

# 试论秦岭—大别山—胶南隆起—临津江 褶皱带及其周缘地区的大地构造属性

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**摘 要** 具有统一发展史和构造属性的中国华北—东北南部—朝鲜北部地区构成了东亚地区较大的稳定区—中朝古陆,大量的研究工作使得其内部及其南部的大地构造格局逐渐明朗化,作为中朝地台与其南侧的稳定区—扬子地台之间的过渡带—秦岭地槽的构造轮廓、构造属性、发展史也得到了进一步的厘定。由于郯庐断裂的影响,加之研究程度的限制,在该断裂以东,中—朝古陆与扬子地台的构造关系及其间过渡带—秦岭地槽的东部延伸问题一直困扰着人们,加之朝鲜半岛的构造复杂性及黄海地区的资料缺乏,致使中—朝古陆南缘的大地构造格局成为亟待解决的重大构造地质问题。

古生物资料的对比研究表明:沿着秦岭—大别山—南朝鲜的汉城分布着一系列的古陆隆起,其分隔了北部和南部的两个海盆(中朝海盆和扬子海盆),使得两个海盆的古生物交往受到了阻碍,从而导致了南北两侧的古生物差异,尤以早古生代最为明显,至晚三叠世之后南北两侧的古生物面貌趋于相似。近期研究成果表明:胶东地区曾有过中晚古生代地层的沉积,而在朝鲜松林地区也发现了中晚古生代地层,这进一步说明了胶南隆起北部坳陷带、南黄海盆地及朝鲜汉城隆起北侧的临津江坳陷在中晚古生代呈经历了相近的大地构造发展史。

沿秦岭—大别山—胶南隆起—临津江褶皱带分布的经历了多期变形变质的斜长片麻岩、斜长变粒岩、斜长角闪岩、二长片麻岩、黑云片岩和黑云变粒岩、浅粒岩、云母片岩、阳起石片岩夹大理岩等表明了太古代至早元古代由秦岭—大别山—胶南—临津江分布着一为断裂所限、由变质—岩浆杂岩体组成的构造隆起带,分布于大别山苏淞、孝感、胶南连云港、临津江褶皱带的变质磷矿也证明了这一点。该隆起带是在中、晚元古代时期由中朝古陆南缘裂解而成,在早前寒武纪结晶岩系强烈活化,中生代则发生了强烈的花岗岩类岩浆活动。

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受区域性构造运动差异性及其断裂的影响,中、晚元古代至早古生代在中朝古陆的南侧、前述太古代—早元古代构造隆起带的北侧发育了一条东窄西宽的陆内(间)裂谷,自西向东依次沿北秦岭、北淮阳、胶东北和朝鲜中部延伸,其南界为商县—朱阳关—夏馆断裂、桐柏—磨子潭—桐城断裂、五莲—即墨(青岛)断裂和临津江断裂。其中秦岭二郎坪一带中奥陶世出现了蛇绿岩建造,表现为一陆间裂谷,向东逐渐变窄,演变为陆内裂谷。朝鲜临津群和栖霞陡崖蓬莱群的对比研究表明中晚古生代胶南—临津江构造隆起北侧存在有一较窄的陆内裂谷,其内沉积了一套呈近东西向延伸的冒地槽型沉积,可与秦岭—大别山隆起北侧的北秦岭—北淮阳裂谷相对应。

大量的基底变质岩系同位素年龄测定和航空磁测资料表明:除了在中国的康滇地区和朝鲜的南部广泛出露有太古代—早元古代变质结晶岩系外,在四川盆地、江汉盆地和苏北—南黄海盆地等中、新生代盆地沉积层下展布有一系列由太古界—元古界变质结晶岩系组成的微型古地块,自西向东依次为:康滇微型地块、川中微型地块、江汉微型地块、南黄海微型地块和朝鲜南部的京畿地块。这些微型地块乃扬子—京畿古陆早期形成的稳定块体。在太古代和早元古代扬子地块与京畿地块的基底经历了相近的大地构造发展史。

