KEYWORDS: ***Petroglyph – Age estimation – Microerosion analysis – Tibet Plateau – China***

# THE 2019 SURVEY OF PETROGLYPHS IN THE QINGHAI-TIBET PLATEAU, WESTERN CHINA

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**Abstract.** A week-long expedition of attempting microerosion dating of petroglyphs was conducted in Garze Tibet Autonomous Prefecture, Sichuan Province, and Yushu Tibetan Autonomous Prefecture, Qinghai Province, in western China in August 2019. Zoomorphic petroglyphs dominate the extensive rock art of the Qinghai-Tibet Plateau. A total of twelve petroglyph sites were recorded in this survey and empirical data were secured from them. This endeavour provides the first scientific rock art direct-dating result in Yushu and demonstrates the Early Metal Age of some petroglyphs in the Yushu area.

## 1. Introduction

The Qinghai-Tibet Plateau is located in north-western China, including all of Tibet and parts of Qinghai, Xinjiang, Gansu, Sichuan and Yunnan Provinces, at an average elevation of more than 4000 metres (Fig. 1). It features extensive Alpine meadows, steppe criss-crossed by streams and abundant animal and plant resources. The Tibetans are the main ethnic group,

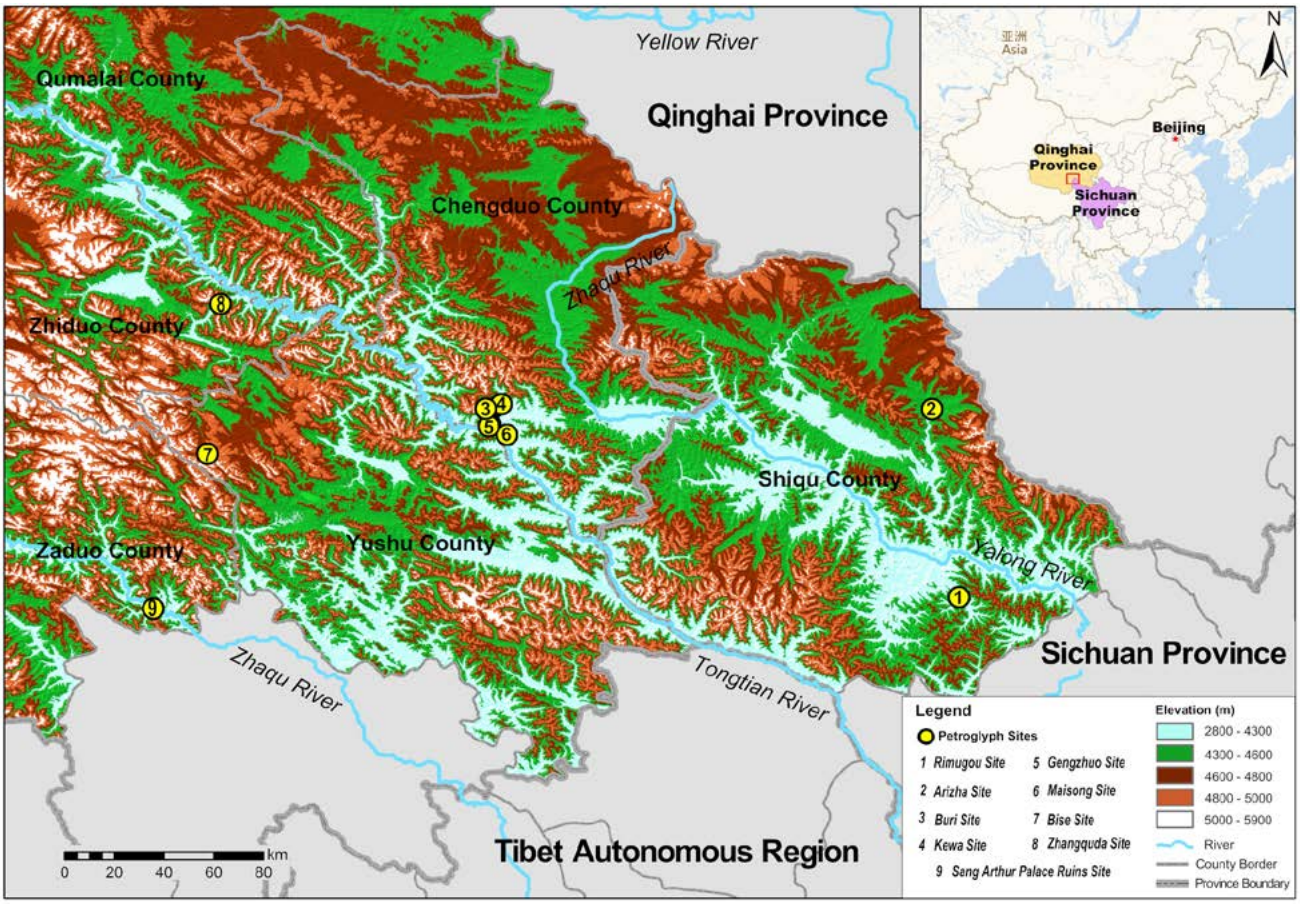


***Figure 1.*** *The locations of the petroglyph sites and site complexes recorded in this expedition on the Qinghai-Tibet Plateau, western China (all images by LM unless noted otherwise).*

***Figure 2.*** *View of Rimgou Site.*

and their economy is dominated by animal husbandry.

