

# 长江三峡工程水库 水文题刻文物图集



国务院三峡工程建设委员会移民开发局 主持  
水利部长江水利委员会 编著

科学出版社



# 长江三峡工程水库 水文题刻文物图集

国务院三峡工程建设委员会移民开发局 主持  
水利部长江水利委员会 编著

科学出版社

1996

(京)新登字 092 号

书名题写:邹家华

图书在编目(CIP)数据

长江三峡工程水库水文题刻文物图集=Hydrologic In-  
scription Cultural Relics in Three Gorges Reservoir Area/  
水利部长江水利委员会编著. —北京:科学出版社,1996.7  
ISBN 7-03-005488-1

I. 三… II. 水… III. 水文石刻(考古)-中国-三峡-图  
录 IV. K877.492

中国版本图书馆 CIP 数据核字(96)第 0927 号

1997 3.17

文物出版社

出版

No. 1113.19-1

科学出版社 出版

北京东黄城根北街 16 号

邮政编码:100717

深圳科技园 承制  
深圳美光彩色印刷股份有限公司

新华书店北京发行所发行 各地新华书店经售

\*

1996 年 6 月 第 一 版 开本:889×1194 1/16  
1996 年 6 月 第 一 次 印 刷 印张:11 1/2  
印数:0001—3 000 字数:420 000

定价:220.00 元

历史见证  
古为今用

郭象华

一九九二年三月



# 《长江三峡工程水库水文题刻文物图集》

## 编辑委员会

顾问	林一山	黄友若	唐章锦				
主任	黎安田	杨启声					
副主任	傅秀堂	陈俊府	季学武				
委员	(按姓氏笔画为序)						
	文伏波	王思乔	甘家庆	陈金荣	陈雪英	何治华	
	吴畏	杨玉荣	金蓉玲	林仙	段志德		
	姚炳华	赵时华	高治齐	郭一兵			
主编	郭一兵						
副主编	郭海晋	吴畏	王辉				
编辑	郭海晋	王辉	刘其发	刘智选	陈晖	范可旭	
责任编辑	姚岁寒	彭胜潮	王日臣				
美术编辑	李新芬						

## 出版的 话

文物古迹是不可再生的宝贵历史财富,若有所失,则不可弥补。在三峡工程建设中,执行《中华人民共和国文物保护法》和《长江三峡工程建设移民条例》,保护好文物,是全体公民应尽的职责。

库区文物的淹没处理,一直是三峡工程文物保护的重要内容。为此,40多年来,对凡具有历史、艺术、科学价值的古文化遗址,反映历史上各时代、各民族社会生活的代表性实物,以及与重点历史事件有关的具有纪念、教育意义和史料价值的遗址、遗物等文物,中国历史博物馆、中国文物研究所主持并组织有关单位进行了逐一调查登记,于1995年底,完成了21个县(市)区《长江三峡工程淹没及迁建区文物古迹保护规划报告(初稿)》。

在三峡工程论证期间,经核实工程建设将淹没重要文物44处。其中,有涪陵白鹤梁水文题刻全国重点文物保护单位一处,省级文物保护单位五处,县市文物保护单位10余处。作为三峡工程水库淹处理及移民安置的负责部门和工作人员,历来将保护库区文物视为自己神圣的职责和义务,是爱祖国、爱人民,依法办事的历史唯物主义精神的体现。1993年国务院三峡工程建设委员会移民开发局发出了《关于做好三峡工程库区文物保护前期工作有关问题的通知》,该通知第5项提出了“对库区洪、枯水碑刻、题记,要配合做好有关专业学科评价和提出保护、迁建、安置等处理方案”的建议。本图集就是根据这一精神,在多年调查、搜集的大量资料基础上,经整理、分析,将具有历史科学价值的洪水题刻130余幅、枯水题刻180余幅,及近50幅有关背景性照片,编著成我国第一部具有水文专业特色的文物图集。

本图集是三峡工程移民工作者与水文工作者和文物工作者相互协作,共同努力“三合一”的成果;它集1000多年来三峡工程库区水文题刻之大观,其数量之多、跨越时代之久,水文科学、历史艺术等综合价值之高,举世罕见。

在本图集的编著过程中,得到了多方面的支持。国务院副总理邹家华特为图集题写书名并题词,这是对我们工作的鼓励和鞭策。今谨以此图集献给所有关心和支持三峡工程建设,关心和支持三峡工程文物保护工作的同志们!献给所有为三峡工程水库淹没处理和移民安置而辛勤工作的同志们!以表我们诚挚的谢意。文物保护工作任重道远,本图集的编著只是一个起步,我们将一如既往,继续为保护好三峡地区的文物而努力!

