chronical Data of Chinese Historical Earthquakes" was compiled and printed, based on which the late Professor Li Shanbang (S.P.Lee) and others determined the fundamental parameters of all the destructive earthquakes by using modern seismological methods, and a catalogue was prepared and published, called the "Catalogue of Chinese Earthquakes". The results of these two collections provide the basis for research work on seismic activity of China. They open up a way for further studies and analysis of Chinese historical earthquakes records.

However, on account of the changes in history, names and locations of the places where the earthquakes occurred and other geographic aspects are now different from before. There are some distortions with regards to such as epicentral locations, spatial distribution of destruction of some earthquakes and so on. Again recordings of historical earthquakes are highly diversified in their detailness for individual earthquakes, it has been felt that we need more concrete materials to reflect at different angles of those large earthquakes. With the cooperation of the Institute of Chinese Historical Geography, Fudan University, the Institute of Geophysics of the State Seismological Bureau and the Cartographic Publishing House compiled recently this present work «Atlas of the Historical Earthquakes in China». All of the destructive earthquakes occurred in China during history are described by isoseismal lines or other forms of representation on historical geographic maps when possible one sheet for one earthquake, with short annotations and the related literatures and objects.

This work signifies the combination of studies of historical earthquakes, historical geography and cartography, giving much precise epicentral locations, scales of destruction, etc.

It relies greatly on the results of work of many previous authors and their thoughts as a new approach of describing the historical earthquakes.

Gu Gongxu  
1983

# 序

我国是一个多地震的国家。我们的祖先对地震这种自然灾害，早就予以严重关注。因此，在我国浩如烟海的历史文献中，蕴藏着大量的地震史料，其内容之丰富、时限之长远，在世界上是无与伦比的；单是在公元前三世纪以前的先秦时期，就有十多次破坏性地震的记录。西汉开始，地震已被作为“灾异”记入历代正史中，同时各种史书、志书、笔记、日记和诗赋等，对于地震的破坏程度、波及范围等，也都有或详或略的记述。据统计，我国历史上见于记载的地震不下八千余次，其中破坏性地震就有八百余次。对大量历史地震史料，进行科学地分析、总结，必将为地震的长期预测，提供最重要的科学根据。尤其是用地图的形式，表示历次破坏性地震的震中位置、震级和波及范围，无疑是更加直观，更易于寻找地震在时间上、空间上的发震规律。《中国历史地震图集》的编绘出版，显然是一项很有价值的科研成果。

历史地震图集的编绘，首先必须用历史地理学的方法，考定每次地震所涉及的地理要素，在发震时的准确的地理位置；然后根据不同地点的破坏程度，用地震学的方法，评定震中位置、震中烈度和烈度分布等项地震要素，并尽可能地用等震线予以表示。因此，在国家地震局主持下，由国家地震局地球物理研究所、复旦大学中国历史地理研究所和地图出版社，通力合作，共同编绘《中国历史地震图集》，其地震要素和地理要素，必然更为科学、准确，图集的质量更有保证。

《中国历史地震图集》，可以说是一项基础工程。我相信，在此基础上，地震学界、地质学界和地理学界，在不久的将来，一定能够在地震的长期预测等重大科研项目上，作出新的更大的贡献，造福人民。

谭其骧 一九八三年

## PREFACE

China is a country where earthquakes occur frequently. Our ancestors paid a good deal of attention to earthquake disasters. In the vast collection of Chinese historical documents, there holds in store a large amount of historical information of earthquakes. It is rich in content and long in history and beyond comparison in the world. China owns the historical records of more than ten destructive earthquakes even in the Pre-Qin Dynasty before the third century B.C. Since the beginning of the Western Han Dynasty about 200 B.C., earthquakes have been written into history books as "catastrophes" in each dynasty. The degrees of damage and the affected areas, etc. were recorded and narrated, in brief or in detail, in various history books, chronicles, notebooks, diaries and poems, etc. According to statistics, earthquakes recorded in Chinese history total no less than 8,000, of which more than 800 are destructive ones. We have carried out scientific analysis and made a summary of the historical information of these earthquakes, which give us the most important scientific evidence for long-term earthquakes prediction. Especially, by indicating the epicentral locations, magnitudes, and the affected areas in a collection of seismicity maps, one will be enabled to find, more directly and more easily, the regularities of earthquake occurrence in time and space. The compilation and publication of the «Atlas of the Historical Earthquakes in China» is obviously a very valuable result of scientific research.

