

# 扬子板块西缘 地质摄影选

成都地质学院

一九九一年

# 杨子板块西缘地质摄影选

The Album of Geology in West  
Margin of the Yangtze Plate

成都地质学院

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# 前 言

康定—攀枝花地区位于四川省西南部,行政区域属甘孜藏族自治州、凉山彝族自治州和攀枝花市管辖。是我国西南地区的重要经济开发区,攀枝花市有著名的西南最大的钢铁冶金联合企业,也是全国最大的钒钛生产基地。该区矿产资源极为丰富,素有“聚宝盆”之称。有规模巨大的钒钛磁铁矿床,稀有、稀土矿床和特大型石棉矿床,还有金、铜、铅、锌等多种有色贵金属矿产资源,都具有良好的找矿和矿业开发前景。

该区最老的基底为康定群,岩性有斜长角闪岩,角闪斜长片岩,斜长角闪质混合岩和长英质混合岩等。冕宁沙坝混合片麻岩 Rb—Sr 法全岩等时线年龄为 2420 Ma。成都地矿所在泸定片麻岩中锆石 U—Pb 法测年为 2451 Ma。故原岩时代暂定为古元古代( $P_{\text{U}}$ )。(照片 1—8)褶皱基底以会理群为代表,岩性为板岩、千枚岩、白云岩等浅变质岩系,时代为中元古代。(照片 9—10)沉积盖层包括震旦系至第四系,主要是沉积岩层。(照片 11—20)本区在地史上岩浆活动频繁而强烈,有不同时代、不同岩性的岩浆岩,主要有晋宁—澄江期、印支和燕山期中酸性侵入岩,海西期基性、超基性岩,印支期正长岩等侵入岩。显生宙喷出及浅成岩主要有加里东—海西期基性—中基性火山岩及脉岩。其中富铁质的红格、攀枝花等层状基性、超基性岩体的钒钛磁铁矿储量占全国 90% 以上。二叠系峨眉山玄武岩在该区分布面积达数万  $\text{km}^2$ ,它的形成条件及含矿性是极有兴趣的课题。(照片 21—32)区域构造方面,本区处扬子准地台和松潘—甘孜地槽的结合部位。板块构造观点看,是扬子板块西部大陆边缘。地史上经历长期复杂的演化历史,晋宁—澄江期的板块俯冲、碰撞,海西期的区域拉张、形成裂谷,印支—燕山期的逆冲、推覆以及喜山期的走向滑动断层的大量出现。形成丰富多彩的地质构造(褶皱、断层、节理、劈理等)现象。在区域上有发育历史漫长的安宁河断裂带,有典型的大渡河韧性剪切带等,有金河—箐河逆冲推覆构造,有则木河走滑断层等等。在地理上该区位于青藏高原东缘,有著名的贡嘎山、锦屏山,金沙江、雅砻江、大渡河等名山大川,地貌景观壮丽雄伟。(照片 33—70)本区色彩缤纷的地质地貌现象是极其引人注目的。

本影集是我院承担“七五”国家科技攻关项目:“康定—攀枝花地区金矿化规律及预测”(75—55—金 08)时,由王振荣副教授现场拍摄的大量照片中选出 70 张。前言和照片说明由王振荣完成。栾世伟教授审阅全文,特此致谢,不当之处,敬请指正。

一九九一年五月



# Preface

Kangding—Panzhihua area lies at the southwest of Sichuan Province, and administratively falls within the regions of Ganzhi zang Minority Autonomous District, Liangshan Yi Minority Autonomous District and Panzhihua city. It is one of the important economic exploiting areas in Southwest China. In Panzhihua city is located the largest iron and steel enterprise in Southwest China, which is also the largest producing base for vanadium and titanium in China. The extremely abundant mineral resources have made the area get the name of "treasure-gathering basin". There are Carge V—Ti magnetite deposits, rare element and rare-earth element deposits, very large asbestos deposits and many valuable colour metal resources such as gold, copper and zinc, lead, which make the area to be one of the most prospective and important areas for mineral resources exploiting.

The oldest basement in this area is Kangding Group with the plagioclase-hornblende, hornblende-plagioclase schist, plagioclase-hornblende magmatite and so on. The migmatitic gneiss in Shaba, Mianning is dated by Rb—Sr method as an age of 2404 Ma. The researchers of Chengdu Institute of Geology and Mineral Resources dated the gneiss in Luding by zircon U—Pb method as an age of 2451 Ma. So the rocks are tentatively dated as early Proterozoic ( $P_{11}$ ) (photos 1—8). The folding basement is represented by Huili Group, which is composed of light metamorphic rocks, such as slate, phyllite and dolomite in lithology, and middle Proterozoic in age (photos 9—10). The sedimentary covers include Sinian to Quaternary, mainly sedimentary rocks (photos 11—20).

