PROCEEDINGS OF THE THIRD INTERNATIONAL SYMPOSIUM ON DEVELOPMENT WITHIN GEOPARKS

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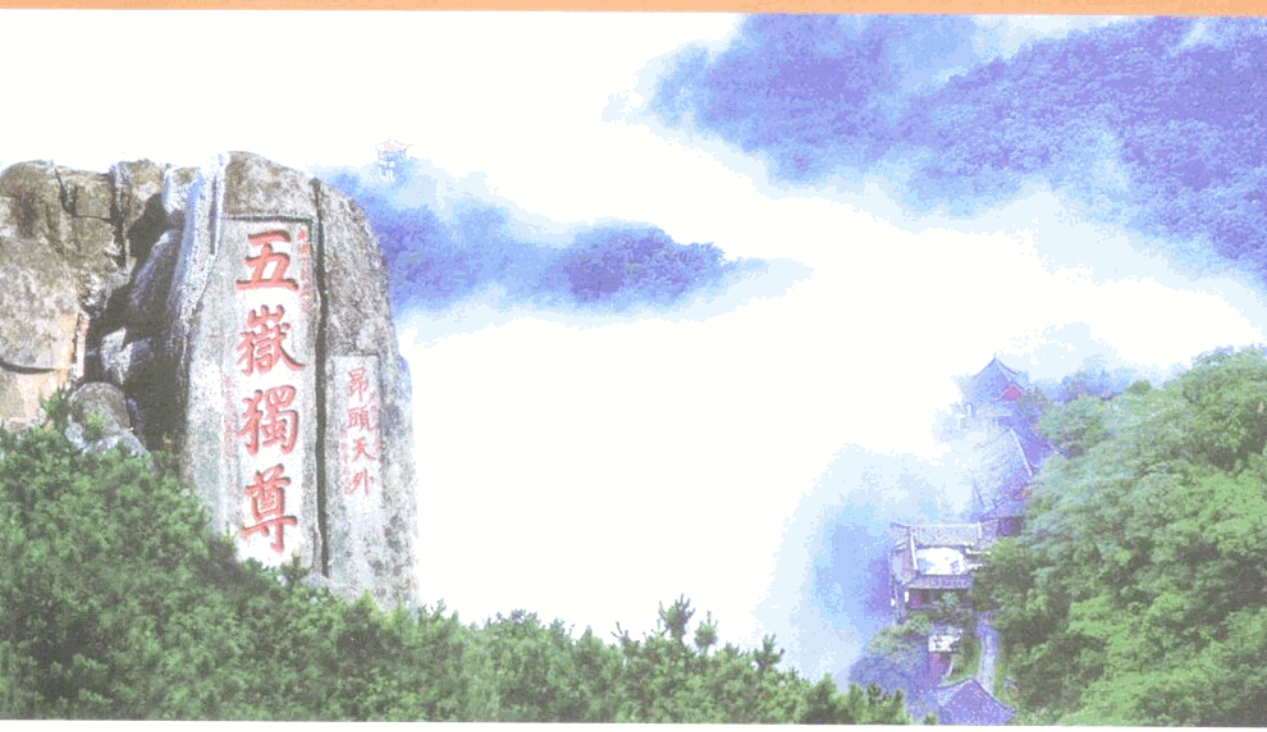

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泰山风景名胜区管理委员会主任
泰山地质公园管理委员会办公室主任　谭业刚

