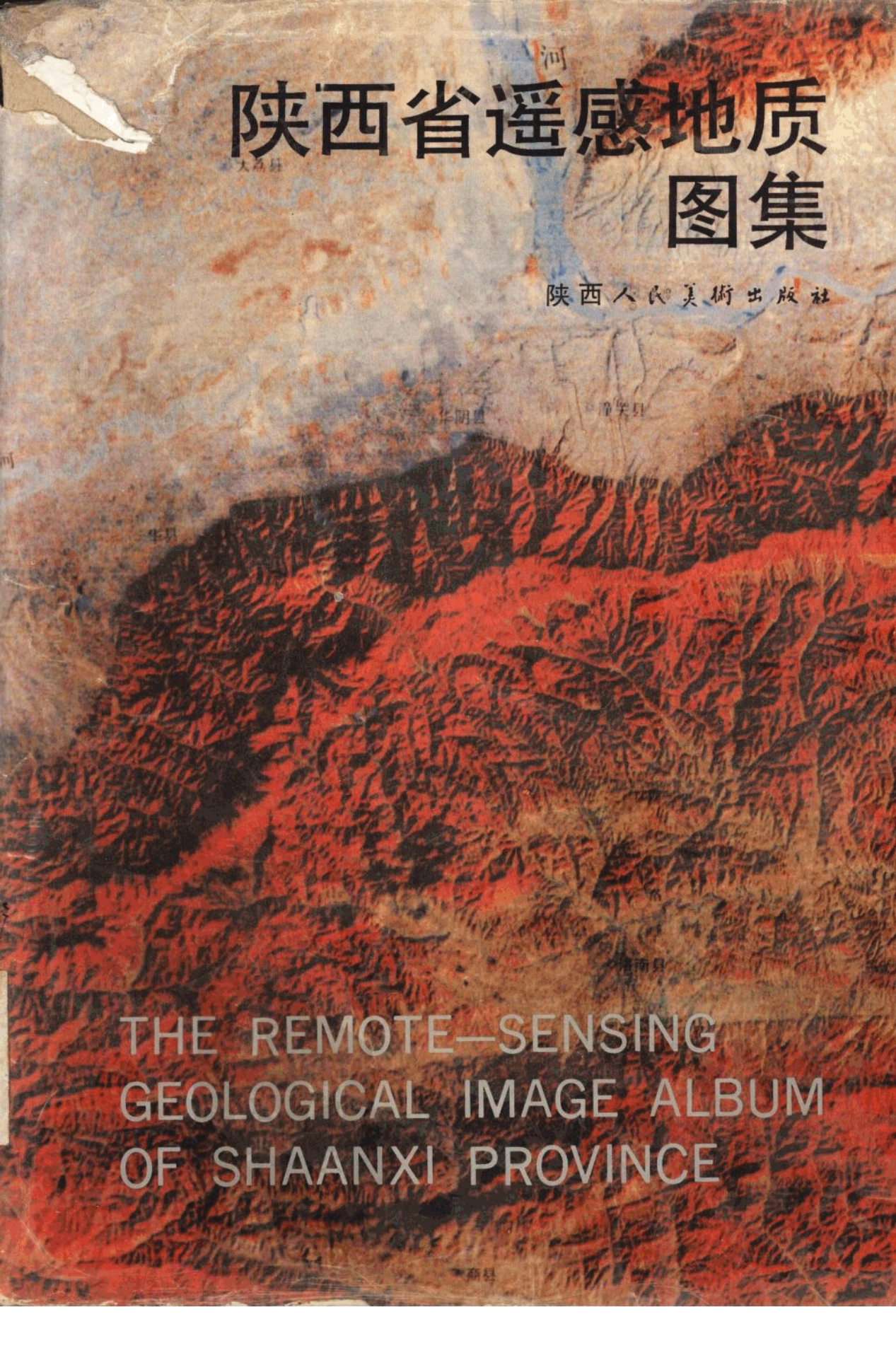


The background of the cover is a large, textured aerial remote-sensing geological image of Shaanxi Province. It shows a complex terrain with various shades of brown, red, and black, representing different geological features and land use. The texture is grainy and detailed, typical of satellite imagery. The title is printed in large, bold, black Chinese characters at the top, and the English title is at the bottom. The publisher's name is in the middle right.