In the compilation of this book, we first examined the geographical elements involved in every earthquake from a historical and geographical point of view; and then evaluated, according to the degree of damage to the different areas, such seismological parameters as the epicentral location, the epicentral intensity and the intensity distribution. Isoseismal lines are used, if possible, to indicate the intensity distribution in the surrounding regions. Under the sponsorship of the State Seismological Bureau, the Institute of Geophysics of the State Seismological Bureau, the Institute of Chinese Historical Geography, Fudan University and the Cartographic Publishing House compiled this book in an all-out co-operation. Therefore both the seismological and the geographical aspects of the book are certainly more accurate and the maps are more reliable.

It can be said that the compilation of the "Atlas of the Historical Earthquakes in China" is a sort of basic work. I believe that, with the help of this atlas, the seismological, geological and geographical circles will surely be able to make, in the near future, new and greater contributions to the major subjects of scientific research such as the long-term earthquake prediction and benefit the people.

Tan Qixiang  
1983

# 前 言

我们伟大的祖国幅员辽阔，是世界上历史最悠久的文明古国之一，又是一个多地震的国家。在漫长的岁月里，我们的祖先对包括地震在内的各种自然现象进行观察和了解，寻求其规律，并做了逐步详细的记载。对地震的文字记载开始较早，留下了极丰富的历史地震资料。在地震的观测和研究中，也做出了许多有益的贡献。汉代伟大科学家张衡于阳嘉元年（公元132年）创制了世界上第一架能指示地震方向的地震仪器——候风地动仪，比世界上其它国家同类仪器的出现早一千多年。开创了人类用仪器观测地震的历史。

我国有文字记载的历史相当久远，在各类典籍中有极其丰富的地震记载。若仅从可判定地震参数的周幽王二年（公元前780年）强震记载算起，我国的地震历史资料可追溯至二千七百多年前，约占最新地质年代——全新世的四分之一。这样长时期、丰富的地震史料是极其宝贵的，是任何一个国家所不能比拟的。因此，系统搜集、整理和分析这些资料，对于我国乃至世界地震活动的研究，是一件十分有意义的工作。

一九五六年中国科学院组织我国地震学家和历史学家共同编辑出版了《中国地震资料年表》。中国科学院地球物理研究所将其中的破坏性地震，从现代地震学角度加以分析研究，和用仪器取得的地震观测资料合在一起，编辑出版了《中国地震目录》。二十多年来，代表着我国历史地震科学研究水平的这两部著作，成为我国地震工作者必不可少的参考文献。

为了将我国历史地震方面的研究成果反映出来，组织了历史地理、地震和制图专业工作者编辑出版这部《中国历史地震图集》。《图集》反映我国现今国界线以内发生的历次破坏性地震的概貌。《图集》以地震震中和等震线图为主，并附简要的文字说明及少量照片。在编辑中，注重科学性，尽可能较确切反映地震和历史地理内容。它具有直观、形象和综合性等特点，并力求生动活泼，以便于读者理解与使用。

《中国历史地震图集》是在国家地震局主持下，由国家地震局地球物理研究所和复旦大学中国历史地理研究所主编，地图出版社绘制出版。具体编辑工作由《中国历史地震图集》编委会完成。



为编辑《中国历史地震图集》，天津、山西、辽宁、黑龙江、吉林、山东、河北、河南、湖北、江苏、浙江、上海、福建、江西、广东、广西、陕西、甘肃、宁夏、青海、四川、云南、贵州等二十三个省、自治区、直辖市地震局(办)提供了本地区《地震历史资料汇编》。

《中国历史地震图集》编辑过程中，承蒙中国地震学会理事长顾功叙教授和复旦大学中国历史地理研究所谭其骧教授的热心指导。

本《图集》的编辑出版与上述同志和单位以及国家地震局、国家地震局地球物理研究所、复旦大学、地图出版社有关领导的大力支持是分不开的。在此，谨向所有协助这项工作的同志及单位表示衷心的感谢。

编辑出版《中国历史地震图集》还是第一次，缺点和错误在所难免，恳切希望读者予以批评指正。

《中国历史地震图集》编委会

一九八三年

# INTRODUCTION

China being one of the countries with the most ancient civilization has a vast territory within the boundaries of which many earthquakes occurred in the past. During a long historical time, our ancestors observed and studied different kinds of natural phenomena including earthquakes. They recorded in detail progressively and attempted to understand their processes of occurrences. On earthquakes, written accounts began rather early, containing valuable materials of scientific interest of historical earthquakes. In the study and observation of earthquakes, some important contributions were made. In the Han Dynasty, the famous scientist Chang Heng, created in 132 A.D. the world's first seismograph, capable of determining the direction in which a strong earthquake took place, an invention usually considered as more than 1000 years earlier than the inventions of all other seismographs. This initiated the history of earthquake observation by means of instruments.

