

中国黄土高原地貌图集

LANDFORMS ATLAS OF THE LOESS PLATEAU IN CHINA

水利电力出版社

China Water Resources and Electric Power Press



中国盐场原地貌图集

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内容简介:

本《图集》是一本科普性地貌专题图集。它通过大量典型地貌航空摄影像片、地貌测绘的实例分析,介绍我国黄土典型地貌的分类、分布、特征、地貌判读及地貌形态测绘,便于读者了解地貌遥感图像特征判读和地貌测绘的共同规律。

《图集》荟萃了黄河中游千姿百态的黄土典型地貌及属于黄土高原的多种地貌景观,所选择的航片包括甘肃董志塬、陕西洛川塬、晋西北的黄土梁峁、白于山黄土川地、河南的黄土坪、甘肃东乡大塬坡、泾河深切河曲、黄河壶口瀑布、渭河四级阶地、黄河河心洲、中条

山断层及山前洪积扇、华山西峰、天水的喀斯特、内蒙古的沙丘及风蚀残丘等,计有低空摄影地貌景观彩色照片38幅、黑白照片12幅、典型地貌航空摄影立体像对65对(共130片),等高线图51幅、卫星像片及陆摄像片3幅、影像地图1幅。内容丰富、图文并茂,实属地学、遥感判读、水利和测绘等部门的珍贵文献。

可供地理、地质、水利、测绘、遥感等专业技术人员及高等院校相关专业师生参考,同时可对高中《地理》教学和举办遥感测绘和地学科技夏令营也不失为一本适宜的辅导材料。

Landforms Atlas of the Loess Plateau in China Introduction

The Atlas, a popular scientific publication specialised in geomorphology, presents, through large amount of examples of the typical aerophotographic pictures and geomorphological surveys, the classification, distribution and features of representative loess landforms in China and their geomorphological interpretations and mapping, thus helping its readers get a better understanding of common regularities governing the landform interpretation of remote sensing images and of geomorphological surveys.

The Atlas gathers together the loess landforms in various gestures along the middle reaches of the Yellow River and the diverse landscapes of the Loess Plateau. The pictures and aerophotos including the loess mesas in Dongzhiyuan village, Gansu province and in Luochuan county, Shaanxi province; the loess ridges and knolls in the North-West of Shanxi province; the branch-like loess land near Baiyushan village, Gansu province; a loss flat ground in Henan province; the gigantesque landslide in Donxiang county, Gansu province; the incised meander of the Jinghe river; the Hukou waterfalls on the Yellow River; four loess terraces along the Weihe river; an islet in the Yellow River; a fault escarpment in Zhongtiao mountain and the alluvial fans on its piedmont; the Western Peak in the Huashan mountain; the pseudokarst landscape in Tian-

shui county, Gansu province; the sand dunes and wind-eroded monadnocks in the Inner Mongolia, etc. Materials collected in the Atlas are 38 colour low-altitude-taken landscape pictures, 12 black-and-white pictures, 65 pairs of stereo aerophotos of typical landscapes, 51 contour maps, 3 satellite-and land-taken pictures and one image map. The contents and pictures are both excellent. It serves as an invaluable documentation for institutions engaged in geoscience, remote sensing interpretation, water conservation, surveying and mapping.

The Atlas is not only a reference book for the specialists, teachers and students of colleges and universities in the fields of geography, geomorphology, water conservancy, surveying and mapping and remote sensing but also a suitable supplementary reading material for "Geography" teaching and learning in senior middle schools. It is also a good guide-book for holding scientific Summer camps of modern remote sensing technique and geoscience.

By the Investigation, Planning and
Design Institute, Yellow River
Water Conservancy Commission

前言

黄河中游黄土高原的地貌类型复杂、形态各异、黄土连续分布范围广、厚度大、地层齐全，其黄土地貌发育之典型，堪称世界之冠。黄河是世界上含沙量最高的河流，年平均输沙量达16亿吨，其中91%来自黄土高原。黄河中游水土流失面积为43万平方公里²（占黄河中游面积的74%），年平均侵蚀模数达4600吨/公里²，大量的水土流失，既使这里成为千沟万壑的经济落后区，又给下游造成水患。人类与自然地理环境息息相关，地貌形态的演变和保护业已成为人们极为关注的问题，黄河水害的症结就在黄土高原的水土流失。由此可见，深入研究该区域特殊的地理环境和地貌特征、测绘高质量地形图、编绘地貌图集，不但在科学理论上具有一定价值，而且对监测黄土地貌的变化，作好水土保持工程，开发黄土高原，亦具有重要价值。