杨启声 段志德 赵时华

1996年 初春

# 前 言

长江是中国第一大河。她发源于号称“世界屋脊”的青藏高原,干流流经青海、西藏、四川、云南、湖北、湖南、江西、安徽、江苏、上海等 10 省、直辖市、自治区,于上海崇明岛以东注入浩瀚的东海,全长 6300 余公里。她的数以千计的支流呈南北状辐射,延伸至甘肃、陕西、河南、贵州、广西、浙江、福建、广东等 8 省、自治区。干支流构成庞大水系,流域面积达 180 万平方公里,占全国总面积的 1/5 强。她跨越西南、华中、华东三大区,哺育着全国 1/3 以上的人口,既是中华民族的重要发祥地,又是当今中国范围最大、工农业基础最为雄厚的经济区。

长江流域自然资源丰富,特别是水资源和水能资源蕴藏量巨大。但由于降水的时空分布不均,流域内洪、涝、旱灾频繁发生,长江中下游平原的洪水灾害尤为严重。为了除害兴利,早在 50 年代长江水利委员会便制定了长江流域综合利用规划,将三峡工程作为治理开发长江的关键工程,并积极为此项工程的设计进行了大量的水文、勘测和科研工作,历时 40 余年,从未稍懈。

三峡工程修建在西陵峡的三斗坪河段,控制了长江上游 100 余万平方公里的流域面积,可以有效地调节进入长江中下游的洪水,兼有发电、航运之利;其回水可至重庆及下川江两岸支流河涧,形成长达 660 公里的水库区。三峡水库淹没区,包括淹没和受淹没影响的陆地面积共有 632 平方公里,涉及 19 个县、市,13 座县城、140 个集镇和数以千计的山村。被淹没的城镇和山村均将按移民规划,就近后移或迁建至新的移民区。

我国治水的历史十分悠久,有关洪枯水情的记载尤为丰富,劳动人民在长期与洪、涝、旱灾斗争的实践中,以历史文献、石刻题记等方式,大范围、长时期、多点位在三峡库区留下了许多世界上罕见的洪枯水史料。水文题刻文物就是指这些记录洪枯水情况的实物性石刻题记。三峡库区石刻题记年代之久、数量之多、分布之广,使其具有很高的科学、历史和艺术价值,是葛洲坝、三峡工程设计的重要依据资料,同时也为长江上游水电工程建设、城市防洪、气象研究和航运等提供了极其宝贵的历史水文资料。

三峡工程于 1994 年正式开工,计划于 1997 年实现大江截流,2003 年首批机组发电,2009 年工程全部竣工。这样,三峡库区干支流沿岸珍贵的水文题刻文物大部分将淹没水下。社会各界对此极为关注,国家已责成有关部门采取措施予以补救。在国务院三峡工程建设委员会移民开发局主持下,1994 年以来长江水利委员会再次组织力量对三峡库区

的水文题刻进行调查与复核,并以此为基础编制了《长江三峡工程水库水文题刻文物图集》。本图集的出版,不仅为后世留下了一份极为珍贵的文化遗产,也是文物保护的措施之一。

由于图集全系图片编成,仅有简略而分散的文字说明,读者阅读不便,兹将长江历史洪枯水调查工作的过程和洪枯水题刻的特点、价值作一概述。

长江历史洪枯水的调查研究工作始于50年代初。据统计,长江干流从上游宜宾至下游大通之间,较大规模的调查有10次,其中以1956、1959、1966年的3次调查较为系统全面,共查得大水年份60多个、洪水点据2800余处。