China has a written history of the remote past. Among various kinds of ancient writings, classics contain a great amount of narrations on earthquake occurrences. If we take the 2nd year of Emperor "You" of the Zhou Dynasty (780B.C.) as the beginning of historical recording of strong earthquakes in China, the historical seismic data can go back to more than 2700 years ago, a time period, occupying one-fourth of the most recent geological period, Holocene Epoch. Such a long accumulation of abundant historical seismic data is very valuable and is possibly uncomparable with that of any other country of the world. Therefore, systematically compiling, arranging and analysing such a great volume of data is quite worthwhile for studying seismic activity of China and also for the world as a whole.

In 1956, the Chinese Academy of Sciences organized a group of seismologists and historians to compile and publish the "Chronical Data of Chinese Historical Earthquakes". Later, seismologists of the Institute of Geophysics of the Chinese Academy of Sciences, selected and again analysed in the light of modern seismology the destructive earthquakes, so that by combining with recent earthquakes, the "Catalogue of Chinese Earthquakes" was prepared and published. During the past 20 years, the chronical data and the catalogue, representing the research level in historical earthquake science of China, have become the necessary basic reference for seismological workers of this country.

For the purpose of presenting the results of our studies of Chinese historical earthquakes, a committee consisting of history-geographers, seismologists and cartographers was organized to compile this present volume of "Atlas of the Historical Earthquakes in China". It gives a general picture of all destructive earthquakes, occurred within the borders of modern China.

In this atlas, the principal contents are maps of the epicentres and isoseismal lines, in addition simple explanatory remarks and several photographs. During the compilation special emphasis has been made on the reliability of the data, in connection with seismological and history-geographical aspects. The maps possess visual, imaginal and multiple characteristics as well as vivid in appearance so that readers can readily comprehend and use them.

The compilation work of "Atlas of the Historical Earthquakes in China" was chiefly done by a special committee including members of the Institute of Geophysics of the State Seismological Bureau and the Institute of Chinese Historical Geography, Fudan University under the auspices of the State Seismological Bureau and published by the Cartographic Publishing House.

Local data of historical earthquakes have been provided by 23 seismological bureaus of provinces, autonomous regions and municipalities, namely Tianjin, Shanxi, Liaoning, Heilongjiang, Jilin, Shandong, Hebei, Henan, Hubei, Jiangsu, Zhejiang, Shanghai, Fujian, Jiangxi, Guandong, Guangxi, Shaanxi, Gansu, Ningxia, Qinghai, Sichuan, Yuannan and Guizhou.

Professor Gu Gongxu, president of the Chinese Seismological Society and Professor Tan Qixiang, director of the Institute of Chinese Historical Geography, Fudan University were kind enough to give their warm guidance for the compilation of this atlas.

This work was carried out with the support and help of all the above-mentioned organizations and their leading members. Hearty thanks are due to them all.

As the work of compiling and publishing of this atlas is first of its kind, there inevitably exist shortcomings and mistakes. Criticisms and corrections are entirely welcome.

Committee for the "Atlas of the Historical Earthquakes in China"

1983

# 明时期中国历史地震图集

## 编辑说明

明时期《中国历史地震图集》由5幅序图和以216次地震汇编的214幅分幅图组成。对分幅图的编辑作如下说明：

1. **图目**：以1983年出版的《中国地震目录》为基础，参考有关省、自治区、直辖市的地震历史资料汇编选定，图目仅收取震中在现今国界范围内的历史地震。原则上一次地震设一幅图。个别由于资料不足只能标绘出震中的，如发震时间连续、且同点或震中相距不远的两次地震，共设一幅图。

2. **图号与编排**：按地震时间顺序编排，一次地震一个图号。个别大地震另设高烈度区的扩大图，其图号与主图相同，但分别注出图名。两次地震合幅者，同列两个图号和两个图名。

3. **图名**：以地震时间与震中地名命名。发震时间除按照历史文献所记载的时间外，均据陈垣著《二十史朔闰表》换算成公元年、月、日，其中1582年10月5日以前用儒略历，1582年10月5日以后用格勒哥里新历，未作历法统一。震中地名根据地震史料的详略并对照《明史地理志》记载，或取府州名，或取县名，或取县级以下的地名，当县级以下地名易于混淆时，冠以县名。图名采用古今对照。

4. **图幅范围**：原则上参照震级、烈度与有感半径大小确定。

5. **图面内容**：根据每次地震的史料，表示出震中位置、震中烈度、烈度分布等地震内容。地理要素经考证，表示发震时的历史地理情况，主要选取与地震记载有关的古地名以及政区设置、山脉、河流、湖泊、海岸线等。有地震记载的地名基本上全取。其他县及县以下地名视图面情况选取。地名采用古今对照。不论有无地震记载，一般对照到今县，无对照意义的今县酌选。