There is a long history with frequent and strong magma activities in this area. The magmatic rocks of different ages and lithologies are mainly these, such as neutral-acid intrusive rocks formed in Jinning—Chengjiang phase, Indosinian and Yanshan phase, basic and ultrabasic rocks of Hercynian phase, syenite of Indosinian phase etc. Phanerozoic eruptive and hypabyssal rocks are mainly basic and intermediate-basic ones of Caledonian—Hercynian phase. Among them the ferro-rich, bedding basic and ultra-basic V—Ti magnetites in Hongge—Panzhihua take over 90% of total reserves in China. Emei Basalt of Permian has a distribution covering several tens of thousands km<sup>2</sup> in this area. How is it formed, and what are its features concerning the deposits? All these offer very interesting topics. (photos 21—32) As to the regional tectonics, this area just lies at the contacting part between Yangtze Platform and Songpan—Ganzhi Geosyncline. From the view of plate tectonics, it is the west continental margin of Yangtze Plate. It has a very long and complex evolving history, for example, the subduction and impact in Jinning—Chengjiang phase, the regional tension and rift forming in Hercynian phase, the thrust and nappe structures in Indosinian and Yanshanian phase, and the appearance in large amount of strike-slip faults in Himalayan phase. Marvellous scenic geological structures (fold, fault, joint, cleavage etc.) are thus formed. Regionally there are Anninghe fault zone with a long evolving histo-



ry, typical Daduhe ductile shear zone, Jinhe - Qinhe Nappe structure, Zemuhe strike - slip fault and etc. Geographically, this area is situated in the east margin of Qinhai - Tibet Plateau, many famous mountains and rivers, such as Gongga Mt., Jinping Mt., Jinsha River, Yalong River, Dadu River and etc., which offer a fantastic geomorphologic scenery. (photos 33—70) All of the geologic and geomorphologic phenomena with marvellous spectacles are very charming and attractive.

The album is a selection of the works made by prof. Wang Zhengrong, which is part of "Seventh 5" National Scientific - Technologic Program "Gold Mineralization Model and Expecting in Kangding - Panzhihua Area" (No. 75—55—Au. 08) Prof. Wang Zheng - rong write the preface and explanations of photos. It is reviewed by Prof. Luan Shiwei, to whom we give our thanks. The translation from Chinese to English is made by Mr. Gong Daming, Any comments and criticism which benefit our work will be accepted.

May, 1991





1. 康定群角砾状混合岩, 泸定咱里之北

Agmatite of Kangding Group, North of Zhanli Luding



2. 康定群条带状混合岩, 冷竹关, 瓦斯沟口之南

Striped migmatite of Kangding Group, south of the mouth of Wasigou, Lengzhuguan





3. 康定群变粒岩, 泸定县加油站

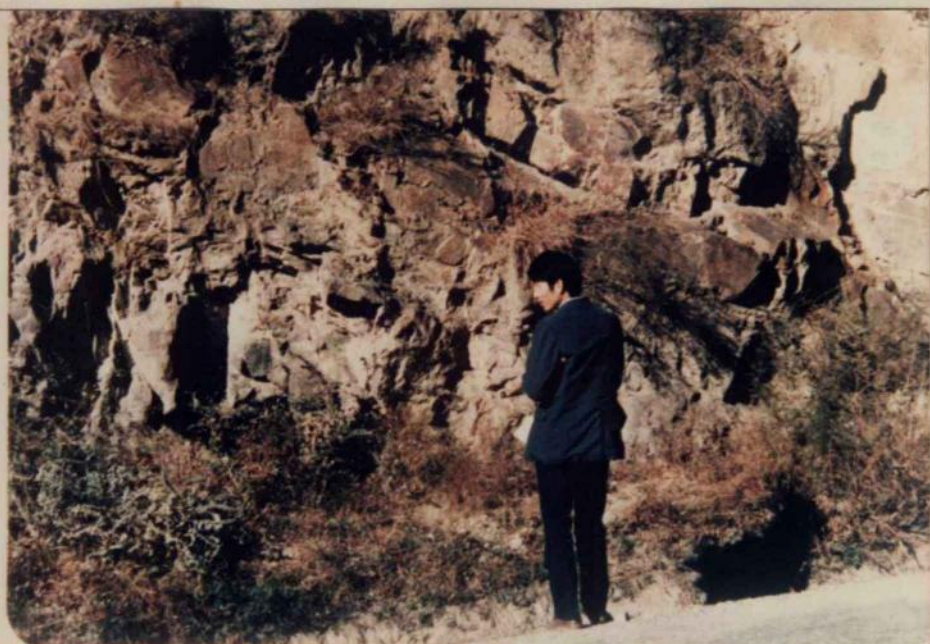
Leptynite of Kangding Group, the gasoline station of Luding



4. 康定群混合片麻岩, 暗色包体定向分布, 姑咱康定民族师专校旁

Migmatitic gneiss of Kangding Group, dark inclusions distribute in direction by the Normal Technical College of Kangding, Guzan





康定群, 片麻岩夹变粒岩层, 泸定瓦斯沟口

Gneiss with intercalations of leptynite, Kangding Group, the mouth of Wasigou, Luding



康定群。变粒岩中“白眼圈”构造, 黄金坪北唐家河坝

The "white eye" structure in leptynite, Kangding Group, Tangjiaheba, north of Huangjinping