Qinghai-Tibet Plateau is famous for its vast territory, high altitude and dangerous access roads. The rock art on the Qinghai-Tibet Plateau features zoomorphic petroglyphs mainly produced by direct percussion, which generally applies to the northern steppe petroglyphs. In August 2019, we conducted a week-long investigation of the microerosion dating potential of Chinese rock art in Shiqu County, Ganzi Tibetan Autonomous Prefecture, Sichuan Province, and Yushu Tibetan Autonomous Prefecture, Qinghai Province. The mission's principal purpose was the age estimation of rock art by microerosion analysis, but adverse conditions for the method's application limited its prospects. Nevertheless, the project has provided the first scientific assessment of Yushu rock art. The survey recorded a total of twelve rock art sites, including two sites in Shiqu County of Sichuan Province and ten sites or site complexes within the territory of Yushu. The region's petroglyphs are dominated by zoomorphic images, with smaller numbers of anthropomorphous and geometric motifs, and later added motifs such as chariots, stupas, swastikas and Buddhist rock inscriptions.

At three of the twelve sites we examined, the rock surface was severely weathered, and the earlier petroglyphs were badly obscured by later Buddhist inscriptions, so we will only introduce nine of the sites here. Among them, two petroglyph sites are in Shiqu County, Sichuan, and the other seven are located in Yushu Tibetan Autonomous Prefecture. Below we will introduce the image content and distribution of each petroglyph site in detail by region.

## 2. Sichuan Shiqu Region

Shiqu County belongs to Ganzi Tibetan Autonomous Prefecture of Sichuan Province in China. It is located at the junction of Sichuan, Qinghai and Tibet, and located on the eastern edge of the Qinghai-Tibet Plateau. Shiqu is one of the most remote and highest-altitude counties in Sichuan Province. The county is at c. 4100 m elevation; the terrain is generally sloping from northwest to southeast, the landform seems between extensive Alpine meadows and steppe country reminiscent of Mongolia. The rock art sites in Shiqu are mainly distributed along the Yalong River on the plateau's eastern edge. The sites Rimugou and Arizha, which we examined on this expedition, are located along a tributary of the Yalong River in the south-eastern part of Shiqu County.

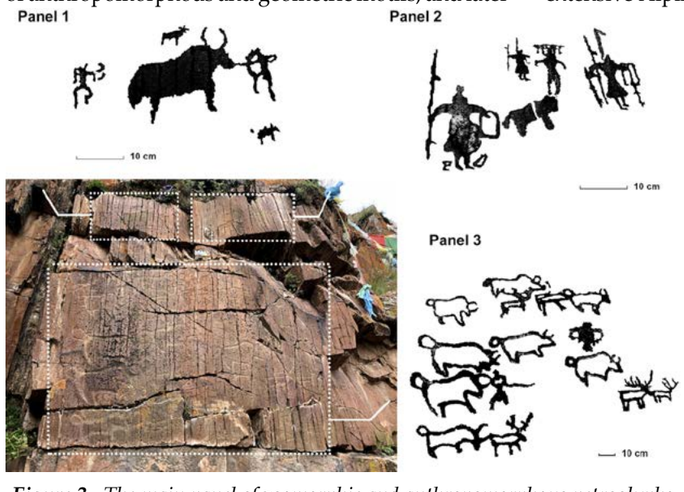


***Figure 3.*** *The main panel of zoomorphic and anthropomorphous petroglyphs engraved on a vertical surface of the Rimgou Site, and recordings of the petroglyphs.*

### *2.1 Rimugou Site*

Rimugou, called Rem Longba in Tibetan, is located at Hada Village, Waxu Township, Shiqu County, Ganzi Tibetan Autonomous Prefecture, Sichuan Province. This is a steep schist cliff that is broken up into many sections and thus easily scalable. The site is heavily decorated with strings of prayer flags and littered with prayer papers (Fig. 2). Apparently, it has long been adopted as a sacred site by Buddhists. According to a guide, the top of the cliff was once used as a celestial burial platform for Tibetan rituals. The petroglyphs were engraved on several near-vertical cliff surfaces, which are identically oriented to the southeast. The content of the petroglyphs is mainly zoomorphic motifs; among them, the images of bovids and cervids accounted for the vast majority. In addition, there are a small number of anthropomorphous and geometric motifs. Besides several petroglyph panels, the site also features numerous rock inscriptions, which are typically small and very carefully scripted, apparently made with metal tools and of relatively recent times.