6. **图中界线**：古界表示政权部族界，一级和二级政区界。今界表示国界及省、自治区、直辖市界。今行政区划资料截止期为1980年底。某些地震波及范围越过今国界范围的，亦予表示。

7. **地震参数**：震中位置以破坏最重的地方确定；震中烈度(I。)根据《实用震级表》并参考《新的中国烈度表》评定；震级(M)按震中烈度、震级关系： $M=0.58 I。+1.5$ 换算，并参考影响范围大小作适当调整。

8. **文字说明及照片**：每幅图附该地震的综合性简要说明。文字叙述尽量用史料原文，并

注明出处。若干大地震附实地考察和文物考古资料照片。

编辑本图集时参考的主要文献和资料有：1. 顾功叙主编《中国地震目录》（科学出版社，1983年出版）；2. 中国科学院地震工作委员会历史组编辑《中国地震资料年表》（科学出版社，1956年出版）；3. 各有关省、自治区、直辖市地震历史资料汇编；4. 谭其骧主编《中国历史地图集》；5. 明史《地理志》、《河渠志》、《兵志》；6. 顾祖禹辑著《读史方輿纪要》；7. 有关地方志、档案、文集等；8. 有关地震实地考察、文物考古资料；9. 有关地震、地震地质方面科研成果等。

负责编辑本图集的编委会成员有：国家地震局地球物理研究所时振梁、李群、杨玉林、武宦英，复旦大学中国历史地理研究所祝培坤、陈家麟、嵇超、张修桂、周源和，地图出版社计伯仁、邹明方、石奉天、赵杏英，国家地震局王志新、李裕初。参加工作的还有牛平汉、刘昌森、金计初等同志。地图的技术设计、绘制和清绘工作由地图出版社历史地图室和整饰室承担，地图出版社印刷厂承担了制印工艺设计和制版工作。

## 《中国历史地震图集》编委会

一九八三年

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# ATLAS OF THE HISTORICAL EARTHQUAKES IN CHINA DURING THE MING DYNASTY PERIOD

## ANNOTATIONS

This "Atlas of the Historical Earthquakes in China during the Ming Dynasty Period" consists of five sheets of introductory maps and altogether 214 separate maps with 216 earthquakes. The compilation of the separate maps is described as follows:

### 1. List of the separate maps

They are taken from the 1983 edition of the "Catalogue of Chinese Earthquakes" with some references to the local data of historical earthquakes of provinces, municipalities and autonomous regions, making use of only the epicentres of historical earthquakes inside the borders of modern China.

One earthquake occupies principally one map. For some earthquakes whose data are not sufficient so that only their epicentres can be indicated, then two of such earthquakes, nearby in location and consecutive in time of occurrences are placed on the same one map.

### 2. Map number and sequence order

They are arranged in the order of times of occurrences of the earthquakes, assigning one earthquake a map number. For certain great earthquakes, extension maps of the areas of higher seismic intensity are inserted, with the same map numbers as that of the principal maps of the respective earthquakes, but retaining their map names. When two earthquakes are on the same map, there should be two individual map numbers and their map names.

### 3. Map names

Maps are named by the time of occurrences of the earthquakes and the localities of the earthquakes, as given by the related historical recordings, and all of earthquakes have been converted by a table prepared by Professor Chen Yuan to dates in the Christian Era, Julian Calendar before October 5, 1582 and Gregorian Calendar after it, thus the dates are not unified in calendar. Names of the localities of the epicentres are taken from the data of historical earthquakes and checked with the "Geographic Memoir of the Ming Dynasty", indicating as prefectures, counties or areas smaller than a county which may be combined with the county names to avoid confusion. Historical and present names of the map are juxtaposed.

### 4. Scope of a map

It depends on the magnitude, intensity and the radius of the felt area of an earthquake.

### 5. Contents on the map

A map contains seismological aspects, such as epicentre, epicentral intensity, intensity distribution, etc. of the earthquake. Geographic locations should represent the sites of the earthquakes at the historical time of occurrence, taking chiefly the historical names from the related historical earthquake recordings as well as the political dividing lines, mountain ranges, rivers, lakes, shore lines, etc.

All the names of places having historical earthquake recordings are generally included, but whether the names of the counties or areas smaller than a county are taken into consideration, depends on the actual situation of the individual maps. Historical and present names of localities are juxtaposed. No matter whether there are historical earthquake recordings or not, the juxtaposition is generally done for no lower the level of a present county and may be omitted if it becomes meaningless.