陕西省遥感地质 图集

陕西人民美術出版社

THE REMOTE—SENSING
GEOLOGICAL IMAGE ALBUM
OF SHAANXI PROVINCE

陕西省遥感地质图集

(陕西省地矿局遥感图集编辑组)

THE REMOTE-SENSING GEOLOGICAL IMAGE
ALBUM OF SHAANXI PROVINCE

(The Editorial Group of the Remote-Sensing Geological Image Album of Bureau of
Geology and Mineral Resources of Shaanxi Province)

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目 录

序 (1)	1
序 (2)	5
前言	11

第一部分 典型地质影像

总貌	15
陕西省卫星象片影像图 MSS5	17
陕西省卫星象片影像图 MSS7	18
陕西省地貌解译图	
陕西省地质图	
陕西省构造解译图	
陕西省活动构造解译图	
陕西省水文地质图	
陕西省土壤、土壤利用分布区	
陕西省植被类型分区图	
地貌	27
一、水系类型	28
二、流水地貌	35
三、冰川地貌	39
四、黄土地貌	42
五、沙漠地貌	50
六、岩溶地貌	55
地层、岩石	59
一、地层	60
二、岩浆岩	69
构造	73
一、地层产状	74

二、接触关系	77
三、褶皱	79
四、断裂	85
五、隐伏、活动构造	94
矿产信息	101
水文地质	107
环境工程地质	111

第二部分 遥感地质解译研究

概述	149
一、典型地貌影象解译研究综合及解译图的编制	150
(一) 典型地貌影象的解译研究	150
1. 水系类型	150
2. 流水地貌	151
3. 冰川地貌	152
4. 黄土地貌	153
5. 沙漠地貌	154
6. 岩溶地貌	155
(二) 地貌解译图的编制	156
二、典型地质影象解译研究及地质、构造解译图的编制	163
(一) 典型地质影象的解译研究	163
1. 地层、岩石的解译	163
2. 构造解译	165
(1) 地层产状的判译	165
(2) 接触关系的判译	166
(3) 褶皱构造的解译	166
(4) 断裂构造的解译	167
(5) 隐伏、活动构造的解译	170
(二) 遥感地质、构造综合解译图的编制	172
1. 遥感地质解译图的编制试验	172
2. 陕西区域地质背景概述	174

3.遥感构造解译图的编制	177
4.遥感活动构造解译图的编制	181
三、矿产信息及遥感地质找矿方法的研究	183
四、典型水文地质现象的解译及水文地质图的编制	188
(一) 典型水文地质现象解译研究	188
(二) 遥感水文地质图的编制	190
五、遥感技术在环境工程地质上的应用研究	197
(一) 不良地质现象的判译	197
(二) 环境污染的判译	200
(三) 森林植被及沙漠侵袭的判译研究、植被类型分区图的编制	200
(四) 土壤、土壤利用分布图的编制	204
六、遥感图象的解译研究方法	209
七、岩矿波谱测试及其应用	225
结语	233
参考文献	235

CONTENTS

Preface 1	1
Preface 2	5
Foreward	11
Section I Typical Geologic Images	
General Configuration	15
Satellite Image of MSS 5 of Shaanxi Province	17
Satellite Image of MSS 7 of Shaanxi Province	18
Geomorphological Interpretation Map of Shaanxi Province	
Geological Map of Shaanxi Province	
Structural Interpretation Map of Shaanxi Province	
Active-Structure Interpretation Map of Shaanxi Province	
Hydrogeological Map of Shaanxi Province	
Distribution Map of Soil and soil-Utilization in Shaanxi Province	
Zonal Map of Vegetation Types in Shaanxi Province	
Geomorphology	27
1.Types of Water System	28
2.Fluvial Landform	35
3.Glacial Landform	39
4.Loess Landform	42
5.Desert Landform	50
6.Karst Landform	55
Stratigraphy and Petrology	59
1.Stratum	60
2.Magmatite	69
Structure	73
1.Stratigraphic Attitude	74
2.Contact Relations	77
3.Fold	79
4.Fault	85
5.Buried and Active Structures	94
The Message of Mineral Resources	101
Hydrogeology	107