我国独特的黄土高原地貌在世界地学方面占有重要地位。为使外读者进一步了解黄土高原的地理环境、地貌类型及特征，我们广泛收集了黄土高原各种典型地貌景观照片、航空摄影立体像对，并测绘了地貌等高线图。经过对数以万计的航空摄影像片的筛选，分类编成《中国黄土高原地貌图集》。

《图集》主要介绍黄土地貌的分类、成因、分布、地貌特征及其典型地貌航空摄影测绘法，对寓于黄河中游的其他地貌类型也作了适当选取。因此，《图集》包含有黄土、流水、侵蚀中山及断层、风成、喀斯特（砂砾岩）、人工地貌等六个地貌类型，荟萃了黄河中游气势轩昂、千姿百态的地貌景观，计有低空摄影地貌景观彩色照片38幅、航空摄影立体像对65对（130片）、地貌等高线图51幅以及卫星遥感判读像片，内容颇为丰富。

黄土地貌融合了高山峡谷、低山丘陵、悬崖和沟壑的多种形态特征，是地貌测绘中难度最大的，熟悉了黄土地貌测绘技法，就能触类旁通。故《图集》采取了地貌概述、典型地貌航空摄影像对、等高线图及测绘要点四位一体的编排形式，通过大量样片的实例分析，将地貌遥感图像判读与测绘技巧紧密结合一体，从而使读者了解像片判读及测绘技法的共同规律。

《图集》中的航空摄影像片为立体像对，借助小立体镜可观察到立体效果。像片和等高线图未注比例尺者，分别为航空像片1:1.4万、等高线图1:1万。

《图集》初稿承武汉测绘学院航空摄影测量系、地图制图系，郑州测绘学院科研处，南京大学、北京师范大学、中山大学、东北师范大学、西北师范大学、华南师范大学、南京师范学院地理系，中山大学地质系，华东水利学院农水系，河南省地理学会等单位，以及测绘地质学方面的教授和专家黄世德、张克权、陆淑芬、赵淑梅、张立果、张奠坤、孙家驹、王礼育、严子善、俞序君、毛继周和李荣兴等同志审阅。

《图集》初稿在《第二届水利测量经验交流大会》被评选为优秀展品并推荐出版专集，在出版过程中得到水电部水利水电规划设计院门光永和毛良同志的热情支持。

为《图集》提供航空摄影像片的有陕西、山西、黑龙江省测绘局、煤炭部航测大队。地貌风光彩色照片均由黄河展览馆殷鹤仙摄影。

本《图集》由王学海主编。技术顾问：李凤岐、宋佛山、楼翰俊。编辑：窦惠懿、彭志豪、殷鹤仙。责任编辑：彭志豪。立体测绘：窦惠懿、赵春香、汪巧云，另谷喜凤、王家琳、王金璐、郭如崇也作了部分测绘。刻图：何平、赵凤云。审核：赵汝龙、吴方、葛腾。我院测绘处制图组、精测组、综合组、资料室也给予了大力支持并试测了样图。

由于我们水平所限，错误和不足之处在所难免，敬希广大读者批评指正。最后，谨向积极支持本《图集》出版工作的各位审稿人及单位、各位作者、印刷出版单位和其他有关同志表示衷心感谢。

黄河水利委员会勘测规划设计院

一九八五年八月

Preface

The Loess Plateau along the middle reaches of the Yellow River has a complex geomorphic feature. The widespread continuous loess deposition is of great thickness and has a complete stratigraphical sequence. The typical development of loess landforms in this region is unique in the world. With the highest silt load among the rivers all through the world, the Yellow River flows through this region and carries with it 1.6 billion tons of silt annually, among them 91% comes from the Loess Plateau. No less than 74% of the total drainage area of the middle Yellow River, i.e., 430,000 sq. km. of land suffer from soil erosion. The annual erosion modulus comes to 4600 ton per sq. km. Having scarred the region with hundred of thousands of ravines and gullies, the severe soil erosion not only hinders the economic development of the region but also causes disastrous floods to the lower reaches.

