

<<中国喀斯特-奇峰异洞的世界>>

图书基本信息

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内容概要

Karst in China is of great social significance. Not only is it closely involved in many aspects of people's daily life and national economic construction projects such as water conservation , hydropower , railways , expressways , seaports , airports , mines and municipal and urban

construction etc , but it is also intimately interactive with agriculture , eco-systems and the geo-environment. Karst in China——A World of Improbable Peaks and Wonderful Caves is a remarkable scientific monograph. With a host of photos and figures as well as vivid writing ,

it reveals the features and rules of karst development in China , reflects upon construction achievements , and summarizes a lifetime's experience of geological studies in these great karst lands.

## 作者简介

Lu Yaoru's Academic Posts : Senior research fellow of the Chinese Academy of Geological Sciences; Professor of Department of Geotechnical Engineering , School of Civil Engineering , Tongji University , Shanghai; Member of the Chinese Academy of Engineering; Honorary President of Guizhou Normal University; Member of the Expert Committee of the National Commission for Hazard Reduction , China; Member of the National Environmental Consultative Committee , China.

Research Interests: Karst and hydro-engineering and environmental geology.

Education: 1950-1952 , department of Geology , Tsinghua University. 1952-1953 , transferred to study at the department of hydrogeology and engineering , Beijing Institute of Geology ( due to the adjustment of colleges and departments in 1953 ) , and graduated ahead of time with a bachelor's degree.

Professional Experiences: For more than fifty years , Professor Lu Yaoru has been undertaking the research and surveying for a series of water conservation and water power construction projects

including hundreds of water control projects on the Yangtze River , Yellow River , Zhujiang River , Huaihe River , etc. , such as the Sanxia ( Three Gorges ) , Wujiangdu and Xin'an Jiang projects. He has directed the investigations and research for construction of railways , cities and towns etc , contributed to the economic development of karst regions by studying karst geo-ecology and the prevention and treatment of geo-hazards , first put forward the concept of rocky desertification

and related understanding of geological and ecological environment , and has developed a set of theories on the controls of karst environmental and hydrogeologic evolution and their impacts on engineering projects in karst terrains. In the early 1960s , Prof Lu was in charge of the first karst research team in China and participated in the establishment of the Institute of Karst Geology. For his remarkable contributions to karst research and engineering construction , Professor Lu Yaoru has long been dubbed “ Karst Lu ” !

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( ) Microstructure of gypsum

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( ) Microstructure of carbonate rocks

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( ) Corroded faults

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- ( ) Karst funnels and shafts
- ( ) Karst depressions
- ( ) Karst hills and mounts-corrosional hills
- ( ) Karst peaks-corroded peaks
- ( ) Residual ridges and rock benches
- Processes of cave development
- ( ) Corroded pits and pores
- ( ) Geodes-crystal-lined pores and cavities

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Part The Processes of Karst Development

## 章节摘录

版权页：插图： Hydropower Development ( ) Introduction of large-scale hydropower stations Western China is endowed with rich water resources. A number of hydropower stations have been constructed on the main channel of the Yangtze River and its tributaries (including the Qingjiang River, the Wujiang River, the Minjiang River and the Jinshajiang River), on the upper reaches of the Pearl River (including the Hongshui River, the Nanpan River and Beipan River) as well as on the Lantsang River etc. Some dams have been constructed in karst areas and others in areas that include extensive carbonate rocks. For instance, a number of hydropower stations have been constructed in karst areas on the middle and upper reaches of the Yellow River. The Guanting Dam was the first one constructed in the karstified areas of Hebei, North China. The height of the dam was only 45m and the volume of storage,  $20 \times 10^8 \text{m}^3$ . Immediately after its construction in 1955 leakage and collapses occurred. Survey and research found three leakage channels which had to be dealt with properly so as to guarantee the safety of the dam. The experience with the Guanting Dam helped improve subsequent construction of hydropower stations in other karst regions. The Wujiangdu Reservoir was constructed in the early 1980s in Guizhou, southwest China. The dam reached 165m in height and the installed capacity was  $630 \times 10^4 \text{KW}$ . Based on thorough pre-construction survey, a series of measures including high pressure grouting were adopted. Thanks to these effective measures, no leakage or collapses ever occurred. Later, the installed capacity was increased to almost one million KW. Based on the successful experience with the Wujiangdu Dam on the Wujiang River, recent years have seen a series of cascaded developments of hydropower along a given river, for instance, the Hongjiadu Reservoir and Suofengying Reservoir on the upper reaches of the Wujiang, the Geheyan Dam and Shuibuya Dam on the Qingjiang River, as well as the Wanjiangzhai Dam on the upper reaches of the Yellow River. There were originally two potential dam sites for the construction of the Three Gorges water conservancy project. One was the Sandouping dam area on igneous rocks, and the other the Nanjinguan area on carbonate rocks (Lu Yaoru, 1959c-e). Based on years of survey, the final choice went to the Sandouping site even though there were extensive outcrops of carbonate rocks in its reservoir area. Currently, the installed capacity for the Three Gorges project can reach  $1820 \times 10^4 \text{KW}$ .

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