Environmental Engineering Geology	111
Section II Remote-Sensing Geological Interpretation Study	
Summary	149
1. Interpretation Study on Typical Geomorphologic Images and Compilation of Geomorphologic Interpretation Maps	150
1) Interpretation Study on Typical Geomorphologic Images	150
(1) Types of Water System	150
(2) Fluvial Landform	151
(3) Glacial Landform	152
(4) Loess Landform	153
(5) Dessert Landform	154
(6) Karst Landform	155
2) Compilation of the Interpretational Map of Remote-Sensing Geomor- phology	156
2. Interpretation Study on Typical Geologic Images and Compilation of the Interpretational Map of Geology and Structure	163
1) Interpretation Study on Typical Geologic Images	163
(1) Stratigraphy and Petrology	163
(2) Structure	165
a. Stratigraphic Attitude	165
b. Contact Relations	166
c. Fold Structure	166
d. Fracture Tectonic	167
e. Buried and Active Structure	170
2) Compilation of the Synthetic Interpretation Maps of Remote-Sensing Geol- ogy and Structure	172
(1) Remote-Sensing Geologic Interpretation Map	172
(2) Regional-Geological Background of Shaanxi	174
(3) Remote-Sensing Structural Interpretation Map	177
(4) Remote-Sensing Interpretational Map of Active Structures	181
3. Application Study on the Remote-Sensing Geological Method of Mineral Message and Ore Prospection	183
4. Interpretation Study of Typical Hydrogeological phenomian and Compilation of Hydrogeological Maps	188
1) Interpretation Study on Typical Hydrogeological Phenomina	188

2) Compliation of Remote-Sensing Hydrogeological Maps	190
5.Study on the Application of the Remote-Sensing Technique to Environmental Engineering Geology	197
1) Interpretation of Harmful Geological Phenomena.....	197
2) Interpretation of Environmental Pollution	200
3) Interpretation Study on Forest Vegetation and Desert Spreading, and Compi-lation of the Distribution Plan of Vegetation Types	200
4) Distributing Graphs of Soil and Soil Utilization	204
6.Interpreatation Procedure of Remote-Sensing Images	209
7.Wave Spectrographic Identification of Rock and Mineral and Their Applica- tions	225
Conclusion	233
References.....	235

序 (1)

《陕西遥感地质图集》是一部宣传空间技术遥感影象在地球科学领域中应用效果的科普读物。它通过典型卫星相片及航空照片介绍陕西省境内不同自然景观区遥感影象特征及其地质解译方法。本图集共搜集不同比例尺图象资料 260 张，在七个部分中反映出 28 个方面的影象特征及其综合解译说明。

从图集的卫星相片中可以看到区域自然景观总貌，绵延千里的秦岭巴山可一目了然 可以看到举世闻名的陕北黄土高原的独特景色 卫星假彩色合成相片的不同彩色可以区分太白山植被三个垂直分带 在西安市地区仔细观察还可以发现古城墙遗址。

在航空照片上可以看到陕西不同景观区的微地貌，如在太白山上分布有三个明亮如镜的湖泊，它是中国腹心地区保留最好的第四纪冰川活动遗迹 在黄土塬区可以清楚地看到黄土滑坡整体滑动的轨迹 在平原区可以在照片上圈定盐碱滩地分布范围，也可以区分土壤类和圈定其分布范围 还可以从照片上发现工厂矿山烟尘废水对环境的污染范围。

通过卫片、航片解译与地面检查验证可以准确地划出断裂、褶皱、矿化带的位置及其展布范围，还可以推测一些隐伏构造、深部构造及深部岩浆活动对地面地质影响范围，这些遥感信息对研究区域构造及矿产分布起着重要的指导作用。总之，遥感图象是一种对工农业有广泛用途的新型技术资料，应尽快的普及和应用。

