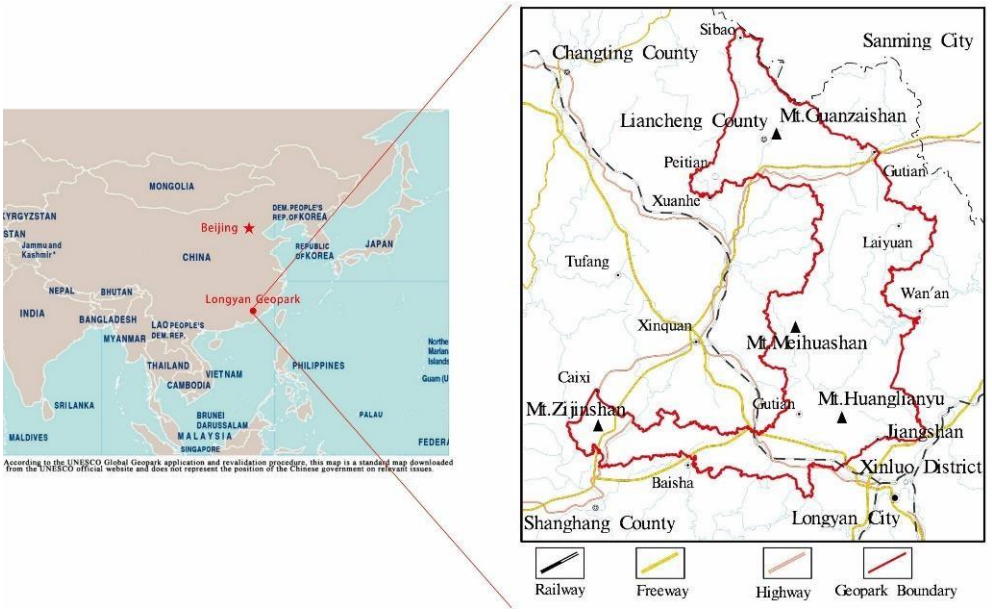
Organisation des Nations Unies pour l'education, la science et la culture

Géoparcs mondiaux UNESCO

Applicant UNESCO Global Geopark

Longyan, China

Geographical and geological summary



1. Physical and human geography

Longyan Geopark is located in the southeastern part of China, the main source of the Minjiang, Jiulongjiang and Tingjiang Rivers. Its geographical coordinates are

116°21'32"--117°04'00"E, 25°07'15"--25°47'50"N. Longyan Geopark covers a total area of 2175 km2, encompasses parts of the administrative regions of Xinluo District, Shanghang County and Liancheng County, includes 26 townships and 221 administrative villages, comprising a total population of 312,000. Longyan Geopark is 327km away from Fuzhou, Capital of Fujian Province, and 160km away from Xiamen. Transportation to Longyan Geopark is convenient; Guanzaishan Airport is situated within the geopark, while Xiamen Gaoqi International Airport is only one hour away by train. There are 4 high-speed railroads, 4 expressways and 8 national/provincial highways that traverse the Geopark area and its immediate surroundings. The main transportation network within the geopark is highway, which makes transit convenient. The economy in the area can be characterized by agriculture, tourism and mining.

Longyan Geopark is situated in the Daimao Mountain Range and in the regions to its west and east, characterized by middle-high mountains in the east, middle-low mountains in the middle, and low hills and basins in the west. There are more than 70 peaks over 1000m in the geopark. The highest point is Gouzinao Peak of Mt. Meihuashan, with an elevation of 1811m. The altitude range is 255-1811 meters. Longyan Geopark has a humid subtropical climate. The average annual temperature is 19.1℃; annual precipitation vary between 1100 – 2800mm, largely concentrated between April and September, which accounts for 78% of total annual precipitation.

2. Geological features and geology of international significance

Longyan Geopark lies in the inland South China. It is rich in geological heritage resources, and contains a complete geological record of the evolutionary history of tectonic- magmatic-metallogenesis associated with the assemblage of the multiple continents of southern China and the subduction of Paleo-Pacific plates, making it a key region for the study of the tectonic evolution of southern China. The main characteristic geological heritage sites include the Meihuashan granitic complex, Guanzhaishan huge-thick red bed sedimentary rocks and Danxia landforms, as well as Zijinshan super-large porphyry-epithermal copper-gold deposit.

The Meihuashan granitic complex is situated at the intersection of the E-W Nanling granite belt and the N-E coastal granite belt in South China. The outcrop of the Meihuashan granitic complex exceeds 1000 km2, which consists of multi-stage granites, including the Early Paleozoic, Triassic, Late Jurassic and Cretaceous. These granites were formed during a long period of approximately 300 million years (430 – 95 Ma), and the rock types range from gneissic granite, monzogranite containing K-feldspar megacrysts, syenogranite, granodiorite to miarolitic alkaline feldspar granite. They form a complete geological record of tectonic evolution and conversion process of different tectonic regimes in South China, including the early Paleozoic intracontinental orogeny, Indosinian collisional orogeny and the subduction of Paleo-Pacific plate, and thus the Meihuashan granitic complex is a microcosm and typical representative of the multi-stage granites in South China. The 9th Hutton Symposium on the Origin of Granite and Related Rocks which will take place in China in 2019 listed Meihuashan granitic complex as a post-conference field trip.

The Zijinshan Au-Cu deposit was the first typical high-sulfur epithermal deposit discovered from the Pacific volcanic-magmatic belt in China. The deposit was formed between 103 to 101 Ma. The Zijinshan copper-gold deposit was formed in the geological background of Late Mesozoic multi-stage, large-scale tectono-magmatic events overlapped in southern China, and is a reflection of the Late Yanshan (Cretaceous) lithosphere extensional tectonics. The Zijinshan copper-gold mine is renowned as “China’s top gold mine” for its “largest production of gold, largest mining scale, lowest unit cost of ore”. The exploration and research of the super-large copper-gold deposit was an important breakthrough in the history of Chinese mining exploration, and won First Prize in the State Science and Technology Progress Award in 1996. The unique metallogenic model has provided important lessons for the exploration of copper-gold deposits. Researches by Dr. Richard J. Goldfarb of the U.S. Geological Survey have shown that the Zijinshan deposit is the best representative of the metallogenesis of epithermal copper-gold deposits in an extensional tectonic environment.

In the Late Cretaceous, the subduction of the Paleo-Pacific plate changed from early forward subduction to late retreat subduction, giving rise to a long-term extensional tectonic environment in South China. The Liancheng rift basin was born and deposited a huge-thick coarse clastic red bed sediment of the Chong’an Formation. After then, due to tectonic uplifting and various exogenous forces, grand rock wall clusters and cuesta clusters came into being, forming a Danxia landform. The Danxia landform in Guanzhaishan Mountain took on a more typical form, with a more complete type series and a picturesque landscape, which is a representative of monocline Danxia landform of the rock-wall and valley. The four distinct grades of planation surfaces systematically displays the geological evolution cycles of the landforms, and is hence an ideal site to reconstruct the development and evolution of the Danxia landform.