泰山是世界首例文化与自然遗产、世界地质公园，首批中国国家重点风景名胜区、国家5A级旅游景区。泰山不仅有“会当凌绝顶，一览众山小”的神奇意境，而且有“稳如泰山”、“重如泰山”的美誉，更有“泰山安则天下安”、“国泰民安”的精神内涵，被誉为中华文明的标志，中华民族的精神象征。泰山不仅拥有雄伟壮丽的自然景观、源远流长的历史文化，还有着极其丰富和独特的地质遗迹，特别是在早前寒武纪地质演化、寒武系标准剖面以及新构造运动与地貌等方面，都具有全国和世界意义的重要地学价值，堪称自然景观、历史文化、地质科学的万卷丛书。泰山世界地质公园由红门、中天门、南天门、后石坞、桃花峪、徂徕山、莲花山、陶山8个地质遗迹园区组成，总面积约171平方公里。在泰山世界地质公园的管理实践中，我们愈加感到，保护这些人类共有的、不可再生的珍稀财富责任重大，促进泰山世界地质公园事业可持续发展，是实现地质遗迹永续传承、惠及子孙万代的有效途径。为此，我们提出了“爱护遗产、享受遗产、传承遗产”的宗旨，全力加快了泰山世界地质公园的保护、建设、发展进程。

1　爱护地质遗迹，永续传承珍贵的遗产资源

保护地质遗迹是地质公园可持续发展的永恒主题。30亿年的天工造化，5000年的文化积淀，使泰山不仅具有世界上独一无二的“帝王封禅”精神文化现象，而且拥有拔地通天、雄伟厚重的地貌景观，丰富而典型的地质遗迹资源，融珍贵的历史文化价值、风格独特的美学价值和具有世界意义的地学价值为一体，这也是泰山区别于其他名山的特质所在。泰山漫长的地质演化历史，形成了复杂的地质构造，罕见而典型的地质遗迹，众多奇特的地质地貌景观。泰山岩群是华北最古老的地层之一，其中的科马提岩是迄今中国唯一公认的具有鬣刺结构的太古宙超基性喷出岩；泰山是建立区域太古宙至古元古代地质演化框架的标准地区，对揭示花岗岩-绿岩带的形成演化历史，查明中国东部太古宙至古元古代陆壳裂解、拼合、焊接的机制以及地球动力学过程有着十分重要的科学意义；泰山北侧的张夏寒武纪标准地层剖面的建立在地质学史上占有重要地位，至今仍是国内外进行相关对比的经典剖面。泰山丰富多样的地质资源，吸引了国内外专家的关注，地质研究历史已

有130多年，这在国内外名山中也是少有的。从认识泰山地质、研究泰山地质，到申报国家、世界地质公园，以及管理泰山地质公园的过程中，我们不断加大投入，全面强化了地质公园的保护、建设与完善。

一是增强全员保护意识，为公园管理提供思想保障。地质遗迹的保护，不仅是管理部门义不容辞的责任，也离不开社会各界的支持和参与，加强地质遗迹宣传教育，提高全民保护意识尤为重要。为此，我们确定了“保护地质遗迹，共建美好家园”的主题，充分利用多种途径，开展丰富多彩的地质科学宣传普及活动，形成了保护地质公园，实现可持续发展的广泛共识，为有效保护管理好地质公园营造了良好的氛围。

二是建立健全组织体系，为公园管理提供体制保障。泰山地质公园既是汇集文化自然资源的地域综合体，又是集行政、社会、经济为一体的管理复合体。要管理好地质公园，必须有好的机制作保障。为此，我们强化了机制的创新，通过完善管理体制和规章制度，逐步将地质遗迹保护纳入规范化轨道。成立了由市长任主任、分工副市长任副主任的泰山地质公园管理委员会，提升了地质公园的管理规格，有力推动了各项保护管理工作的开展。结合实际构建了泰山地质公园的管理、服务、执法、经营四大体系，对机构进行科学设置，达到了管理体系精简高效，服务体系运转协调，执法体系依法行政，经营体系规范有序的良好效果。

三是制定完善政策，为公园管理提供制度保障。制定出台了《泰山风景名胜区保护管理条例》、《泰山地质公园地质遗迹保护管理办法》等涉及地质公园保护、管理、执法等方面的规章制度100多项，进一步完善了地质遗迹保护的法律制度保障体系，为地质公园的长效保护管理奠定了坚实的制度基础。