华北地台—狼林地块之上广泛分布的中晚元古代—三叠纪沉积盖层和扬子地台—京畿地块上分布的相似的震旦纪—第三纪沉积盖层则表明了华北地台与朝鲜狼林地块构造属性的相似性、扬子地台与朝鲜京畿地块构造属性的相似性,其分别构成了中朝古陆和扬子—京畿古陆两大稳定地块,其间则为横亘东西、东窄西宽的秦岭—胶南—临津江陆内(间)裂谷。

胶南隆起带升高的正磁异常带向东可延至朝鲜境内,可与秦岭—大别古隆起南侧相对比,反映了此带南北两侧地壳结构的差异。沿秦岭—大别山隆起南缘、胶南隆起带及临津江褶皱带广泛分布的花岗岩,胶南隆起带之上分布的榴辉岩,超基性岩等深源岩石,沿朝鲜临津江褶皱带分布的大量角闪岩则表明了扬子—京畿古陆曾分别于元古代末期(晋宁运动)和中生代早期(印支运动)与其北侧的华北—狼林古陆发生过碰撞对接作用,对接带在郯庐断裂以东经洪泗—连云港断裂与五莲—即墨(青岛)断裂之间的胶南隆起延至朝鲜的临津江褶皱带。

纵观古生物特征、前晚寒武纪基底发展、古生代陆内(间)裂谷的演化、中—晚元古代—三叠纪沉积盖层的发育特征及后期构造变形、变质、岩浆活动等特征,华北地台与狼林地块、秦岭地槽与临津江褶皱带、扬子地台与京畿地块均具有明显的相似性和可比性,表现出了相似的大地构造发展史。华北地台与狼林地块共同构成了中朝古陆,扬子地台与京畿地块则构成了稳定的扬子—京畿古陆,二者在元古代末期碰撞结合在一起,构成了统一的古陆。震旦纪后,由于两大古陆的差异性运动,形成了西宽东窄的古生代陆内(间)裂谷,该裂谷在郯庐断裂带以西的秦岭地区尤为发育,至胶南—临津江地区裂陷不明显,仅在中晚古生代发育有一狭窄的陆内裂谷,其内形成了冒地槽型沉积建造。至中生代的早期(晚三叠世),中朝古陆与扬子—京畿古陆相向运动并于秦岭—大别山—胶南—临津江一线碰撞对接,最终拼合在一起。其后,共同经历了西太平洋大陆边缘的构造演化过程,形成了一系列的中新生代盆地和一系列走向 NNE—NE 向的裂陷与隆起带,并伴随有岩浆的侵

入和喷发。

**关键词** 隆起 褶皱带 大地构造属性 中—朝古陆

## ESSAY ON THE TECTONIC ATTRIBUTE OF QINLING—DABIE MOUNTAIN—JIAONAN UPLIFT —RIMJIN-GANG FOLD BELT AND ADJACENT REGIONS

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**Abstract** Based on the similarities and differences in stratigraphic paleontology, metamorphic complexes of Archeozoic—Early Proterozoic Era, systems of crystalline rocks of Early Precambrian, evolutionary features of intracontinental (intercontinental) rift and caprocks, the authors probe into the tectonic attribute of Qinling—Dabie Mountain—Jiaonan Uplift—Rimjin-gang Fold Belt and adjacent regions, and set forth the tectonic corresponding correlation between North China Platform—Rangrim Massif (China—Korea Paleoccontinent) and Yangtze Platform—Kyonggi Massif (Yangtze—Kyonggi Paleoccontinent) and the different motions between them. Combining the gravity-magnetic anomaly, glaucophane-schist, eclogite and other evolutionary features of granitic rocks, the authors think that China—Korea and Yangtze—Kyonggi Paleoccontinents collided with each other and then combined together along Qinling—Dabie Mountain—Jiaonan Uplift—Rimjin-gang Fold Belt respectively in the last period of Proterozoic and in Late Triassic.