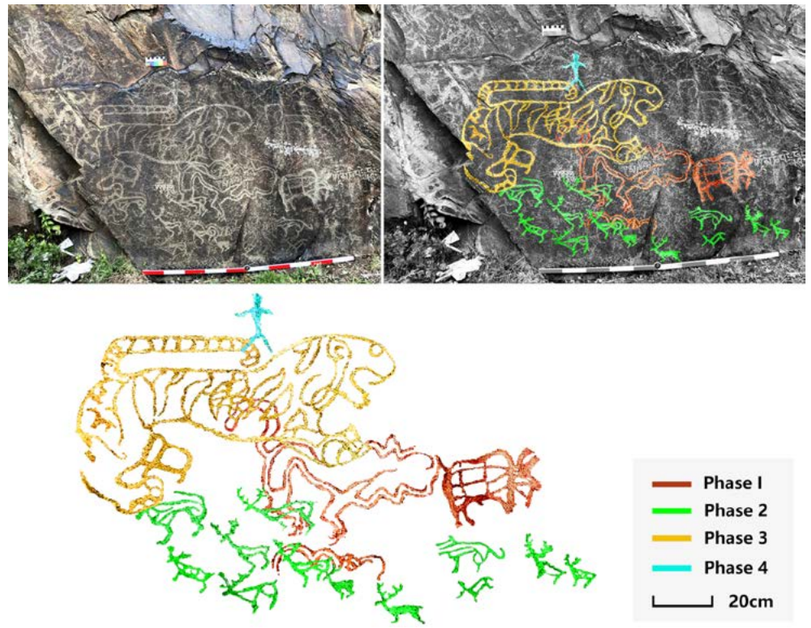


***Figure 4.*** *Petroglyphs of the major panel at Arizha Site. According to the superimposition relationship between the images, they can be divided into four periods.*

Most of the petroglyphs are poorly preserved, and many of their grooves are filled with mostly blackish accretionary deposits, making the images blurred and indistinct. Fortunately, one of the main panels is well-preserved. Its petroglyphs are densely distributed on a large vertical cliff surface (Fig. 3), comprising a few dozen motifs. The main panel bearing petroglyphs is about 1.6 m high and 1.5 m wide. A total of 26 definable images on it include zoomorphs and anthropomorphs. The zoomorphic images are the majority, being mainly bovids and cervids, with a few dog-like motifs. According to their distribution, the petroglyphs can be divided into three panels. Panels 1 and 2 of filled-in motifs seem to depict hunting scenes, while the images on Panel 3 are rendered as outlines.

### *2.2 Arizha Site*

The Arizha Site is located at San Village, Arizha Township, Shiqu County, Ganzi Tibetan Autonomous Prefecture, Sichuan Province. The site is located along a dirt road immediately next to the river. It extends over 150 m and may have been partly damaged by the road construction work. There are now two concentrations of rock art and rock inscriptions. Most of them occur close to the base of the steep rocky slope and face southeast. Zoomorphic motifs also dominate the content, and the majority seem to depict bovids and cervids. There are also a few images of apparent carnivores. Most of these zoomorphic petroglyphs represent the outlines of animal's bodies.

One prominent decorated panel is about 1 m high and 1.4 m wide, and there are more than a dozen petroglyphs on it (Fig. 4). The zoomorphic motifs account for the majority, comprising four presumed carnivore images, one bovid image and ten male cervid images. A likeness of a large carnivore nearly one metre in length and facing right dominates the palimpsest. Below it, fourteen relatively small zoomorphic motifs are distributed so all face to the left. In addition, there is an anthropomorphous image of a small person at the top of the panel, standing with legs apart and arms outstretched.

Most of the images on this panel have overlapping relationships, as shown in Figure 4. The superimpositions divide them into four periods: phase 1 features what resembles a carnivore chasing a bovid. The foot and the back positions of that 'carnivore' image were superimposed by the figures of phases 2 and 3, respectively. Phase 2 features twelve zoomorphic petroglyphs arranged in the same direction, including ten Cervidae and two possible carnivores. All the images were small, ranging from about 10–20 cm. One of the cervids is superimposed on the hindfoot of the carnivore image of phase 1. Phase 3 is a large tiger-like carnivore. The body of the image is decorated with a striped pattern. The mouth is open, the tail is up and folded back parallel to the body. Its front and hind legs were superimposed on the images of phases 1 and 2, respectively. Phase 4 features an anthropomorphous image standing upright, arms spread out, legs splayed apart, and the right leg is superimposed on the end of

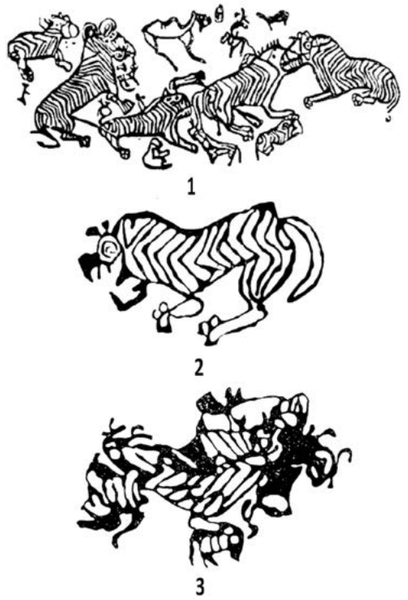

*Figure 5. Petroglyphs themed on tigers, which are distributed in the Yinshan rock art in Inner Mongolia (after Gai 1985).*

*Figure 6. Bronze plaques themed on tigers: (Fig. 6-1) a bronze plaque decorated with a tiger eating a sheep, which was unearthed from Fanjiayao Archaeological Site in Inner Mongolia, China; (Fig. 6-2. a bronze plaque decorated with a tiger eating a donkey excavated in Guyuan, Ningxia Province, China (images after Tian and Guo 1986).*

the presumed tiger's tail of phase 3.