四是完善各类设施，为公园管理提供硬件保障。先后投资3亿多元加强了公园的基础设施建设，实施了八大园区的景观改造、水系建设、服务设施、环境整治、绿化美化、排污设施、道路整修、标示标牌等工程。建设了地质博物馆；整修了公园内游览路、步游道和停车场；对61处厕所和排污设施进行了提升改造，8处达到四星级，13处达到三星级；制作了2400余块精美并与自然融为一体的各类公共信息符号标志碑牌，设置了与国际接轨的7大类400余块信息展示标志，完善了泰山地质公园的信息展示系统；建设完善了2个游人服务中心、1个投诉处理中心、8个投诉站、5个医疗救助站等旅游服务设施，有效提升了泰山地质公园的档次和品位。投资6000万元建设的桃花峪游人中心明年初投入使用，集车辆停放、游人集散、信息展示等多功能于一体，建筑形态充分表达彩石溪自然地质地貌特点，建成后不仅能把泰山地质公园的综合服务设施提升到国内一流水平，也将成为一处新的展示地质遗迹的旅游亮点。

2 享受地质遗迹，充分展示丰富的地质内涵

泰山地质公园将地质资源的魅力展现在世人面前，并与厚重的文化和壮丽的自然景观融为一体，进一步丰富了泰山的内涵，极大地提升了泰山的综合价值，也为遗产事业服务当代提供了崭新平台。为此，我们确立了“以人为本”的理念，让更多的游客和公众充分领略和享受地质公园的建设成果，既在游览中获得科学知识，又在欣赏中带来愉悦。

一是深入挖掘典型地质遗迹，形成新的亮点。为充分展示类型丰富的地质遗迹，我们

在专家的帮助下，对泰山的地质遗迹进行了全面考察，选取典型的遗迹，如科马提岩、多期次侵入岩、桶状构造、新构造运动及其形成的奇特地貌景观进行了深入挖掘，形成了新的地质景点；挖掘恢复了宋摩崖、碧天泉、北斗台、白云洞、青云洞、鲁班洞、振衣岗、仙泉、圣水井等一大批地质与人文相互融合的景观，受到游客和公众的普遍欢迎。

二是串点成区，建立特色主题园区。在挖掘新地质景点的基础上，实施了彩石园、石峡园、醉心园等地质遗迹园区建设，把地质景点与周围老景点串联成线，融为一体，力争使每个园区都有一个主题，充分展示泰山地质遗迹的魅力。如红门的“醉心园”主要是展示“桶状构造”，这是国内外罕见的一种新构造类型，其成因和形成机理至今尚无定论，其内核上刻有“醉心”二字，据传孔子登泰山时曾在此饮酒赏景，为奇石和美景所陶醉，所以“醉心石”既是一种重要的地质遗迹，也是一处重要的景点，是将地质遗迹与历史文化完美的结合在一起的例证。我们以此为主题构建了“醉心园”，并与周围的红门宫、孔子登临处、小泰山、万仙楼、经石峪、三潭叠瀑串联成线，构成了红门地质遗迹园区，极大地丰富了泰山中路的旅游内容。“彩石园”的主题是彩石溪，它的突出特点是丰富的地质遗迹与水系的有机结合，28 亿年的浅色石英条带和墨绿色的泰山岩群的斜长角闪岩相见排列，构成了色彩斑斓的彩石溪河床，与桃花峪的水系、一线天构造裂缝、龙角山断裂、泰山岩群的残余包体、傲徕山五世同堂共同构成了桃花峪地质遗迹园区。我们将彩石溪河床清淤与桃花峪水系建设有机结合在一起，围绕展示泰山独特的地质遗迹和自然景观，投资 2500 万元实施了桃花峪水系生态保护一期工程，通过河道治理、绿化美化等措施，形成溪水与彩石和谐共存、相映生辉的壮丽景观，完整再现了彩石溪地质景观，成为该园区的一个亮点。另外，围绕中天门虎皁石、玉皇顶节理、莲花山科马提岩露头、徂徕山金鱼石等地质遗迹，我们还建立了中天门、南天门、莲花山、徂徕山等地质遗迹园区，形成了主题鲜明、特色突出的景点，丰富了泰山旅游内涵，为人们提供了游览观赏、科学普及、科学研究的佳境，置身其中，游览者可以得到美的享受，学生可以得到知识的熏陶，地质工作者有了研究基地，各得其所，各享其乐。