**Key words:** essay uplift fold belt tectonic attribute  
China—Korea Paleoccontinent

### 1 Introduction

Along with continuous studies on tectonics of China and adjacent regions in recent years, many of the classic viewpoints have changed largely. The regions from North China, the south part of Northeast China to the north part of Korea were once a whole paleocontinent—a large steady continent in East Asia<sup>[1][2][3]</sup>. The recent researches have

made clear its tectonic style in China, and the tectonic outline, tectonic feature and evolutionary history of Qinling Geosyncline (the transitional belt between the continent and another steady region—Yangtze Platform) are also becoming clear now<sup>(4)(5)(6)</sup>. Due to the presence of Tan—Lu Fracture Zone and limit of research degree, geologists have always been puzzled by the tectonic relation between China—Korea Paleocontinent and Yangtze Platform, and also the eastward extension of Qinling Geosyncline, the transitional belt between the two paleocontinents. And in addition, because of tectonic complexity of Korea Peninsula and little information about the Yellow Sea area, the tectonic style around the south border of China—Korea Paleocontinent has become a very important tectonic problem to be solved. According to the research results and together with other geologists' research information, the authors try to answer the problems mentioned above, and hope this paper can play a role in casting a brick to attract jade for the deepgoing researches on China—Korea tectonics.

## 2 Evidence of Stratigraphic Paleontology

The comparative research on China—Korea tectonic style may be traced back to 1930's. Kobayashi (1930, 1937) divided Korea into three parts as Rangrim Massif, Kyonggi Massif and Ryongnam Massif and found that a series of paleocontinental uplifts distributed along Qinling—Dabie Mountain—Seoul line separated Sino—Korea Sea Basin from Yangtze Sea Basin, and due to the relation stop between the two, paleontologic difference appeared. Kobayashi called the line as "Qinling—Seoul line". The paleontologic difference became very clear in Early Paleozoic, but paleontologic appearance in the two basins tended to be similar after Late Triassic Period.

After having studied basal conglomerate layer of Laiyang Formation in Jiaodong Peninsula, Guo Zhenyi (1985) found the foraminiferal and fusulinid fossils of Late Carboniferous in the gravels come from Jiaonan Uplift. The phenomenon shows that sediments of Mid-Late Paleozoic strata ever existed before. During petroleum drilling in the north depression of the South Yellow Sea Basin in 1988, fusulinid fossils were also found in limestone gravels of conglomerate interbeds in Wangshi Formation of Late Cretaceous. Cai Qianzhong et al. went to Songrim region for a geologic survey in North Korea in 1988, and found Silurian—Devonian-fossil-bearing gravels in the basal conglomerate of the Lower Jurassic System<sup>(7)</sup>. The discoveries further explain that the depression north of Jiaonan Uplift, South Yellow Sea Basin and Rimjin-gang Depression north of Seoul Uplift underwent similar tectonic development in the Mid-Late Paleozoic.

### 3 Metamorphic Complexes of Archaeozoic—Early Proterozoic Era(Tectonic Uplift Zone)

At the West side of Tan—Lu Fracture Zone, the Qinling—Dabie Mountain area, as a tectonic uplift zone of Archaeozoic—Early Proterozoic in Qinling Geosyncline, is limited by Shangxian—Zhuyangguan—Xiaguan Fracture and Xincheng—Xishui Fracture by its north side and Danfeng—Shangnan—Xixia Fracture and Tongbo—Mozhitan—Tongcheng Fracture by its south side (Fig. 1). The tectonic zone is composed of Qinling Group of Early Proterozoic and Tongbo Group of Late Archaeozoic—Early Proterozoic which underwent multiperiodic deformation and metamorphism and belonged to a series of hypometamorphic magmatic complex.