Animal patterns are a widely used decorative theme in the entire Eurasian steppe, including Xinjiang and other parts of northern China. They are the most striking symbol of the northern steppe cultures. In the rock art of north China, except for the high frequency of herbivorous animals (such as bovid, cervid, equid), there are also many tiger-like images among carnivores. As a mighty and ferocious animal, people may regard it as a symbol of bravery and strength. Although no tigers live on the steppe of the Qinghai-Tibet Plateau, there are many apparently 'tiger'-themed rock art motifs (Tang and Zhang 2001: 102). The largest number of rock art purportedly depicting tigers are found in the Yinshan rock art in Inner Mongolia (Gai 1985; Fig. 5). The Yinshan tiger-like petroglyphs can be compared with the 'Ordos-style' bronzes widely distributed in the steppe of northern China, and the 'Karasuk culture' and 'Scythian culture' on the Eurasian steppe characterised by this style of 'wild beasts'. In comparison, the Yinshan tiger-like rock art is roughly of the Spring and Autumn Period and the Warring States Period (Zhang 2010).

Archaeological evidence related to many tiger-like images found in adjacent areas also confirms this dating estimation. For instance, a bronze plaque decorated with the ornamentation of a tiger eating a sheep was unearthed from the Fanjiayao Archaeological Site in Inner Mongolia (Tian and Guo 1986; Fig. 6-1). Two bronze plaques with similar themes derive from the burial site of Guoxian Yaozi, Liangcheng County, Ulanqab City, Inner Mongolia (Wei 1989). A bronze plaque with a tiger eating a donkey was excavated in Guyuan region, Ningxia Province (Fig. 6-2). These bronze plaques all belong to the Late Spring and Autumn Period-Early Warring States Period (approximately 6th century BCE to 5th century BCE), which provide us with a possible cross-dating basis for the age estimation of the apparently tiger-themed petroglyph at Arizha Site reported here.

About 1 m to the left of the major panel, a smaller triangular vertical rock surface features more than a dozen petroglyphs (Fig. 7), including nine zoomorphic motifs, five anthropomorphous images and one swastika symbol. The images are distributed roughly vertically, with the swastika symbol arranged in the middle at the top of the panel.

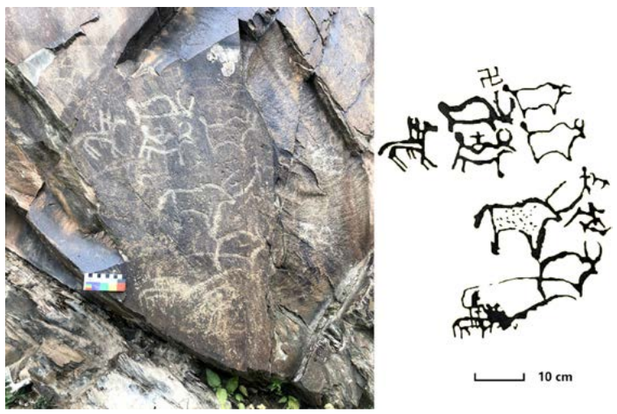


*Figure 7. Petroglyphs engraved on a smaller triangular vertical rock surface, Arizha Site.*



**3. Qinghai**
**Yushu Region**

The Yushu Tibetan Autonomous Prefecture is located at the source of the Three Rivers (the Yangtze, Yellow and Lancang Rivers) in the hinterland of the south-eastern Qinghai-Tibet Plateau in Qinghai Province, western China. Yushu is a main component of the Qinghai-Tibet Plateau, with an average elevation of over 4200 m. The terrain is generally high in the northwest and low in the southeast. Its southeast is adjacent to the Ganzi Tibetan Autonomous Prefecture in Sichuan Province. The rock art in the Yushu region is unique among the rock art forms on the Qinghai-Tibet Plateau (Lari 2018). They are mainly found in the Tongtian River basin at the source of the Yangtze River and have an evident 'northern prairie' rock art style. This survey was mainly carried out in the three counties of Chengduo, Zaduo and Zhiduo in Yushu. A total of ten petroglyph sites or site complexes were recorded. A set of micro-wane data for microerosion dating was successfully read at the Kewa Site in Chenduo County. It is the first rock art direct dating data for the Yushu region.