Since the mankind is closely linked with natural environment, the evolution and protection of the landforms have long since become subjects of great concern to the public. The very root of the menaces brought about by the Yellow River lies in the soil erosion in the Loess Plateau. Therefore, to make further investigation into the regional environment and geomorphological features and to compile high quality topographic maps and a geomorphologic album are of great value not only in the respect of scientific research but also in monitoring changes of loess landforms, in doing a better job in water conservancy and in developing the Loess Plateau as a whole.

The unique geomorphological features of the Loess Plateau in China have great importance in geoscience in the world. In order to help the readers both at home and abroad have further understanding of the geographic environment and the types and configurations of the landforms of the Loess Plateau, we have made great efforts to collect landscape pictures of various types, stereo aerophotos and draw landform contour maps, and, after sieving through thousands of aerophotos have succeeded in compiling this "Landforms Atlas of the Loess Plateau in China".

The Atlas presents mainly the classifications, genesis, distribution and features of loess landforms and the techniques of surveying and taking aerophotos of the typical landforms. Besides, the Atlas contains other carefully selected landforms in the Yellow River middle reaches. Six types in all of the landforms contained in it are as follows: loess, running water, eroded hills and faults, wind-formed landforms, pseudokarst in sandstones and conglomerates, and man-made landforms. Gathering together the magnificent and variously postured landform sceneries, the Atlas is rather rich in content, having 38 low-altitude-taken scenic colour pictures, 65 pairs of stereo aerophotos, 51 geomorphological contour maps and one satellite remote sensing interpretation photo.

Mountains and gorges, hills and rolling terrains, cliffs and deep ravines are all merged in the loess landforms of various characteristics, making them the most difficult to be surveyed. If one knows well the mapping techniques for loess landforms, it will be easier for him to comprehend by analogy the landform features of other types. By properly

laying out the landforms introduction, its typical aerophotoes, contour maps and the highlights in surveys and by analysing a large amount of examples, the Atlas links closely landforms remote sensing image interpretations with mapping techniques so as to help its readers have a better understanding of the common laws of image interpretation and mapping techniques:

When viewed through a stereoscope, the stereo aerophotoes in the Atlas will give a better effect. Unless otherwise indicated, the scale of the aerophotoes is 1:14,000 and contour maps 1:10,000.

Owing to the limit of the time available there would be room for improvements in the Atlas. Criticism and corrections are most welcome. We are greatly indebted for the helps to its revisors and their organizations, to authors and the publishing and printing departments and other colleagues concerned.