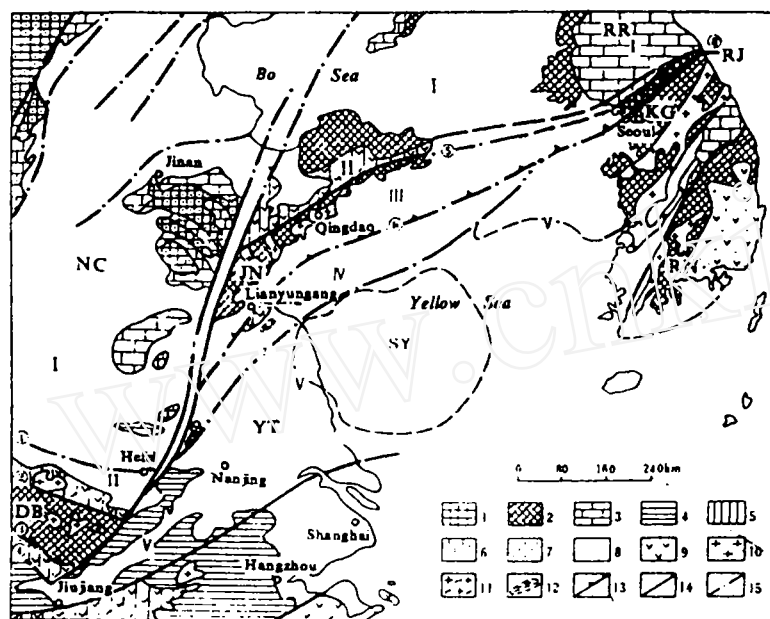


Fig. 1 Sketch map showing tectonic style around the south border of China—Korea Palecontinent

1. Archaeozoic metamorphic complexes 2. The metamorphic complex and crystalline rocks of Archaeozoic—Early Proterozoic 3. The caprocks of Mid-Late Proterozoic—Triassic 4. The caprocks of Sinian—Triassic 5. The continental marginal zone of Mid-Late Proterozoic 6. The continental marginal zone of Mid-Late Proterozoic—Early Paleozoic 7. The sedimentary basin of Jurassic—Cretaceous 8. The covering area of Cenozoic 9. Volcanic rocks 10. The granite of Mesozoic. 11. The reworked granite of Proterozoic 12. Glaucophane-schist 13. The south margin of collision and junction zone 14. The regional fracture 15. The geophysical inferred fracture.

I China—Korea Palecontinent II The intracontinental(intercontinental)rifts at the north side of Qinling—Dabie Mountain—Jiaonan—Rimjin-gang Uplift III Qinling—Dabie Mountain—Jiaonan—Rimjin-gang Fold Belt

W The intracontinental rifts at the south side of Qinling—Dabie Mountain—Jiaonan—Rimjin-gang Uplift V  
 Yangtze—Kyonggi Palecontinent NC North China Platform RR Rangrim Massif DB Dabie Uplift  
 JN Jiaonan Uplift RJ Rimjin-gang Fold Belt(Uplift) YT Yangtze Platform SY South Yellow Sea Massif  
 KG Kyonggi Massif RN Ryongnam Massif  
 ①Minggang—Gushi—Feizhong Fracture ②Tongbo—Mozitan—Tongcheng Fracture ③Xincheng—Ying-  
 shan—Xishui Fracture ④Xiangfan—Guangji Fracture ⑤Wulian—Jimo (Qingdao) Fracture ⑥Hongsi—  
 Lianyungang—Qianliyan Fracture ⑦Jiashan—Xiangshui Fracture ⑧Rimjin-gang Fracture ⑨Tan—Lu  
 Fracture

Jiaonan Uplift east of Tan—Lu Fracture Zone is limited by Wulian—Jimo (Qingdao) Fracture and Hongsi—Lianyungang Fracture, and composed of Jiaodong and Fenzishan Groups which are made up of plagiogneiss, plagiogranulite, plagioclase amphibolite, monzonitic gneiss, biotite schist, biotite granulite, leucogranulite mica schist and actinolite schist containing marble, corresponding to Tongbo Group, Dabie Group and Hongan Group respectively.

Except the west part, Rimjin-gang Fold Belt in the center of Korea is covered by the metamorphic magmatic complex of Archeozoic—Early Proterozoic<sup>(8)</sup> which formed a tectonic uplift.

The aforementioned circumstance shows that a tectonic uplift composed of metamorphic magmatic complex was distributed along Qinling—Dabie Mountain—Jiaonan—Rimjin-gang in Archeozoic—Early Proterozoic, and the tectonic uplift was limited by fractures. The tectonic uplift separated from the south border of China—Korea Palecontinent in Mid-Late Proterozoic, and crystalline rock series was activated strongly in Early Precambrian (Ar-P<sub>1</sub>) and granitic magmatism took place strongly in Mesozoic.