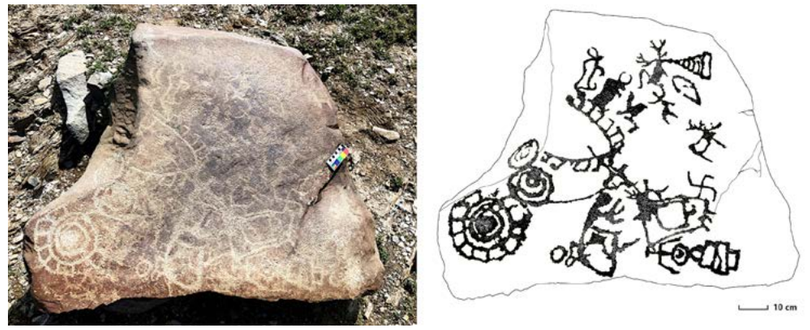


*Figure 8. Petroglyphs on one of the many decorated blocks at Buri Site Complex.*


*Figure 9. Two stupa-like motifs and one anthropomorphous motif on a triangular block of Buri Site Complex.*

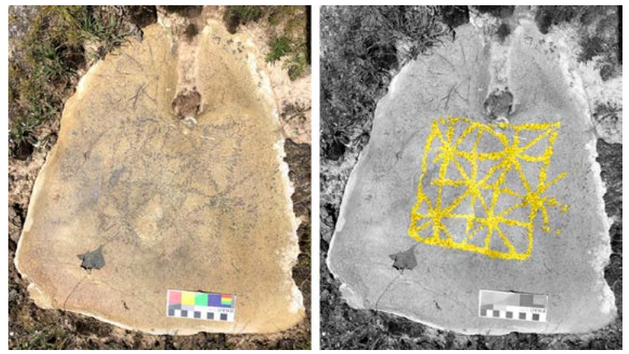

*Figure 10. A square checkerboard-like motif on a panel of a rock outcrop at Buri Site Complex.*

*3.1 Buri Site*

This site is located at Bailong Village, Chengwen Township, Chengduo County, Yushu Tibetan Autonomous Prefecture, Qinghai Province. The site complex is situated on a large grassy hill overlooking the broad main valley, at the foot of which a rock art museum is being built. On the hill's south end is a large spring and scattered over the hill are numerous rounded blocks. The rock can be scored by steel and is hardness 5.5 or lower on Mohs scale. The blocks are often well-patinated, which includes deep-black, manganese-rich rock varnish. Some of the accretion has been worn away by aeolian erosion on some of the blocks, while adjacent boulders seem unworn. Most of the rocks are in the order of 1 m to 1.5 m long. Rather than glacial erratics, they are residues of a fluvial deposit, and some of them are almost fully concealed by sediment despite the generally sparse cover. In all, we examined about twenty such decorated rocks, but not one offered good prospects for microerosion analysis or any other age estimating method.

The first of the decorated blocks featured several circles and more complex geometric motifs, two 'stupas' and one swastika, the patination being apparently uniform (Fig. 8). The decorated panel of the block is truncated along one side, but we failed to locate the second fragment of this boulder because no nearby candidate could provide a full fit; connecting fragments may be missing. We found another decorated block about 100 m further up the slope, triangular-shaped (Fig. 9). The upper surface bears three petroglyph motifs, comprising two stupa motifs and one anthropomorphous motif. On the eastern end of the ridge, a panel

of a rock outcrop bears a square checkerboard-like motif, which is 20 × 20 cm in size (Fig. 10). Besides, another decorated, approximately square block that bears multiple petroglyphs was found on the southeast slope. However, the rock surface of the block is heavily weathered and the petroglyphs are superimposed on each other, rendering most of the images difficult to distinguish and superimpositions hard to judge (Fig. 11). The recognisable images include anthropomorphs, zoomorphs and 'geometric' motifs. According to speculation, the anthropomorphs postdate the zoomorphs.

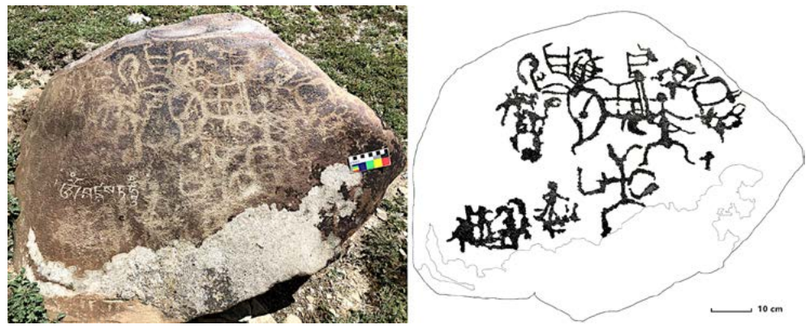


***Figure 11.*** *The anthropomorphous and zoomorphic petroglyphs engraved on one of the many decorated blocks at Buri Site Complex.*


***Figure 12.*** *(Left) Three grey blocks bearing petroglyphs at Kewa Site; (right) close-up view of the pounded petroglyphs on panels 1 and 2.*


***Figure 13.*** *(A–E) Petroglyphs engraved on the surface of panel 3 at Kewa site; (D) the measured micro-wane is where the groove of the conjoined cells petroglyph traverses the quartzite bulge.*