长江上游地区,共查得8个可以确切定量的历史洪水年份,它们是1153、1227、1520、1560、1788、1796、1860、1870年。其中最高洪水位的年份是1870年(清同治九年),该年洪水题刻也最多,有近100处;1153年洪水题刻最少,只有2处。60年代中期,就长江上游局部地区广为流传的“洪化”、“洪武”年大洪水问题,长江水利委员会与考古、文博等部门合作,对长江上游干支流与洪水有关的摩崖题刻、古建筑的年代及其洪水痕迹、古遗址地层中洪水沉积物等方面,进行了大量的水文与考古相结合的专题调查研究,查明“洪化”、“洪武”年洪水远小于1870年洪水,民间之说实为误传。又如对三峡坝址附近黄陵庙水痕的考证,通过碑刻题记、建筑物反映的朝代风格、构件形式及其兴衰史和历史文献等分析研究,查明了自明万历四十六年(1618年)该庙修建至调查时360多年的历次洪水发生情况和洪水高程,证明自黄陵庙建成后,重庆至宜昌河段没有发生超过1870年洪水的其它大洪水。

70年代又对重庆至宜昌河段进行了3次枯水题刻的专题调查,在江津的莲花石、重庆的丰年碑、涪陵的白鹤梁、云阳的龙脊石、奉节的落水碑等处,收集了大量的枯水水文资料。其中,已被国家列为重点文物保护单位的涪陵白鹤梁枯水题刻,有题刻163段,3万余字,记载了自唐广德二年(764年)至今1200余年间72个枯水年份的历史枯水资料。

此外,围绕着长江流域的历史洪枯水,50年代以来,还投入大量人力,多次在北京及长江流域内各地图书馆、档案馆搜集了大量历史文献资料,掌握了包括照片、拓片等在内的大量第一手资料。其中仅宜昌以上地区,查阅抄录的地方志就有760多种、宫廷档案600多件。

1994年5月至1995年10月,长江水利委员会又3次对三峡库区的水文题刻进行了复查和测量。通过复查,发现已有部分题刻被自然或人为毁坏。据统计,原有的174处洪水题刻,目前已毁坏89处,残缺15处,保存完好的只有70处。库区枯水题刻较多,由于大部分时间处于水下,只有水位较低时才露出水面,因此保存较好。

三峡库区水文题刻具有如下特点:一是题刻记载的洪枯水年代久远、内容丰富,并有具体高程位置及发生时间;二是碑记石刻数量多、分布广;三是题刻所指定的洪枯水高程



准确;四是题刻记载与地方志等史料所描述的内容多能相应而互为印证。

长江干流重庆至宜昌河段能够确切定量的最早洪水题刻年份为宋绍兴二十三年(1153年),最早的枯水题刻为唐广德二年(764年),这在国内外都是罕见的。从题刻内容来看,大部分题刻有历史洪枯水的水位具体位置及发生的年代和日期。如涪陵市两汇乡题刻:“同治九年庚午,六月十六日涨大水,二十一日水退”。有的洪水题刻还对不同年份洪水的淹没位置作了比较,如忠县忠州镇题刻“宝庆三年丁亥去癸酉七十五年,水复旧痕高三尺许”,说明1227年洪水位比1153年洪水位高出三尺左右。涪陵白鹤梁枯水题刻群,与水文有关的题刻多达100余段,其突出特点是以“石鱼”为水标来描述江水位的高低,如971年题刻“江水退,石鱼出见,下去水四尺”;1086年题刻“江水至此鱼下五尺”等等。就枯水题刻而言,国内各大河流尚没有发现有像白鹤梁如此完整的枯水题刻群。

三峡库区水文题刻数量多,洪水题刻达174处,枯水题刻有4个河段。题刻涉及的洪枯水年份也多,其中有历史大洪水年份19年,枯水年份93年。洪水题刻分布广,在三峡库区沿江各地均有分布。同一洪水年份的题刻,如1870年就有近100处;1788年有21处。它们基本上分布在沿江各地,能较好地反映洪水位的沿程变化。

三峡库区水文题刻,所指定的水位高程一般都具有较高的精度。因为绝大多数洪水题刻都有“水涨至此”、“水淹此处”等字样;有的还以“一”、“三”等符号标出当时的水位——这种标志形式已与现在的水位标记方式基本一致,为测量当时洪水位提供了具体位置。根据长江地质地貌特性资料分析,近千年来重庆至宜昌段河槽整体上是稳定的。用1870年洪水题刻所测高程,点绘的该河段洪水水面线,与现代实测洪水水面线基本一致,说明洪水题刻所提供的洪水位位置是准确可靠的。