#### 4 Development of Intracontinental (Intercontinental) Rift

The authors ever dealt with the intracontinental (intercontinental) rifts of Paleozoic in Qinling region in detail before (Guo Yugui et al., 1992), expounded tectonic evolution features of North China Platform, Qinling Geosyncline and Yangtze Platform quantitatively at the angle of paleomagnetism, and elaborated the forming and developing history of the rift which becomes narrower eastwards. Influenced by the difference of regional tectonic movement and Tan—Lu Fracture, an intracontinental (intercontinental) rift with width larger in the west than in the east developed between the south border of China—Korea Palecontinent and the north border of the above-mentioned tectonic uplift of Archeozoic—Early Proterozoic from Mid-Late Proterozoic to Early Paleozoic. The rift extended along North Qinling, North Huaiyang, northern Jiaodong and central Korea from west to east. The south boundary of the rift is Shangxian—Zhuyangguan—Xiaguan

Fracture, Tongbo—Mozitan—Tongcheng Fracture, Wulian—Jimo (Qingdao) Fracture and Rimjin-gang Fracture. We found ophiolite formation of Middle Ordovician in Erlangping area in Qinling and it shows an intercontinental rift which became narrow gradually eastward and evolved into an intracontinental one. We can find metamorphic volcanic sedimentary rock series of Mid-Upper Proterozoic—Lower Paleozoic in the rift. Taphrogeny has become so faint to Jiaodong area that we have not found the Lower Paleozoic now, while sedimentary formation of Upper Proterozoic—Lower Paleozoic and typical geosynclinal sedimentary formation——Rimjin Group of Devonian are distributed at the west part of Rimjin-gang Fold Belt in the center of Korea, and the former forms the main fold complexes.

Rimjin Group of Middle Paleozoic was discovered in the regional geological investigation (on the scale of 1 : 2000000) in Korea during 1959—1960. It was put into Sangwon Group of Proterozoic before and considered as Mid-Upper Devonian according to the fossils later. Rimjin Group unconformably overlies the white dolomite of Myolak Formation, Sangwon Group of Proterozoic in Cholwon—Kumchon zone, and its total outcrop thickness is 2440—3030m. In Kangryong area of west coast, the lithologic character of Rimjin Group varies rapidly and its grain size becomes coarser, and the outcrop thickness is only 1658—1980m. Rimjin Group is composed of slate, phyllite, metamorphic siltstone and limestone, most of which belongs to marine facies, and corresponds with Penglai Group at Qixia area in Jiaodong of China. The outcrop thickness of Penglai Group at Douya, Qixia area is about 2834—5018m. It is a set of epizonal metamorphic marine facies and composed of phyllite, argillite, aposandstone, quartzose sandstone, marble and limestone which belong to geosynclinal sedimentary formation, and overlies the Fenzishan Group unconformably (Penglai Group here does not suit at all to the standard stratigraphic sections of Sinian Period in Jixian, Dalian and other northern areas in lithology). Cai Qianzhong and Yang Zhijian (1989) made a comparative research on Rimjin Group and Penglai Group at Douya, Qixia area, and considered that these two sets of strata had clear similarities and should belong to Mid-Upper Devonian, but clear difference existed between the two sets of strata and northern Sinian System at Zhifu Island in Yantai, China. The discoveries and the aforementioned fossils of Late Carboniferous and Silurian—Devonian illustrate that along the north side of Jiaonan—Rimjin Uplift in Mid-Late Paleozoic existed a narrow intracontinental rift, in which was formed a set of miogeosynclinal sediment extending from east to west and which can correspond with North Qinling—North Huaiyang Rift at the north side of Qinling—Dabie Uplift.