三是加大科研科普力度，宣传普及地学知识。如何通过地质遗迹的科学解释来揭示地质公园的内在美，推进地质知识的普及，让广大游客和公众更好地欣赏地质遗迹，是我们探索的课题之一。为此，我们专门建立了泰山研究院，聘请著名地质专家赵逊教授、陆松年教授等专家担任顾问，并分别与中国地质大学、天津地质科学研究所建立科研合作关系，开展了对泰山地质种类、特点的系统研究，完成了多篇有地质科学价值的论文，在更广的领域挖掘了泰山的地质内涵。同时，开展了丰富多样的地质科学宣传普及工作。编辑出版了《泰山地质》、《岩岩泰山》等 20 余种地质科普读物、影像光盘和 8 种园区介绍册；在泰山门户网站开辟地质公园专栏，充分利用游人服务中心、地质景点信息展示系统、旅行社，通过广泛的宣传，把地质科学的普及延伸到市区，使公园内外成为科普教育的大课堂。

四是注重游客参与，贯穿以人为本。无论是在地质遗迹园区的建设，服务设施的功能完善，还是在管理、执法、服务过程中，都贯穿了以人为本、以游客为本的理念，突出如何方便游客参观、游览，并注重让游客亲身参与到公园的保护管理建设中。建设了社会各界参与的平台，在泰山门户网站及时发布旅游信息，设立了游客电子信箱、论坛和便捷的在线预定业务，提高了地质公园的亲和力，激发了游客和公众爱护地质遗迹的自觉性和责

任感。积极开展青年志愿者、小红帽、主题宣传日、万人签名等一系列与社会互动、与游客共享的活动，引导社会各界及游客在充分享受地质遗迹的同时，参与到公园的保护管理中来，形成人人关心遗迹保护的良好氛围。

3 科学利用地质遗迹，促进区域经济健康发展

正确处理保护、利用与发展的关系是地质公园可持续发展的内在要求。我们坚持用保护促进发展、用发展反哺保护的理念，强化了地质公园的科学利用，促进了区域经济的健康发展。

一是反哺地质保护，实现良性循环。为保证地质公园的健康有序发展，建立科学有效的反哺机制，我们用政策明确了反哺的三个途径。首先，确定了从门票收入中拿出地质公园专项保护资金的政策。其次，积极策划在公园内推行特许经营的制度，山东省专门出台了《泰山风景名胜区服务项目经营管理办法》省政府规章，运作中始终坚持“将特许经营收入全部反哺公园保护管理”的原则，用制度保证公园的健康持续发展。第三，委托泰山研究院研究多元化融资政策和渠道。通过努力，使公园的发展建立在门票提取、特许经营费、多元化融资的坚实平台上，把公园的发展落在实处。

二是有效整合资源，纳入科学规划。为保护管理发展好泰山地质公园，我们确立了保护泰山资源的完整性、原真性的规划原则，编制了泰山地质公园总体规划，建立了 8 个地质遗迹园区和一系列外围科学考察点，规划了 1 个旅游综合服务区和 4 个旅游服务亚区，划分了核心保护区、游览区、发展控制区、外围生态恢复区 4 个功能区和一系列功能小区。在总体规划的框架内，又对各园区分别作出详细规划，使规划具有更强的目标性、可控性和可操作性，把公园建设从一开始就纳入了规划中。

三是发展地质旅游，推动区域经济发展。当今的旅游业已呈现出由观光旅游向多元化旅游发展的趋势。顺应这一趋势，我们确定了“严格保护，永续利用，实现科学发展”的指导思想，以地质公园建设为突破点，全力抓好“强内力、聚实力、扩张力”三篇文章，保持了公园旅游业的持续升温。