**The Investigation, Planning and
Design Institute, Yellow River
Water Conservancy Commission**

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黄河

陕西佳县

Yellow River

Jiaxian county, Shaanxi province

黄土高原地貌风光

1. 黄土高原的水库

Reservoir on the Loess Plateau

2. 黄土高原的水库

Reservoir on the Loess Plateau

3. 黄河壶口瀑布

Waterfalls at Hukou on the
Yellow River

甘肃西峰

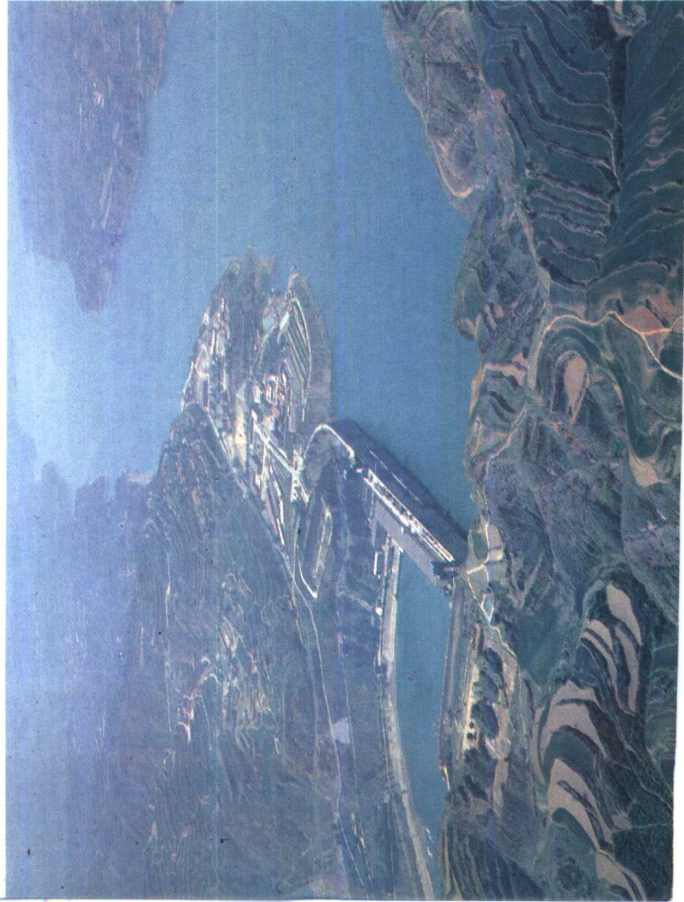
Xifeng area, Gansu province

河南三门峡