## 5 The Existing of System of Crystalline Rocks on Yangtze—Kyonggi Paleocontinent in Early Precambrian

Along with the deepgoing of studying on geology of Precambrian in Yangtze region in the recent years, a great deal of information on radiometric dating of basement metamorphic rock series and areomagnetic survey was accumulated. These results demonstrate that a series of micropaleomassifs composed of metamorphic crystalline rocks of Archaeozoic—Lower Proterozoic are underlying sedimentary layers in Sichuan Basin, Jiangnan Basin, Northern Jiangsu—South Yellow Sea Basin and other Mesozoic and Cenozoic basins except Kangdian region in China and southern Korea where metamorphic crystalline rocks of Archaeozoic—Early Proterozoic are widely outcropped (Yang Sennan et al., 1990). The micropaleomassifs are Kangdian Micropaleomassif, Middle Sichuan Micropaleomassif, Jiangnan Micropaleomassif, South Yellow Sea Micropaleomassif and Kyonggi Micropaleomassif in southern Korea which were the steady massifs formed during the early formation of Yangtze—Kyonggi Paleocontinent. On the map of magnetic anomaly, the wide and gentle positive anomaly reflects the old crystalline basement composed of intermediate—basic magmatic complex, and the E—W wide and gentle positive anomaly on the background of negative anomaly field in northern Jiangsu—South Yellow Sea region has a value about 200nT<sup>[9]</sup>. The aforementioned situation illustrates that the basements of Archaeozoic—Early Proterozoic of Yangtze Massif and Kyonggi Paleocontinent have undergone a similar tectonic development.

## 6 Development Features of Caprock

According to Fig. 1 and Tectonic Map of Korea (scale: 1/2,000,000), we can see that the sedimentary caprocks of Mid-Late Proterozoic and Triassic are distributed extensively in North China Platform and Rangrim Massif. Cambrian System and Ordovician System of the two massifs are both composed of marine sediments. The extensive regression resulted in the absence of Upper Ordovician—Lower Carboniferous in the two massifs. They didn't accept sediments until Middle Carboniferous. Benxi Series and Taiyuan Series were formed in North China (Chao, Y. T., 1925) and Kogen Series which corresponded to Taiyuan Series was formed in Korea. Their Permian System and Carboniferous System all belong to continental facies and none of them have obvious limit between the two systems. Triassic Systems of the two massifs are both continental facies which are composed of red cross-bedding quartzose sandstone and something like it, and both conformably contact with Permian System. Jurassic System and Cretaceous System



are all inland-basin sediments. And Quaternary basalt is distributed in both north part of Shanxi in China (Yin, T. H., 1933a) and north part of Northeast Korea (Yin, T. H., 1933b).

Similar sedimentary caprocks of Sinian—Tertiary are distributed in Yangtze Platform and Kyonggi Massif, drift sheet of Sinian and Silurian Systems can be also found in both Yangtze Platform and Nyongwol of Kyonggi Massif. And Permian System and Triassic System in Chouju of Kyonggi Massif which contain coal seams possess the features of typical southern strata of China and correspond with Shanxi Series of China.

The situation aforementioned illustrates that tectonic features of North China Platform and Rangrim Massif in Korea are similar, and those of Yangtze Platform and Kyonggi Massif are similar too. The former two constituted China—Korea Palecontinent and the latter two constituted Yangtze—Kyonggi Palecontinent. The E—W Qinling—Jiaonan—Rimjin-gang intracontinental (intercontinental) rift sat between the two big steady massifs.

## 7 Marks of Collision and Junction Zone

Many geologists dealt with the tectonic relation between North China Platform and Yangtze Platform at different angles. The authors just try to elaborate the problem on collision and junction with the help of some recent research progresses.

Jiaonan Uplift shows a rising positive aeromagnetic anomaly, with an anomalous value of over 250y and peak value up to 500y or more. At the south side of the uplift, there is mainly lower anomaly with an anomalous value of 50~—50y. The map of gravity anomaly shows Jiaonan Uplift as a gently varying zone with an anomalous value of 10~24mg. The aforementioned features extend eastward into Korea and can compare with the south side of Qinling—Dabie Paleouplift, which reflects the difference in crustal structure of the two sides of the uplift.

Glaucophane-schists outcropping at Zhangbaling in central Anhui, Guanyun in northern Jiangsu and other regions at the east side of Tan—Lu Fracture Zone correspond to those at Shanyang, Shangnan, Xichuan and Neixiang in Qinling and Suixian, Yingshan, Huangpi and Guangji on the south side of Dabie Mountain. Radiometric dating results illustrate that there are two different age values——744Ma and  $200 \pm \text{Ma}$ , indicating that North China Platform and Yangtze Platform collided seriously along Jiaonan Uplift and south side of Qinling—Dabie Mountain Uplift respectively at the end of Proterozoic and in Late Triassic.