*3.2 Kewa Site*

The Kewa Site is located on the southern slope at the ruins of Kewa Village, Chengwen Township, Chengduo County, Yushu Tibetan Autonomous Prefecture. The petroglyph complex is distributed mainly on a lower slope, about 100 m above the valley floor and just beyond some dwellings. There are about six grey rocks bearing petroglyphs scattered here, three of which are distributed together (Fig. 12). The incised petroglyph of panel 1 is a tiny abstract anthropomorphous motif, 15 × 20 cm. Panel 2 is on a heart-shaped stone with a very flat surface. It features a nearly square grid or checkerboard pattern of about 50 × 50 cm, consisting of 12 horizontal and vertical cells, and each cell is approximately 4.1 × 4.1 cm. The grooves of the grid motif are delicate, apparently made with metal tools. Panel 3 is an elongate slab containing a linear, 4–5 cm wide stratum of extremely hard quartzite, rounded by transport (Fig. 13). It runs the entire length of the block and is rendered quite prominent by its bulging appearance, attributable to its hardness relative to the enclosing rock. The quartzite is well-metamorphosed and of hardness 7, while the embedding rock mass has a hardness of between 5 and 6. The fluvial erosion has been significantly retarded on the hard vein. Seven roughly pounded abstract images of varying sizes occur on this block, of which a 10 × 6 cm conjoined cells image is on the upper part of this slab. The petroglyph groove clearly crosses the quartzite, so we selected it for microerosion measurement (Fig. 13D). Lower along the hard layer, two other petroglyphs also encroach upon the quartzite zone, but the overlap is not as extensive, and these potential opportunities were not investigated.



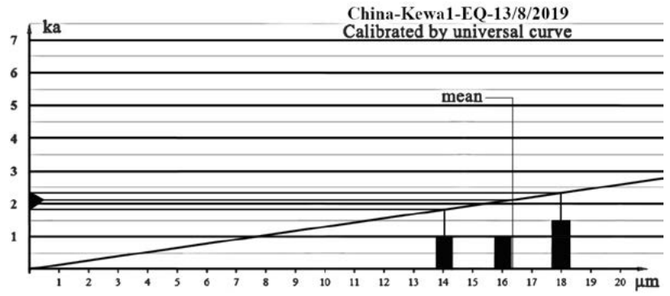


***Figure 14.*** *Microerosion age estimate of the conjoined cells petroglyph of panel 1 at Kewa Site shown in Figure 11D.*

The most promising location for microerosion measurement is within the zone where a crack has been formed in the area where the groove of the three conjoined cells petroglyph traverses the quartzite bulge. This locality was searched exhaustively, for over one hour, to find suitable fractures unambiguously deriving from the production of the petroglyph. The difficulty is that most quartz grains are only between 100 μm and 200 μm fractions. Eventually, a truncated elongate grain was found, 280 μm long, and its wane occupies all that length. The wane length is 279 μm, and seven micro-wane widths were measured as follows: 16, 16, 18, 18, 18, 14, 14 = 114/7 = 16.3 μm. In applying the calibration curve secured from the Deyunshan microerosion coefficient of 6.6 μm/ka (Tang et al. 2017), we would arrive at an age estimate of E2469+258/-348 years BP. This estimate would indicate that the petroglyph was made in the years of the Warring States Period (475–221 BCE). However, there is a difference in precipitation between Deyunshan and Yushu and a preference for referring to the universal calibration curve (Bednarik 2019). Accordingly, a microerosion coefficient of 7.8 μm/ka, corresponding to its annual rainfall of 611 mm, is applied at Yushu. The age estimate of the petroglyph is therefore E2089+218/-295 years BP (Fig. 14). This new result implies that the petroglyph is probably of the period of the Han Dynasty (202 BCE–220 CE). In the context of this microerosion analysis, 'BP' refers to 2019 CE rather than the radiocarbon reference point being 'the present'.

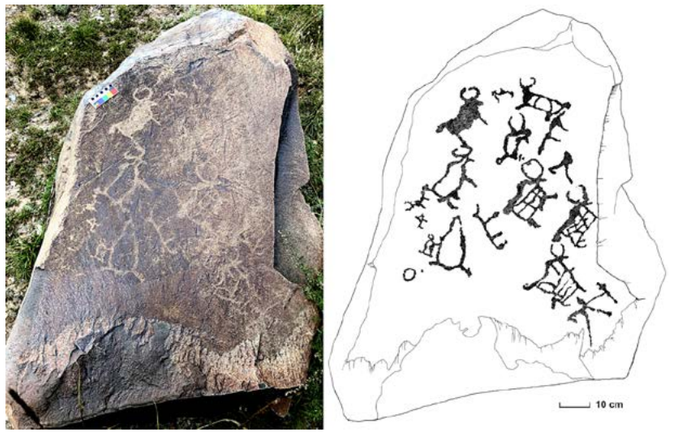


***Figure 15.*** *Multiple zoomorphic petroglyphs on another panel of the Kewa site.*

A further isolated large boulder covered with multiple petroglyphs was also found in the area, about 40 m below Kewa panel 3 (Fig. 15). The surface of this block is dark brown, bearing about 18 motifs, including bovid, cervid and equid figures. The whole panel is 1.20 m long and 90 cm wide.