三峡库区的历史洪枯水,除有各种石刻碑记外,沿江各地方志在大水之后也多有记载,而且题刻内容与地方志的描述能相互印证,互为补充。如前述的涪陵市两汇乡题刻“同治九年庚午,六月十六日涨大水,二十一日水退”;涪陵州志在记述同治九年大水时,为“夏,六月十六日至二十日,江盛涨,水入城,江岸南北漂没民居无数,此数百年未见之灾也”。又如万县市泌溪洪水碑刻“清同治九年庚午,六月十九日,大水涨至此”;万县采访记实有关同治九年洪水的记载是“……六月十五日江水泛,十六日没河岸,十七日啮城根,十八日及县署照墙,十九日夜子时,大雨彻宵,骤涨,平明县地陆沉。……”,描述了洪水起涨的过程和高度,也是泌溪洪水碑记的重要补充。

水文题刻文物具有极高的科学价值和应用价值,在我国一直受到水文界及水利、气象、航运等部门的高度重视。应用水文题刻资料推求工程的设计洪水,是具有中国特色的水文分析计算方法,其创造性已为世界各国水利工程界所公认。

葛洲坝水利枢纽是三峡工程的反调节水库,系径流式水电站,影响枢纽规模和建筑物安全的洪水数据主要是设计洪峰流量。在确定大坝设计标准及相应的设计流量时,正

是根据宜昌上下游 2000 多年有关洪水方面的历史文献及三峡库区 800 余年来的大量洪水题刻记录,经综合分析,选定 1788 年洪峰流量 86000 立方米/秒作为设计洪水,1870 年洪峰流量 110000 立方米/秒(上限值)作为校核洪水。

水文题刻及调查的历史洪水资料也同样用在三峡工程设计上。我国现行设计洪水计算主要采用频率分析方法,即根据洪水样本,用数学模型推求设计标准的峰量。就总体而言,实测洪水样本代表性不够,由此推算的设计洪水成果往往有较大的抽样误差,因此将历史洪水、特别是久远的历史洪水应用于频率计算,可以大大减小抽样误差,使计算成果趋于合理。在三峡工程洪水频率分析中,尽管宜昌站迄今已有 110 余年实测资料,但样本的代表性仍嫌不够。然而,由于三峡库区有大量的水文题刻及丰富的历史文献资料,据此推算出宜昌从 1153 年以来的历史洪水的洪峰及时段洪量,将其加入洪水频率计算,则较好地解决了洪水频率曲线稀遇部分外延的问题。

在白鹤梁枯水题刻群中,最枯水位为 1140 年。据推算,此年最枯水位与本世纪 1937 年接近,由此可以分析了解现有实测样本的代表性,并对航运规划、农田灌溉及气象研究有重要的参考价值。

白鹤梁题刻多出自历代文人墨客之手,除有北宋著名文学家、书法家黄庭坚的题刻外,还有诸多名人的诗文、题记。这些题刻文字,篆、隶、行、楷书皆备,颜、柳、苏、黄体俱全。此外,还有少数民族文字和雕刻精巧、栩栩如生的石鱼。白鹤梁题刻素有“水下碑林”之称,不仅具有科学和历史的价值,为历代专家学者所珍视,而且在艺术上亦极具特色,不乏上乘之作。

本图集既是一部具有水文特色的专业图集,又是一部具有珍贵艺术价值的文物图集,现编辑出版,以飨读者。但由于时间匆促,加之编者水平所限,不足与谬误之处,祈请读者指正。



# *Hydrologic Inscription Cultural Relics in Three Gorges Reservoir Area*

## **FOREWORD**

The Yangtze River is the largest one in China, rising in the Qinghai-Xizang Plateau known as "the roof of the world". Its stem stream runs through Qinghai, Xizang, Sichuan, Yunnan, Hubei, Hunan, Jiangxi, Anhui, Jiangsu and Shanghai, and flows into the East China Sea in the east of the Chongming Island, with its total length of 6 300 km and more. Thousands of its tributaries run along the South-north orientation and cover 8 provinces and autonomous region, i. e. , Gansu, Shaanxi, Henan, Guizhou, Guangxi, Zhejiang, Fujian and Guangdong. The large water system composed of its stem stream and tributaries has a catchment area of up to 1.8 million square kilometers, which accounts for more than one-fifth of the whole country's area. The Yangtze River spans three large regions of Southwest China, Central China and East China. The Yangtze Valley, in which there live the people of one-third and more of the whole country's population, is either an important birthplace of Chinese Nation or an economic region of the largest scope and the most solid industrial/agricultural bases in China.