Sanmenxia area, Henan province

晋陕峡谷

Gorge section on the border between
Shanxi and Shaanxi provinces





1. 黄土塬

Loess mesa

2. 黄土破碎塬

Broken loess mesa

3. 黄土塬

Loess mesa

甘肃董志塬

Donzhiyuan, village, Gansu province

甘肃庆阳

Qingyang county, Gansu province

陕西洛川

Luochuan county, Shaanxi province

381525

2
1 3





黄土丘陵沟壑区

Gully and hilly area on
the Loess Plateau

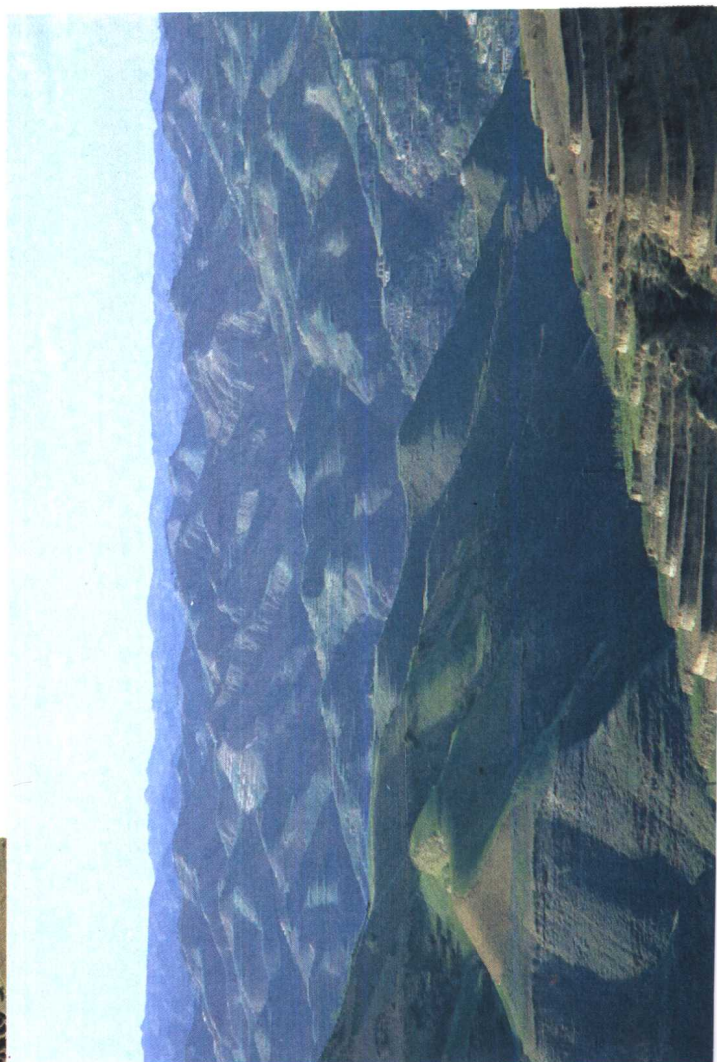
陕西吴堡