本图集取材新颖，图文并茂，通俗易懂，适合于不同专业技术人员参考，也可以作为旅游及摄影爱好者了解陕西自然景观的补充资料。

尚瑞钧

1988年3月23日

Preface (1)

The "Remote-Sensing Geological Image Album of Shaanxi Province" is a popular science textbook which introduces the application results of the remote-sensing image of spatial technique to the earth science field. On the basis of the typical satellite and aeronautical photographs, it introduced the features of remote-sensing images in different natural sceneries within Shaanxi province and the geological interpretation method. The album collected 286 photographs in different scales in all. There are 28 aspects of image features and their synthetical interpretation included in 7 sections in the album.

From the satellite photographs in the album, we can notice the general configuration of natural sceneries in area, and can come into plain view of the Qinling-Dabashan mountains elongated about thousands *li*, and can see the well-known unique scenery of the loess plateau in the north of Shaanxi. Different colours on the satellite pseudocolor composition images can divide the vegetation in Taibai mountain into 3 belts vertically. If you observe Xi'an area on the photographs, you can find the site of the ancient city wall.

From the aerophotographs, you can notice the micro-landform in various sceneries in Shaanxi province, such as 3 lakes as clear as mirror in Mt. Taibai where the most complete sites of the Quaternary glacial activity have been preserved in the center region of China. Massive landslide trace of loess can be seen clearly in loess yuan area; the distribution ranges of salt marshes can be determined on the photographs in plain area and, soil types and their distributions can also be distinguished and determined; environmental pollution ranges of dust and waste water from factory or mine can be found on the images, too.

Through interpretation of satellite images and aerophotographs combining with examination and verification on the earth surface we can accurately delimit faults, folds, mineralization positions and their distributions, and can infer the influence ranges of buried structures, deep-seated structures and deep-seated magma activities to surface geology. These remote-sensing information play an important guide role in studying regional structures and ore distributions. In a word, remote-sensing image, as a new technical data which has extensive uses for industry and agriculture, should be popularized and applied as soon as possible.

This album is characterized by original in choice of collections, excellent in both photograph and language, popular and easy to understand. It is not only suitable for various technical personnel to refer, but it might be a supplementary material for visitors and photograph amateurs to comprehend the natural scenery of Shaanxi province.

Shang Ruijun

March 23, 1988.

序 (2)

《陕西省遥感地质图集》即将问世。这部著作是作者收集全省范围内五万余张各种不同比例尺的航空、卫星像片和大量实际资料，通过对终选像片的目视解译、必要的光学及数字图象处理和野外验证，经综合分析编辑而成的。它以图文结合的形式重点地展现和阐述了陕西境内各种不同自然条件下典型的地貌、地质构造、岩石、矿产、水文地质、环境工程地质、土壤和植被等方面的基本影象特征和解译标志，并探讨了遥感技术在上述地学各个领域中的应用的方法和途径。

我国幅员辽阔，自然环境千姿百态，地质结构错综复杂，遥感影象因地而异，解译标志各具特色。编辑各省（市、自治区）遥感图集，建立典型的地质影象解译标志，有利于推广遥感技术在地学各个领域中的应用。《图集及解译研究》正是适应这一需要而编辑的。它不仅可做为认识和利用、改造陕西省的环境和资源的基础资料，而且也可做为进行地区性遥感地质研究及应用的借鉴，因此《图集》并不受省界限制而具有比较普遍的参考意义。

我国遥感地质研究已经在地质制图、地质构造分析、矿产及能源勘查、水资源寻找、地震地质调查以及环境工程地质研究等应用方面取得了不同程度的效益。在遥感资料多片种、多层次解译，遥感方法与其它方法综合运用，遥感图象处理和地物波谱测试及其应用等技术方法改善方面也取得了进展。实际上，应用方面所取得的