The Yangtze Valley is rich in natural resources, especially in water and hydropower resources potentials. Because of nonuniform temporal and spatial distribution of precipitation, however, the flood, water-logging and drought disasters have been frequently occurring in the valley. Especially, there have occurred the serious flood disasters in the middle/lower Yangtze regions. In order to mitigate and eliminate these disasters and develop the Yangtze River, as early as the 1950s, Changjiang Water Resources Commission formulated the Yangtze valley comprehensive development planning, with Three Gorges Project selected as the key project for regulating and developing the Yangtze. In the past 40 years and more, a lot of hydrologic, exploratory, surveying and research works were continuously conducted for the design of this project.

Three Gorges Project is being constructed on the Sandouping river reach of Xiling Gorge. The catchment area above it amounts to one million square kilometers and more.

This project can efficiently regulate the flood discharging into the middle and lower reaches, in addition, has the benefits of power generation and navigation. The backwater of Three Gorges reservoir will reach to Chongqing City, with the reservoir length of up to 600 km. The area of the land inundated and affected by Three Gorges reservoir totals 632 km<sup>2</sup>, dealing with 19 counties and cities, 13 county seats, 140 towns and thousands of hill villages. The inundated cities, towns and village residential quarters will be relocated in the resettlement areas, according to the resettlement planning of Three Gorges Project.

There is a very long history of the river water control in China, with a lot of the historical high/low water conditions recorded. In the Three Gorges reservoir area, the late labour people left many world-rare historical materials of high/low water by means of the historical documents and the stone inscriptions during their long-term struggle against the flood, water-logging and drought disasters. The hydrologic inscription relics refer to these physical stone inscriptions recording the high/low water events. A lot of the hydrologic inscriptions in Three Gorges reservoir area have a long recording period and wide distribution range, thus, possessing a very high value of science, history and art. These hydrologic inscriptions are an important basis of designing the Gezhouba and Three Gorges projects, in the meanwhile, provide the hydropower engineering construction in the upper Yangtze region, the urban flood defense, the meteorological research and the navigation development and others with very precious historical hydrologic data.

Three Gorges Project formally started to construct in 1994. It is planned that the river closure will be carried out in 1997; the first batch of generation units will be put in operation in 2003; and whole project will be completed in 2009. After impounding of Three Gorges reservoir, most of hydrologic inscriptions in the reservoir area will be inundated. All sections of people are deeply concerned at them, and the state has instructed the relevant departments to take some remedial measures. Under the charge of the Resettlement Development Bureau of Three Gorges Project Construction Commission of State Council, the Changjiang Water Resources Commission organized again the relevant personnel to survey and recheck the hydrologic inscriptions in the Three Gorges reservoir area in 1994. And, on the basis of the obtained results, a photograph album entitled *Hydrologic Inscription Cultural Relics in Three Gorges Reservoir Area* has been compiled. The publication of this album not only can leave a precious cultural heritage for later generations, but also serves as a protective measure to these hydrologic inscriptions.

Because of the album composed of the photographs entirely, and, only with some brief and dispersive written commentaries, it might be not convenient to read it. In view of this,



the process of the Yangtze historical high/low water surveys and the features/value of the high/low water inscriptions are summarized as follows:

The survey and research work of the Yangtze high/low water started from the early 1950s. According to the statistical data, the 10 comparatively large scale surveys were carried out on the Yangtze main stem between the upstream Yibin City and the downstream Daitong City, of which 3 surveys conducted in 1956, 1959 and 1966 are relatively systematic and complete. The 3 surveys revealed more than 60 historical high water years and more than 2 800 high water marks.

In the upper Yangtze region, the inscriptions and marks recording the floods occurring in such 8 years as 1153, 1227, 1520, 1560, 1788, 1796, 1860 and 1870 may be used to exactly quantify the corresponding flood stage, of which the 1870 flood stage is the highest one, and the inscriptions recording the high water occurring in this year are also most, about 100; in 1153, least, only 2.