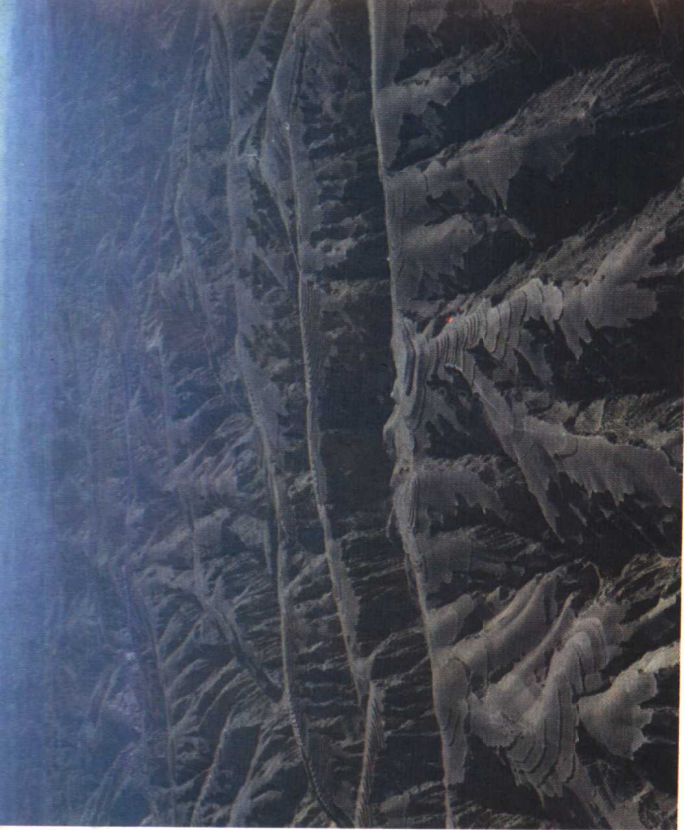
Wubau county,
Shaanxi province

黄土平梁

山西柳林

Flat-topped loess ridge
Liulin county, Shanxi province





1. 黄土梁状丘陵

Loess ridge-shaped hills

2. 黄土斜梁

Inclined loess ridge

3. 强烈切割的黄土梁

Eroded loess ridges on piedmont

甘肃定西

Dingxi county, Gansu province

陕西佳县

Jiaxian county, Shaanxi province

甘肃兰州

Lanzhou area, Gansu province

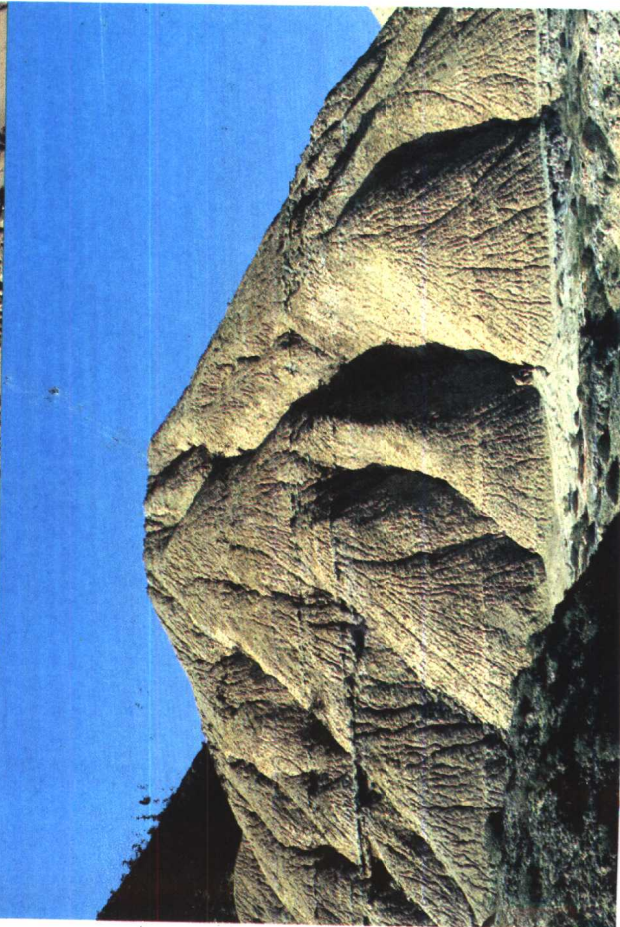
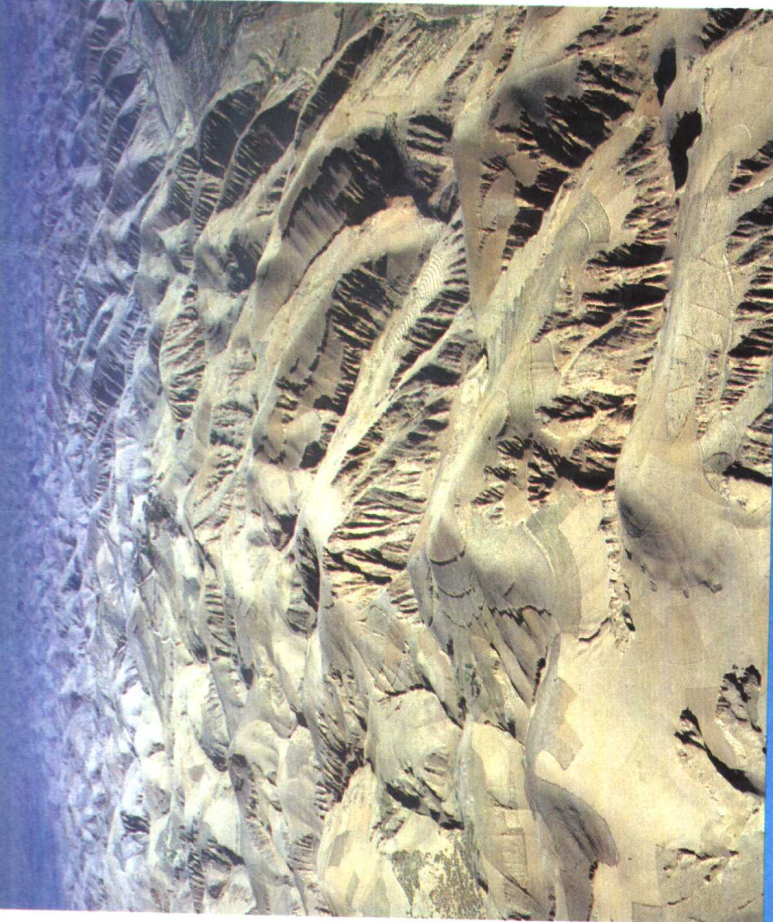