效益往往正是由于技术方法不断完善的结果。《图集》反映并总结了陕西省近年来在遥感技术地质应用和技术改善这两方面的进展和研究程度，这有利于进一步深入开展遥感技术的研究和应用。

遥感图象目视解译是遥感地质研究中的一项重要基础性工作。目视解译成果质量的高低直接影响着应用的效益。《图集》对此给予了足够的重视。目视解译是《图集》的重点，比较系统、也比较全面。对主要影象特征如岩性地层单位和构造要素等建立了相应的解译标志，可供参考。

利用遥感图象解译成果与其它有关资料相结合编制专题图件是一项综合研究工作。这类图件可以反映各个方面的总貌。《图集》对此做了尝试。例如首次编制了陕西全省的地貌图、水文地质图、土壤及土壤利用分布图和植被类型分区图等。尽管其中有些图件的实际内容和表现方法尚有待进一步充实和改善，但仍不失其参考意义。

在目视解译基础上，选择影象模糊，信息微弱，可判程度较低而存在问题又属关键的地区进行必要的图象处理，可以扩大不同影象特征之间的差异，使图象变得清晰 增强图象中的有用信息，提高图象的可判程度。《图集》对部分图象进行了多种方法的光学和数字处理，取得了良好效果。其中如用光学相关掩模技术处理航片，突出了地质信息，较好地显示出土壤、植被的分布范围 又如以地面波谱实测数据为依据进行数字图象处理，显示出隐伏构造等等，都是较有成效的。

《图集》对遥感技术在地学领域中应用的方法和途径做了多方面的探索，其中有些方面取得了显著效果。如在地质构造分析方面，揭示和认识了一些新的北西向断裂构造、隐伏构造和环形影象，并探索了构造与矿产的关系 又如在环境污染和环境工程地质研究方面，图象解译成果为制定环境保护措施提供了一定的科学依

据，等等。

应当看到，如此大量地利用航卫象片和实际资料，比较全面地运用遥感技术，相当广泛地探索遥感地质研究成果在地学领域中应用的可行性，目前为数甚少，因此，《图集》的出版对各省遥感图集的编辑可望起到有益的作用。

由于客观上条件的限制，主观上经验的摸索需要一段过程，因此《图集》难免有某些不足之处，相信今后能够得到进一步的提高和完善。

庄培仁

1985年元月

Preface

(2)

“Remote-Sensing Geological Image Album of Shaanxi Province” will soon come out. On the basis of over fifty thousand satellite and natural photographs on various scales and a vast amount of actual datum within Shaanxi province, the authors compiled this album through last observation and interpretation of selected photographs and the necessary optic-mathematic image processing as well as the test and verification in field. It, in the form of the combination of both photograph and language, presents and expounds the basic image features and interpreting marks in these respects of the typical geomorphology, geological structure, rock, mineral resources, hydrogeology, environmental engineering geology, soil and vegetation etc. under variously natural conditions within the boundaries of Shaanxi province. It also discusses the ways and means to apply remote-sensing technique to every above-mentioned domains of geology.

China is a country with a vast territory where the natural environment is of different poses, different expressions and complexed geoglogical structure. So remote-sensing images varies from place to place and each interpreting mark has its own distinguishing features. It is convenient for every province including city and autonomous region to compile remote-sensing image album, and to establish the interpreting marks of typical geological images so as to popularize the application of remote-sensing technique to the various domains of geology. Compiling “The Remote-Sensing Geological Image Album of Shaanxi Province” is just to meet the above-mentioned needs. It can be regarded not only as the basic datum of recognizing, using and improving Shaanxi environment and natural resources, but also as the references of studying and applying the regional remote-sensing geology. Therefore, the “Image Album” is not influenced by the limit of provincial boundaries, but has comparative universal and referential significance.

To varying degrees, the study of remote-sensing geology in our country has achieved beneficial results in geological mapping, geological structure analysis, exploration of minerals and energy resources, water resource development, seismic-geologic investigation and environmental engineering geology, etc. Also made a good progress in our country has the interpretation of varied photographs of remote-sensing materials; synthetical application of remote-sensing method to