7. 康定群, 混合岩, 泸沽安宁河桥西

Migmatite, Kangding Group, west of the bridge of Anninghe, Lugu



8. 康定群, 混合岩, 同德北 2km 处

Migmatite, Kangding Group, 2 km north of Tongde





9. 会理群, 薄层石英片岩, 会理关河乡山沟边

Thin-bedded quartz-schist, Huili Group by the valley of Guanhe Village, Huili



10. 会理群与三叠系角度不整合, 力马河南 2km 处

Unconformity between Huili Group and Triassic 2 km south of Limahe





11. 震旦系, 白云岩, 会东大梁子  
Dolomite, Sinian, Daliangzi Huidong



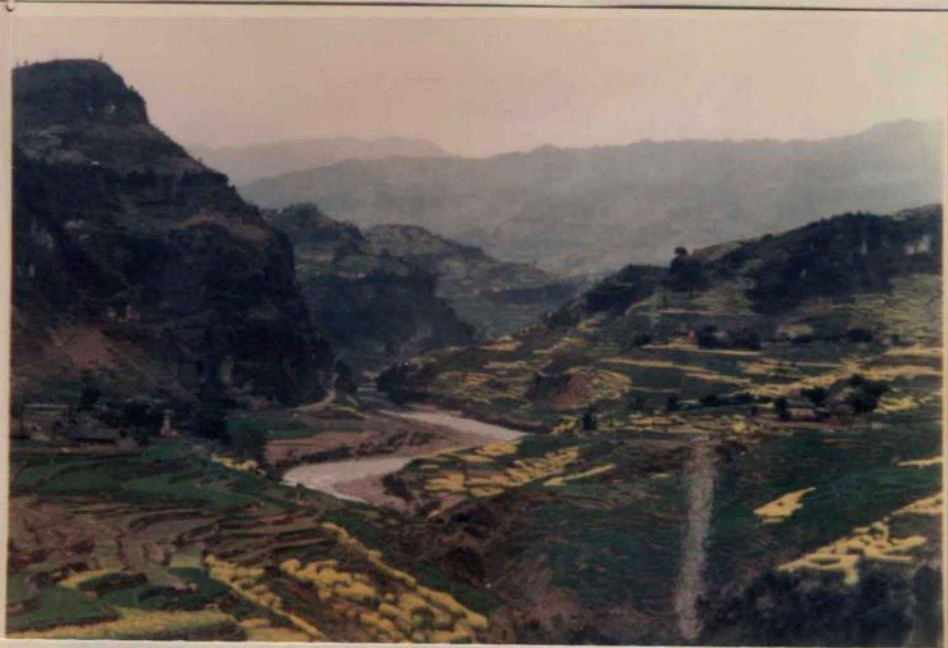
12. 二叠系, 杏仁状玄武岩, 盐边透底河  
Amggdaloidal basalt, Permian, Toudi River, Yanbian





13. 三叠系,砂岩层面发育共轭剪节理,攀枝花小宝顶

Conjugated shear joint developed on the surface of sandstone, Triassic Xiaobaoding, Parzhi-hua



14. 三叠系,砂页岩,荣经西

Sandstone and shale, Triassic, west of Rongjin





15. 三叠系, 陡坎为多金属含矿层, 石棉庙坪

Polymetallic mineral-bearing layer at the cliff, Triassic Miaoping, Shimian



16. 侏罗系, 砂页岩层构成单面山, 会东

Cuesta made up by sandstone and shale, Jurassic, Huidong





17. 侏罗系, 构成单面山, 九襄北  
Cuesta Jurassic, north of Jiuxiang



18. 盐源盆地, 盐源  
The Yanyuan Basin, Yanyuan





19. 昔格达组, 水平产状, 红格  
Xigeda Formation, horizontal stratum, Hongge



20. 第四系冲积层“土林”, 安宁河二级阶地, 土黄色粉砂岩夹砾岩层。西昌黄连关  
Fluvially formed “earth forest”, Quaternary. earth - yellow siltstone with intercalations of conglomerate, the second terrace of conglomerate, the second terrace of Anninghe, Huanglianguan, Xichang





21. 超基性岩体, 蛇纹岩, 橄榄岩, 石棉北矿区

Ultrabasic rocks: serpentinite, peridotite, the north mine of Shimian



22. 含石棉蛇纹岩, 石棉北矿区

Asbestos-bearing serpentinite, the north mine of Shimian





23. 晋宁—澄江期花岗岩侵入康定群, 康定群( $P_{tkd}$ )为斜长角闪岩, 康定黄金坪之北  
 Granites of Jinning - Chengjiang phase intruded into Kangding Group ( $P_{tkd}$ ), which is here plagioclase hornblende, north of Huangjinping, Kangding



24. 康定群中辉绿岩墙, 康定群下索子组为酸性火山岩, 康定下索子南  
 Diabase dike in Kangding Group, Xiashuzi Formation of Kangding Group is acid volcanic rocks in lithology. south of Xiashuzi, Kangding