In the middle 1960s, in order to make sure of the Honghua-year and Hongwu-year high water problems spreaded then in the local upper Yangtze area, a special investigation of combination of the hydrology and archaeology was carried out by the Changjiang Water Resources Commission and other relevant units on the inscriptions on the rock, the dates of ancient buildings and the high water marks on them, and the diluvial deposits in ruins ground on the upper Yangtze stem and its tributaries. The investigation showed that the Honghua-year and Hongwu-year flood discharges are far less than the 1870 one; the rumours are wrong. Then again, as for the investigation of the flood marks on the Huangling Temple building near the Three Gorges Project damsite, in terms of analyzing the inscriptions on the stone tablets and the dynastic style, the element from and the rising/declining histories of this building as well as the relevant historical documents, the conditions of various floods occurring during the period of more than 360 years from 1618 when the temple was built to the year of survey were found out. It was proved that the floods occurring on the river reach between Chongqing City and Yichang City since completion of the temple did not exceed the flood occurring in 1870.

In the 1970s, three special surveys on the low water inscriptions were carried out along the river reach from Chongqing to Yichang. The main surveying objects include: the Lotus Flower Stone at Jiangjin City, the Good Year Tablet at Chongqing City, the White Crane Sill at Fuling City, the Dragon Backbone Stone at Yunyang County and the Water Falling Tablet at Fengjie County. Through these surveys, a lot of the low water data collected, of which the inscriptions at the White Crane Sill ranked as the state's specially protective cul-

tural relic, amounting to 163 pieces or 30 000 characters, recorded the low water conditions of 72 low water years during the period of more than 1 200 years from the year 764 to the present.

In addition, in order to make sure of the Yangtze historical floods, since the 1950s, a lot of manpower has been inputted to consult the flood-related historical documents collected in the libraries and archives in Beijing Municipality and the Yangtze Valley. As a result, a lot of firsthand materials, including the photographs and rubbings, were obtained, of which the local histories and the palace files obtained only from the region above Yichang total 760 and 600 pieces respectively.

During the period from May, 1994 to October, 1995, three recheckings/surveys were carried out by the Changjiang Water Resources Commission on the hydrologic inscriptions in the Three Gorges reservoir area. The results showed that among original 174 high water inscriptions, 89 had been destroyed and another 15 damaged due to effect of the natural and artificial factors, the rest, only 70, remained in good condition. There are a lot of the low water inscriptions in the Three Gorges reservoir area. Because these inscriptions are underwater in most time of a year, they are better preserved.

The Three Gorges reservoir area's hydrologic inscriptions have the following features: long recording years, abundant content and the concrete positions/dates of the high/low water stages occurring; numerous stone tablet inscriptions and their wide distribution range; accurate high/low water stages recorded by the inscriptions; the inscriptions' contents in correspondence with those described by the local histories, for confirming each other.

Along the Chongqing—Yichang stretch of the Yangtze stem, the earliest date of the high water inscription capable of exactly quantifying the flood is the year 1153, and the low water inscription, the year 764. It is rare at home and abroad. As seen by the contents of inscriptions, most inscriptions showed the concrete positions/dates of the high/low water stages recorded. For example, the stone inscription at Lianghui Village, Fuling City, said, "High water occurring on June 16, 1870; Water stage falling to ordinary one on June 21". Some high water inscriptions made a comparison between the high water stages occurring in the different years. For example, the stone inscription at the Zhongzhou Town of the Zhongxian County said, "The high water stage occurring in 1227 was three *chis* (1 meter = 3 *chis*) higher than that occurring in 1153". On the White Crane Sill of Fuling City, there are more than 100 hydrology-related inscriptions. These hydrologic inscriptions' outstanding feature is all taking the "Stone Fish" as a standard to describe the river water stage fluctuation. For instance, the inscription made in 971 said, "The river water stage was falling



so that the Stone Fish appeared out of the water surface, and the low water stage was 5 *chis* lower than the Stone Fish"; also, the inscription made in 1086 said, "The low water stage was 5 *chis* lower than the Stone Fish". As for the low water inscription, no so complete inscriptions like those at White Crane Sill have been discovered on other large rivers in China.

In the Three Gorges reservoir area there are numerous hydrologic inscriptions, the high water inscriptions of 174 pieces, the low water inscriptions over 4 river stretches. The inscriptions deal with many high/low water years, of which the historical large flood years amount to 19, the historical low water years, 93. The high water inscriptions are distributed over the riparian places in the Three Gorges reservoir area. And, in the same high water year, there are also numerous inscriptions, for instance, 100 pieces, in 1870; 21 pieces, in 1788; these inscriptions are basically distributed at the riparian places along the Three Gorges reservoir river stretch, and can better reflect the high water stage conditions along this river stretch in the corresponding high water year.