在强内力上，重点抓好三个环节。首先，科学整合资源。发挥泰山的独特优势，展现的是一种综合美、和谐美，科学整合、整体推介会更大程度满足不同层次游客的需求。为此，我们在景点、园区的建设上，把着力点放在了综合价值的整体挖掘上，提高了园区的吸引力和影响力。其次，实施品牌战略。我们提出了全力打造“世界文化与自然遗产、世界地质公园、世界非物质文化遗产”四重遗产，树立中华国山地位，把泰山建设成国际知名遗产地和旅游目的地的品牌战略，连续取得一系列高含金量品牌，提高了在国内外的知名度、美誉度和核心竞争力。第三，狠抓优质服务。在 2000 年引入国家公园客户服务理念、通过 ISO9001/14001 国际环境质量认证的基础上，提出了“全面满足基本服务，努力提供期望服务，尽可能达到超值服务”的目标，按照国际标准制定了客户服务手册，在公园内全面实施。完善的设施、优质的服务，营造了良好的旅游氛围，受到了游客的好评，在游客问卷调查中，满意率始终保持在 98% 以上。

在聚实力上，一方面加大公园的宣传营销力度，专门组建旅游处，开展多格局、多层次强势营销，挖掘泰山文化及地质内涵，打响“登泰山，保平安”品牌，加大媒体促销、

上门促销力度，与国内外知名旅行社建立长期合作关系，扩大了公园的影响力。另一方面组建自己的市场主体，注册3000万元成立东岳泰山旅游集团，按照市场经济模式加快运作步伐，现已拥有6个全资子公司、1个控股公司和2个加盟企业，搭建了公园的发展载体和融资平台。同时，注重开展区域联合，积极探索省内联姻、国内联手、国际合作的渠道，与境内外世界地质公园等遗产地签订友好协议，在开展区域合作上取得了新的突破。

在扩张力上，以地质公园八大园区为支点，向园区内、市内、省内三个方面辐射。泰山处在山东黄金旅游线“一山一水一圣人”的中心位置，在泰安乃至山东的旅游业发展中举足轻重。按照泰安市委、市政府“建设经济文化强市，打造国际旅游名城”的战略目标，我们确立了“打造国际旅游名城，就要打造国际旅游名山”的工作方向，不断强化泰山龙头带动作用的发挥。通过完善公园内部旅游网络，带动周边区域统筹发展；通过构建大泰山旅游格局，推动泰安市旅游业的快速发展；通过做大旅游产业六大要素，为全省旅游业的发展作出贡献，使区域经济在地质旅游的介入中又好又快地发展。

世界地质公园不仅是品牌，更是历史赋予我们的使命和责任。我们将本着对历史、对人类高度负责的态度，保护好、利用好、传承好泰山珍贵的地质遗迹，努力将泰山建设成世界地质公园的典范，为实现地质公园“保护地质环境，促进区域社会经济持续发展”作出新的贡献。

Discussion on Danxia landform

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Abstract Danxia landform has been known very well by Chinese for a long time, but comprehension for Danxia landform is completely different. Owing to work area difference of geologists, the emphases are different, which generates manifold different meanings, but it remains essentially the same despite all apparent changes. The continental facies red clasolite formation in Yanshan Period is the main stratum forming scenery and "red cliff" is its recognized appearance. Only when seeking its origin, we can reach the same goal by different routes, at least we can seek common points while reserving difference. As a kind of rare natural (geology) heritage, Danxia landform is also a result of specific geology tectonic background and geologic history evolutionary phase. Discovering its geology background is just the key for us to solve the difficult problem.