黄土高原

Loess ridges and knolls

陕西延安

Yanan area, Shaanxi province

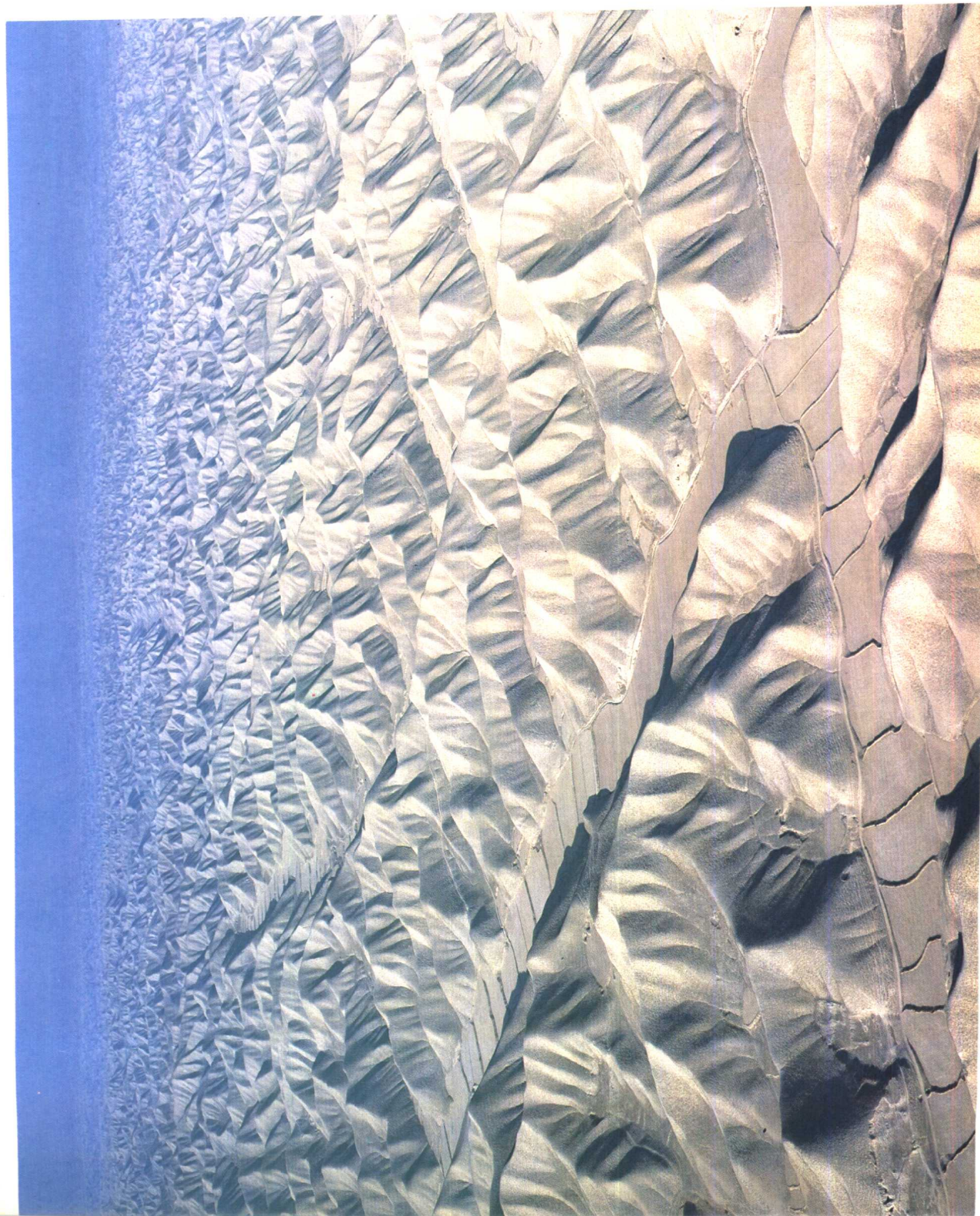


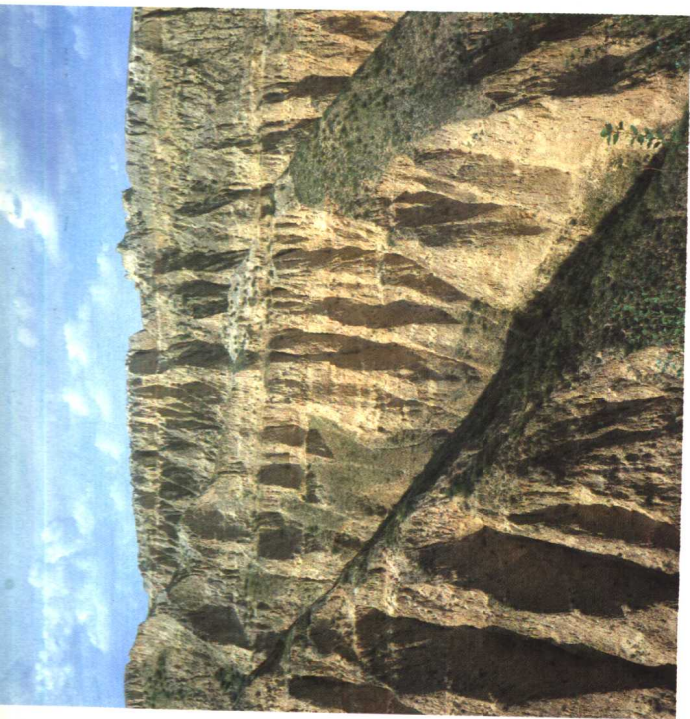
- | | | |
|---|-------|-------------------------|
| 1 | 黄土连续岭 | Loess continuous knolls |
| 2 | 黄土峁 | Loess knolls |
| 3 | 黄土状丘陵 | Knoll-like loess hills |

陕西米脂
Mizhi county, Shaanxi province
甘肃白银
Baiyin area, Gansu province
甘肃皋兰
Gaolan county, Gansu province

黄土峁地
Branch-like loess land

甘肃皋兰
Gaolan county, Gansu province





$$\frac{1 \mid 2}{3 \mid}$$

1. 黄土坝边侵蚀沟

Eroded ravines on the slope
periphery of a loess mesa

陕西靖边
Jinbian county,
Shaanxi province

2. 黄土斜坡侵蚀沟

Eroded ravines on the slope
of a loess knoll

陕西清涧
Qinjian county,
Shaanxi province

3. 黄土坝边微型侵蚀沟

Eroded grooves on the slope
periphery of a loess mesa

甘肃白银
Baiyin area,
Gansu province