*3.3 Gengzhuo Sites*

The Gengzhuo Site Complex is west of Zhengwen Township, Chengduo County, Yushu Tibetan Autonomous Prefecture. The blocks with petroglyphs are scattered along a rural road at the foot of mountains on the north bank of the Tongtian River (the primary source of the Yangtze River). Here, various rocks are found in profusion, mainly granites, gneiss, quartzite and hornstone, reflecting the geological conditions upstream. We visited several points along the main valley, here steep-sided and narrow. The most useful of them was found below the road, immediately above the Tongtian River and of most precarious access (Fig. 16). Above a rock ledge of 60 cm width is a well-smoothed, well-patinated vertical face of a block bearing about ten motifs (Fig. 17).

In addition to the common zoomorphs such as bovids and cervids, two 'camel' petroglyphs are pounded into this rock surface. The camel motif also appears in the petroglyphs at the Yeniugou Rock Art Site in Qinghai (Tang and Zhang 2001: 254–255). At the lower right occurs what appears to be a labyrinthine spiral motif. In the middle of the panel is a glyph inscription of the ancient Tibetan language of the Tubo period that dates from the 7th to 9th century CE. Comparing the relative degree of erosion and patination allows a rough esti-

***Figure 16.*** *A vertical surface with petroglyphs located in the riverside, Gengzhuo Main Site.*

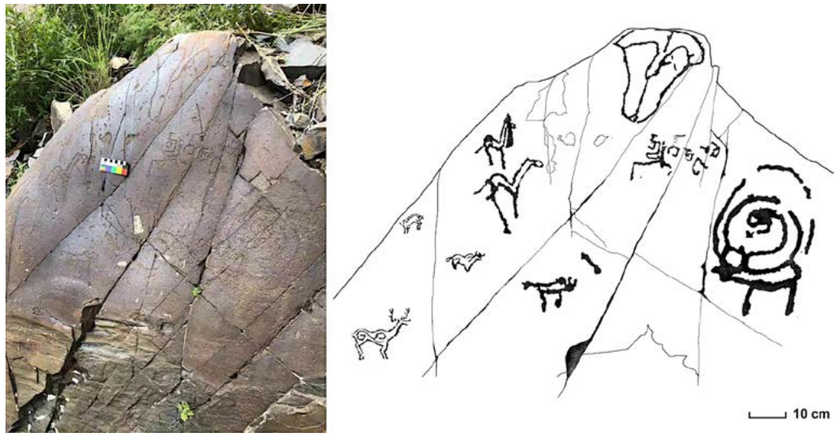


*Figure* **17.** *Petroglyphs on the vertical face of the Gengzhuo Main Site.*

mate of the age of the remaining motifs. Some, such as those on the lower left, are about twice that age. This agrees well with Tang's estimate that the rock art might be between 2000 and 2500 years old, having applied microerosion analysis to other series of petroglyph sites in Qinghai (Tang and Zhang 2001: 264–268). That estimate is also confirmed by a subsequently examined area below a monastery, where in a prominent location, a spiral motif (labyrinth) occurs. This motif is being attributed to Indian influence, and the valley is called Indian Valley. Based on the degree of weathering, the motif is somewhat younger than 2000 years, corresponding to the early use of labyrinth motifs in eastern Tibet. This is a more complex labyrinth, about 15 cm in diameter, and with roughly seven countable concentric rings. Two serpentine figures alongside it are reminiscent of snakes (Fig. 18).

*3.4 Maisong Site*

The Maisong Site is located on a prominent schist spur rising directly from the Tongtian River near a monastery, Maisong Village, Zhongda Township, Chengduo County, Yushu Tibetan Autonomous Prefecture. The site is regarded as a sacred rock by the local people; therefore, it is used as a Buddhist prayer



site and is enveloped in strings of prayer flags (Fig. 19). The narrow-ridged outcrop is about 60 m long and, on the accessible side, 8–10 m high, but on the other side rises straight from the river that is about 50 m below. The rock shows an east-west trend, and it is generally scalable. The petroglyphs occur in several groups, most of them face south, and they are more concentrated on the hillside about 5–6 m high from the ground and are reasonably accessible.

The zoomorphic petroglyphs, especially cervid, bovid and canine depictions, are the most common motifs (Fig. 20). One of the least accessible groups is about 5 m off the ground and includes a motif that is crossed by three quartz veins (Fig. 21). It can only be photographed with difficulty and is out of reach for microerosion analysis. We managed to secure metal scaffolding from the monastery and, therefore, to bring the microscope into position. The work was physically demanding, but no fracture edges suitable for measurement could be located at any of the four appropriate locations despite all efforts. Although there are prominent areas of percussion damage in places where a bovid petroglyph extends into the quartz zones, the impact has only crushed and flattened the battered areas but not yielded any edges suitable for determination.