Key words Danxia landform, red continental facies clast formation, red cliff, natural heritage, geological structure background, geological history evolution

Preface

The name of Danxia landform is universally accepted and extensively used by the geologists of our country. It can be divided into two main classes: typical Danxia landform (narrow sense) and expanding Danxia landform (broad sense). Typical Danxia landforms are constructed by red continental facies clasts. Its distribution and evolution were affected by Yanshan movement. It was formed in the mountain front basin and intermontane basin of the compressive belt of the plate margin or the rift valley fault subsidence and depression basin of the strike-slip and extension belts in the plate, with majority developed near the basin edge at the early stage of tectonic cycle. The dry and hot climatic conditions made the continental facies clastic sediment "deep red in color and iridescent as clouds at sunrise". Owing to intermittent earth crust uplift during Himalayan movement epoch (possibly including the Late epoch of Yanshanian movement), redbeds of continental facies with flat occurrence were incised by the vertical joint, crevice and fault to form landscape elements and combination of red cliff, mesa, fortress, gorge and rivulet gulf, corridor cavity and camber arch, fantastic peaks and fairy stone under the suitable conditions and effect of gravity water, wind, ice, creature and other external stresses. As to the expanding Danxia landform (broad sense), the epoch, lithofacies, lithology, color, geomorphic landscape elements and element combination are all not strictly restricted by the above concept.

Because of tectonic movement; lead and lag as well as difficulty on partition and contrast for red continental facies clast formation, it is quite difficult to put forward Danxia landform concept extensively accepted jointly by the geologists and tourism circle according to the present research achievements, but red sandstone landform have the commonness easy to identify in various continents globally, it still has typical cases for us to study and discuss.

Because of difference from typical Danxia landform in the strata, forming epoch, color, topography, etc., the red silicalite strata containing iron in Archaean, landform formed by redbeds in Proterozoic group, landform formed by old red sandstone in Devonian, landform formed by Rotliegende in Permian Period, landform formed by redbeds of Cretaceous and Paleogene in South Europe, landform formed by redbeds of Upper Paleozoic—Cenozoic, landform formed by redbeds of Mesozoic group in South American Andean tectonic belt; landform formed by Australia Lower Paleozoic Ayers Rock and surrounding redbeds and landform formed by Silurian redbeds in West Asia are regarded as the expanding Danxia landform.

Starting with structural evolution, basin analysis, sedimentary formation, landscape element and unit combination and other aspects, this paper analyzes typical and expanding Danxia landforms at home and abroad and directly faces the challenge in the research for Danxia landforms in the hope of providing the suggestion and reference for promoting global contrast of Danxia landforms.

1 Danxia landform concept

1.1 Historical evolution of Danxia landform concept

In 1928, Feng Jinglan and Zhu Xiangsheng denominated a set of red sandstone formation forming Danxia Mountain in North Guangdong as Danxia stratum and described its unique landform.

In 1939, Chen Guoda and Liu Huisi formally used the name of Danxia landform.

In 1960, Huang Jin ranked Danxia landform as a type of Guangdong landform and explained its concept.

In 1961, Huang Jin put forward the definition of Danxia landform.

In 1980, Zeng Shaoxuan and other persons participated in compiling "Physical geography of China" published by the Chinese Academy of Sciences and introduced Danxia landform of South China in the redbed landform part.

Main presentments on Danxia landform concept

Dictionary of Geology in 1983: It refers to the landforms of castle shape, pagoda shape, needle shape, stylolitic, rod shape, mesa shape or hoodoo shape formed by the thick stratum of red glutenite with inhomogenous mixed cementation of iron and calcium, with flat occurrence and grown jointing under the combined actions of differential weathering, gravitation dilapidation, erosion, corrosion, etc.

Dictionary of Geography in 1983: It refers to the mesa, grotesque peak, red cliff, gtottoes and megalith and other specific landforms grown on tremendously thick red glutenite.

In 1986, Huang Keguang and Peng Hua respectively defined Danxia landforms and conducted further discussion.

In 1988, Huang Jin depicted it in even more details. The red cliff landform forming the mesa with flat top, steep body and flat mountain foot, stone wall, stone peak, stone pillar and other extraordinary dangers, grown on horizontally or gently dipping thick amaranth gravel stratum from Jurassic to Tertiary, eroded by the stream along vertical joint of terrane and peeled by weathering with recession in dilapidation, were referred to as Danxia landform.