### 6. Dividing lines on a map

Historical dividing lines represent the political boundaries between areas inhabited by different nationals or first and second order political lines. Present dividing lines represent national boundaries, provincial boundaries, boundaries of autonomous regions and municipalities directly under the central government. Time limits of present administrative boundaries are up to the end of 1980. Some earthquakes affected areas beyond the present national boundaries are also included.

### 7. Earthquake parameters

Epicentre is determined by where the destruction is most serious; epicentral intensity ( $I_0$ ) is judged by (Practical Earthquake Magnitude Scales) with (New Chinese Intensity Scales) as reference; magnitude ( $M$ ) is the conversional result of epicentral intensity and magnitude relative formula:  $M = 0.58 I_0 + 1.5$ , and

proper adjustment may be made according to the width of the area affected.

#### 8. Explanations and photographs

Each map has a simple explanation, using the original text from the historical recordings and the corresponding citations. For some large earthquakes, photographs from actual field observation and related archaeological materials are also included.

The main references and materials used for this atlas are: (1) Catalogue of Chinese Earthquakes, edited by Gu Gongxu, the Institute of Geophysics of the State Seismological Bureau, Science Press, 1983; (2) Chronical Data of Chinese Historical Earthquakes, edited by the Historical Group of the Working Committee of Earthquakes of the Chinese Academy of Sciences, Science Press, 1956.; (3) Compilations of Historical Earthquake Materials, by different related provinces, autonomous regions and municipalities directly under the central government; (4) The Historical Atlas of China, edited by Tan Qixiang; (5) History of Ming Dynasty including "Geographic Memoir", "River Memoir", "Military Memoir"; (6) Resume of Reading Shi Fanyu, by Gu Zuyu; (7) Related local memoirs, documents, collected papers, etc; (8) Related reports of actual field observations, archaeological materials; (9) Related results of studies on earthquakes and seismotectonics, etc.

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Drafting and drawing of the maps are done by members of the Historical Map Room and the Fairdrawing Room of the Cartographic Publishing House, and printing art designing and plate-making are done by the CPH Press.

Committee for the "Atlas of the Historical Earthquakes in China"

1983

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# 图 例

## 地 震 内 容



等震线及烈度值



震中符号

• VI

单点烈度值

◎ 武功

有地震记载的地名



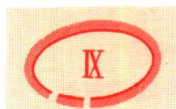
震中烈度 (I.) VI



震中烈度 (I.) VII



震中烈度 (I.) VIII



震中烈度 (I.) ≥ IX

## 古 内 容



◎ 京师

都城

◎ 西安府

省级驻地

◎ 河南府

府、州、卫级驻地

◎ 渭南

县、州、所级驻地

◎ 红寺堡

村镇



政权部族界



省级政区界



府、州、卫级政区界



河流、湖泊、桥



运河、渠



伏流河



沼泽



堤



山峰、关隘



庙宇



长城、壕垣

## 今 内 容



◎ 北京市

首都

◎ 西安市

省、自治区、直辖市人民政府驻地

◎ 洛阳市

市人民政府驻地

◎ 渭南

县级人民政府驻地

◎ 威远堡

村镇



未定 国界



省界



地区界



印巴停火线



河流、湖泊、沼泽



水库、闸坝



蓄洪区



沙漠



珊瑚礁



铁路



公路



# Legend

## Seismological



Isoseismal & intensity



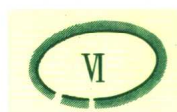
Epicentre



Point intensity



Locality with seismic records



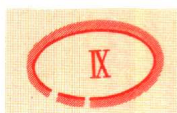
Epicentral intensity ( I. ) VI



Epicentral intensity ( I. ) VII



Epicentral intensity ( I. ) VIII

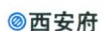


Epicentral intensity ( I. ) IX and over

## Historical



Capital city



Seat of Sheng-level administration area



Seat of Fu-, or Zhou-, or Wei-level administration area



Seat of Xian-, or Zhou-, or Suo-level administration area



Town or village



Boundary of a regime or a tribe



Sheng-level boundary



Fu-, or Zhou-, or Wei-level boundary



River, lake and bridge



Canal



Subterranean river



Swamp



Dike



Mountain peak and pass



Temple



The Great Wall, defence work

## Contemporary



National capital



Seat of province-level administration area



Seat of a city



County seat



Town or village



International boundary



Province-level boundary



Regional boundary



Cease-fire line



River, lake and swamp



Reservoir and dam



Flood storage area



Desert



Coral reef



Railway



Highway