The Three Gorges reservoir area's hydrologic inscriptions showed the quite accurate water stages, because most high water inscriptions had such words as "Water Level Rising Here". In addition, the symbols "～" and "≡" were used in the inscriptions to mark the water stages then, which provide the modern surveying of those high water stages with the concrete positions. Based on the analysis of the Yangtze's geologic/geomorphic data, the river channel of the Chongqing—Yichang reach kept stable in the last 1 000 years. The flood surface curve obtained from 1870's hydrologic inscriptions is basically in agreement with that observed in modern times, which shows the reliable flood stages recorded by the inscriptions.

The Three Gorges reservoir area's historical high/low water stages were recorded not only by various stone inscriptions but also by the local histories of the riparian counties and states, and, the contents of both inscription and local history are in agreement, which may be used for confirming each other. For above-mentioned inscription at Lianghui Village of Fuling City, or "High water occurring on June 16, 1870; Water stage falling to ordinary one on June 21", the corresponding content written in the Fuling State History is "On June 16—20, 1870, the river water was strongly rising and flowing into the city, with a lot of the residential buildings on both banks inundated. It is the biggest disaster in several centuries". Also, the high water stone inscription at Mixi of Wanxian City said, "River water stage rised here on June 19, 1870". ; the corresponding content written in the Wanxian History is "The river water was flooding on June 15, 1870; the river banks were inundated on June 16; the river water came to the vicinity of the city wall on June 17, and to the screen wall of the

county government office on June 18; on June 19, it was heavily raining through the night, and the river water stage was suddenly rising, resulting in the whole county seat inundated next morning." Such a description of the flood process is an important supplement to the stone inscription at Mixi, and is very precious.

Hydrologic inscriptions have a very important scientific and applied value, and the particular attention has been paid to them by the hydrologic circles as well as the water conservancy, the meteorology and navigation departments. The determination of a design flood in terms of the hydrologic stone inscriptions is a Chinese hydrologic analysing method, and its creativeness has been generally recognized by the water conservancy engineering circles in the world.

The Gezhouba Project, a river run hydropower plant, is a counter reservoir of the Three Gorges Reservoir. For the Gezhouba Project, the design peak flood is a very important factor affecting its scale and safety. It was the flood-related historical documents (disappearing upstream/downstream of Yichang, dealing with more than 2 000 years) and the Three Gorges reservoir area's flood inscriptions (dealing with more than 800 years) that were used to determine the dam's design flood standards and corresponding design flood discharges. Through the comprehensive analysis, the 1788 peak flood of  $86\ 000\text{ m}^3/\text{s}$  and the 1870 peak flood of  $110\ 000\text{ m}^3/\text{s}$  were selected as the design flood and the check flood respectively.

The hydrologic inscriptions and the surveyed historical floods were also applied to the design of Three Gorges Project. The current design flood calculation mainly adopts the frequency analysis method in China, namely, on the basis of the flood sample, the peak flood discharges / flood volumes in correspondence with the relevant design standards are calculated by means of the mathematical model. In general, the representativeness of the recorded flood sample is insufficient, and the design floods calculated from it tend to have a comparatively large error of sampling. Application of the historical flood data, especially the very-long-time historical floods, to the frequency analysis method may reduce the error of sampling, resulting in reasonable calculating results. For the design flood calculation for Three Gorges Project, although at the Yichang Station there are more than 100 years' recorded hydrologic data, as a whole, the representativeness of the flood sample is still insufficient. In view of this, a lot of the Three Gorges reservoir area's hydrologic inscriptions and the relevant historical documents were used to calculate the peak discharges/the volumes of the Yichang Station's historical floods since 1153, and, these calculated historical flood data have been applied to the design flood calculating for Three Gorges Project. Thus,



the problem about extension of the rare frequency part of the frequency curve has been satisfactorily solved.

Among the low water inscriptions at White Crane Sill, the lowest water stage occurring in 1140 is close to one occurring in 1937. In terms of this fact, the representativeness of the existing recorded low water stage sample may be assessed. And, it may be for navigation planning's, irrigation development's and meteorology research's reference.

Most inscriptions at White Crane Sill were made by the well-known literati and calligraphers through the ages, and these inscriptions have been known as "the Underwater Forest of Stetes". They have not only scientific and historical values, but also artistic value. So, they have been treasured by relevant experts and scholars.