In 1990, the systemic introduction for Danxia landform was put into Volumn Geography of Encyclopedia of China.

In 1990, Zeng Shaoxuan, Huang Jin: Generic terms of all kinds of red cliffs and grotesque peaks grown along vertical joints in tremendously thick red glutenite bed.

In 1991, Huang Jin: The red clasolite landform giving priority to glutenite, together with cliffs, was referred to as Danxia landform.

In 1991, Peng Hua: Danxia landform was a landform type grown on red glutenite, formed mainly by water erosion and gravitation dilapidation, characterized by red cliffs. In 1992, Huang Jin, Huang Keguang, Chen Zhijun and other persons respectively improved and expounded the definition of Danxia landform again.

In 1993, Zhou Dingyi: Danxia landform was grown on horizontally or gently dipping thick continental facies amaranth or red clasolite formation from Mesozoic to Tertiary, eroded by streams, peeled and dilapidated by weathering to form red cliff landform.

In 1993, Liu Shangren: Danxia landform was the red cliff group landform formed by sedimentary rocks.

In 1993, Yang Yingyu: The landform grown in redstone formation with red cliff shape was referred to as Danxia landform.

In 1994, Peng Hua: The landform grown on red continental facies clasolites and characterized by red cliffs was referred to as Danxia landform.

In 1995, Huang Jin: The red continental facies clasolite landform with red cliffs was referred to as Danxia landform.

In 1998, Luo Chengde: The landform grown by red continental facies clasolites and characterized by red cliffs.

As it is seen from above, in past 80 years, Chinese geologists increasingly deeply comprehend Danxia landform formed by red clastic sedimentary rocks on the basis of extensive investigation, detailed research, elaboration, contrast, summarization and subliming, and approach perfection for its concept day by day. The application of Danxia landform is also accepted by more and more people.

Through induction, the author believes that formation and evolution of the landform depend on three major elements: (1) geologic structure; (2) rock constituents and structure (red is one of ap-

pearance representations); (3) climatic conditions, in which the most important control condition is the geologic structure background.

1.2 Author's cognizance for Danxia landform

According to the plate tectonics of new global view, various mid-oceanic ridges outspreaded successively in Alpine movement period and the diastrophism tended to be active again. The opening and closing of Tethys Ocean and Gondwana land's cracking and wandering engendered new pattern of global tectonics since Jurassic. It showed the north shift of J—N_1 Indian plate, Yanshan movement of J—K East Asia, Nevada and Laramide movement in North America, Andean movement in South American, Alps movement in Europe and Hatra movement in Africa, etc. According to the uptodate research findings of Dong Shuwen et al. (2005, 2007, 2009), the driving force of Yanshan movement likely came from the descending flow of super cold mantle. The lateral compensation of asthenosphere substantces pulled Pacific plate to dive westward(J_3) and Indian Ocean plate to dive toward northeast(156 ~ 150Ma), which likely triggered to form the multiway convergence tectonic system of East Asia continent in Yanshan Period. In the meantime, the influence of opening of mid-atlantic ridge(185 ~ 155Ma) and Arctic Ocean Meiya basin(J—K) might lag to Quaternary period. It was obvious that the tectonic movement synchronous to Yanshan movement had representation in many regions with evident lead and lag. But it was very different from previously several large tectonic cycles. Most of continental sedimentary basins were closely related to the plate borderlines, such as subduction zone(orogeny), rift formation(stretch), strike-slip rupture(pull apart), etc., forming the molasse formation, continental facies red clast formation, gypsum-salt sediment formation, coal formation and oil gas sedimentary formation, tephra sedimentary formation.