Along the south border of Qinling—Dabie Mountain Uplift, Jiaonan Uplift Zone and Rimjin-gang Fold Belt is widely distributed granite, which is bounded on the south by

Fengxian—Shangnan—Xixia Fracture, Xincheng—Yingshan—Xishui Fracture, Hongsi—Lianyuangang Fracture and the southern fracture of Rimjin-gang Fold Belt. The granite becomes smaller on scale and younger northwards, reflecting a tectonic feature that Yangtze—Kyonggi Paleocontinent once subducted northward under North China—Rangrim Paleocontinent (China—Korea Paleocontinent).

Banded, lenticular, pygmatic and leguminous eclogites, ultrabasic rock and other plutonic rocks are distributed at Donghai and Ganyu in Jiangsu, Shimen in Linshu, Zhubian in Junan, Lanshantou and Suoluo Village in Rizhao, Taohang in Zhucheng, Wangshangou in Jiaonan, Yangkou in Qingdao, Tengjia and Datuan in Rongcheng, and Yangting and Liugong Island in Weihai on Jiaonan Uplift<sup>[10]</sup>. The plutonic rocks are bounded on the north by Wulian—Jimo (Qingdao) Fracture, and on the south by Hongsi—Lianyuangang Fracture. The strata in it underwent high-pressure metamorphism and deformation which show tectonic chaotic features and also a ductile shear mylonite zone was developed. The earliest age of eclogite is 220 Ma, reflecting that Yangtze Platform subducted northward under North China Platform in the Early Mesozoic.

A great deal of amphibolite is distributed along Rimjin-gang Fold Belt in Korea. Radiometric dating of the amphibolite is about 230 Ma, and this kind of rock formed in the high-pressure environment 50 km below the ground. Its outcrop now illustrates the evolution history that kyonggi Massif once subducted northward under Rangrim Massif in the Early Mesozoic and then uplifted out of the ground, which further confirms that Yangtze—Kyonggi Paleocontinent subducted northward and collided with North China—Korea Paleocontinent along Qinling—Dabie Mountain—Jiaonan Uplift Zone—Rimjin-gang Fold Belt.

The aforementioned situation and the difference in paleontology and sedimentary features illustrate that Yangtze—Kyonggi Paleocontinent collided with the south side of North China—Rangrim Paleocontinent respectively at the end of Proterozoic and in Early Mesozoic. The collision and junction zone east of Tan—Lu Fracture Zone extends eastward into Rimjin-gang Fold Belt in Korea through Jiaonan Uplift which are bounded by Hongsi—Lianyuangang Fracture and Wulian—Jimo (Qingdao) Fracture.

## 8 Conclusions

To sum up, each pair of North China Platform and Rangrim Massif, Qinling Geosyncline and Rimjin-gang Fold Belt and Yangtze Platform and Kyonggi Massif have obvious similarities and correlatabilities in stratigraphic paleontology basement development of Late Precambrian, evolution of intracontinental (intercontinental) rift of Paleozoic, development of sedimentary caprocks of Mid-Late Proterozoic—Triassic and subse-

quent tectonic deformation, metamorphism and magmatism, and they display the similar tectonic development history. North China Platform and Rangrim Massif jointly constituted China—Korea Palecontinent, and Yangtze Platform and Kyonggi Massif formed steady Yangtze—Kyonggi Palecontinent. The two Palecontinents collided and joined together to make up a united paleocontinent. After Sinian Period, an intracontinental (intercontinental) rift of Paleozoic which was wider in the west than in the east came into being due to different movements of the two big paleocontinents. The rift developed well in Qinling region at the west side of Tan—Lu Fracture, but the taphrogenic phenomenon went unclear eastward to Jiaonan—Rimjin-gang area where only existed a narrow intracontinental rift in which miogeosynclinal sedimentary formation was formed in the Mid-Late Paleozoic. China—Korea Palecontinent and Yangtze—Kyonggi Palecontinent moved toward each other and collided along Qinling—Dabie Mountain—Jiaonan—Rimjin-gang line in the Early Mesozoic, and at last joined together in the Late Triassic. Then the united paleocontinent underwent tectonic evolution process of continental margin of West Pacific Ocean and gave birth to a series of Mesozoic—Cenozoic basins and a series of NNE—NE taphrogens and uplift zones with magmatic intrusions and eruptions.

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