The primary effect of the Yanshan movement on Danxia morphogenesis:

①The sedimentation epoch J—K of continental facies redbeds give priority to Yanshan Period, but because of lead and lag of tectonic movement of sedimentation basin evolution, they may be T_{2+3}—J—K in some regions. The time of forming Danxia landform should be in Paleogene, Neogene, and Quaternary period, namely 65 million years(since Cenozoic, Himalayan movement);

②Lithology gives priority to continental facies red clasolites, in which there may be the coal and oil bearing rock formation or saliferous, eruptive material or transitory sea facies interbed;

③Occurrence is quite flat, with upgrowth of vertical joint and crevice, related to intermittent block uplift of earth crust.

④Landform combination: red cliff mesa, fortress, peak wall, peak pillar, peak cluster, narrow valley, barrier valley, gorge, zungenbecken, valley in valley, solution cavity and road, rain channel, oblatus cavity, taffoni niche, natural bridge and stone arch.

Yanshan movement was put forward by Weng Wenhao in 1926, 1927 and 1929 to represent geologic structure movement generated from Middle Jurassic to Cretaceous period J_2—K. Via research of many persons, China Earthquake Administration defined the epoch as J—E in 1976, namely 203 ~ 23 million years tend to be reasonable much more.

Since Mesozoic, a series of important geology and climate change events have occurred globally. East China belongs to continental margin of circum-pacific belt activity. The west experienced ultimate closing of Tethys Ocean. Under influence of collision between Indian plate and Eurasian plate, volcanicity is frequent with climate warming up (Dong Shuwen, et al. 2009; Sa Jingeng, et al. 2009; Zheng Yadong, et al. 2009).

The diastrophic asynchrony in all quarters was the focus of contention in 1950 ~ 1960s. Stille school asserted synchronism, but Qutten. Gillyly, Harland, Burke, Wezel, Mattauer, etc. stressed the tectogenetic diachronism of the same orogen. It was proven by research that globally continental cracking universally occurred approximately in middle and upper Triassic. The Gondwana land gradually cracked and drifted toward different directions. Indian plate drifted toward the south of Eurasian plate and moved northward together with Australia.

Meanwhile, Yanshan movement (J_3—E) with extensive influence occurred between Eurasia plate and Kula—the Pacific Ocean plate, at the marginal-pacific region, even in the indepth continental plate. The folds, fault subsidence and magmatic activity with different intensity occurred in East China to form a lot of continental facies lake basins (partially red sediment). The molasse formation and volcanogenic sedimentation formation forming continental facies red clasolite sedimention are unequal in thickness.

These red inland basins began to fold or uplift, weathered and denuded in subsequent Himalayan movement. When geologic structural feature, rock composition and profile constitution are favourable and climatic conditions are suitable, it formed Danxia landform of China.

Danxia landform can be summarized as: (refer to narrow sense (typical) Danxia landform)

The landform represented by red cliffs and engendered by fold and uplift of continental facies red clasolite formed by Yanshan movement in Himalayan movement under weathering denudation, gravitation dilapidation, running water scour and freeze thawing gelivation, wind erosion and biological action.

The author also notices that there are not a few red strata forming the landform represented by red cliffs which is "deep red in color and iridescent as clouds at sunrise" through analyses from broad sense and expanded angle, but redbeds are neither formed from continental basins in Yanshan Period, nor definitely continental facies clast formation. But it is also very significant to study Danxia landform from tourism angle and to extend it as the broad sense Danxia landform.

It is analyzed from the above concept that Danxia landforms in China are distributed north to Hongshilazi, Mudanjiang city, Heilong, south to Whitestone mountain, Qionghai County, Hainan province, west to the north side of Hongliutai and Xi Ke Er in the northeast of Kashi County, Xinjiang, east to the shore of East China Sea, from Nangqian County, Qinghai province with altitude around 4500m to Chengtoujiao, Dapeng bay, Shenzhen city and Basalt Island in Hongkong close to the sea level. It spans across the semi-arid region and subhumid region of Qinghai-Tibet Plateau, the humid region, subhumid region, semiarid region and arid region of moderate temperature zone, the subhumid region, semiarid region and arid region of warm temperature zone, the humid region of north subtropics, the humid region and subhumid region of central Asia tropic, the humid region