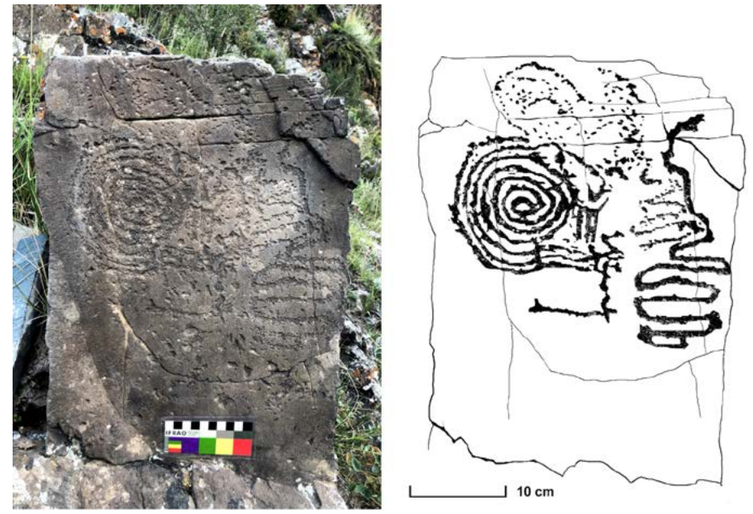


***Figure 18.*** *Petroglyphs of a labyrinth motif and two serpentine motifs, Gengzhuo Site.*

***Figure 19.*** *(Left) Aerial view of the Maisong Site showing the location of the rock art site; (right) the front and the rear view of the decorated rock.*

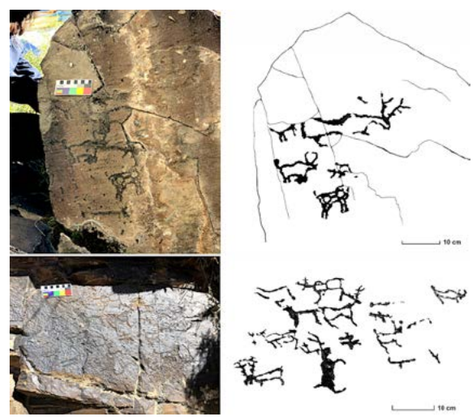

***Figure 20.*** *Some of the zoomorphic petroglyphs at the Maisong Site.*

*Figure 21. A group of zoomorphic motifs crossed by three quartz veins on a sloping panel at Maisong Site.*

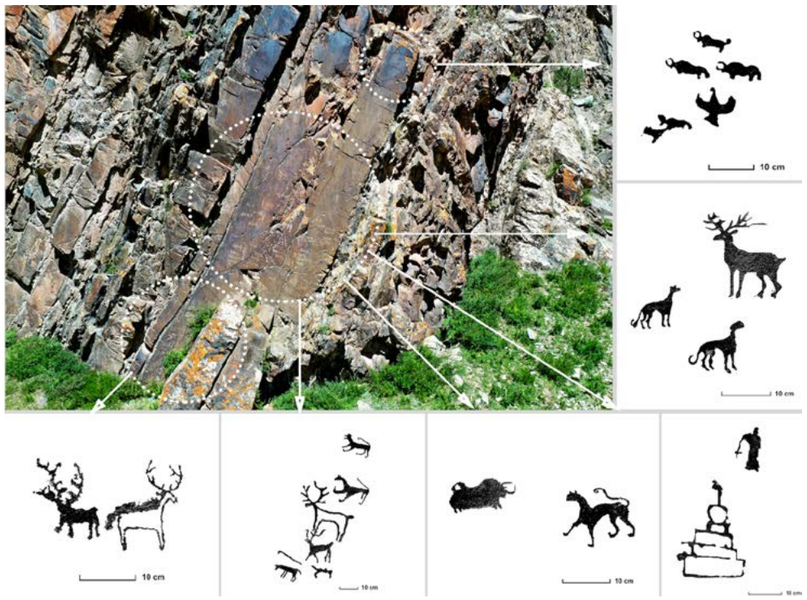

*Figure 22. Multiple zoomorphic petroglyphs on the first panel at Bise Site.*

*3.5 Bise Sites*

The site complex is located on the left (southwest) bank of Dengerqu River in Yeqing Village, Lixin Township, Zhiduo County, Yushu Tibetan Autonomous Prefecture, Qinghai Province. On the left side of a rural dirt road occurs a series of schist cliffs, which features two concentrated petroglyph panels among other scattered sites. The first decorated panel is about 7 m high and 2 m wide, located on the foot of a cliff with prominently inclined rock strata. The dark-brown patinated cliff wall is densely covered with dozens of petroglyphs, including the images of zoomorphs, anthropomorphs and a small number of stupa images and Buddhist rock inscriptions (Fig. 22). Large numbers of zoomorphic motifs dominate the panel, mainly the images of bovid, cervid, 'leopard', 'horse', 'dog' and 'eagle'. Except for a few pounded motifs in outline style, most others are executed in silhouette style.

About 300 m north from this location, past significant concentrations of Buddhist inscriptions, another densely decorated panel occurs close to the base of a steep rocky slope. This panel is heavily weathered and bears extensive light-brown and black lichen cover (Fig. 23). The images featured here are dominated by cervid motifs, over most of which Buddhist rock inscriptions were superimposed. These inscriptions' grooves, apparently, were carved with metal tools.

## 4. Other sites

*4.1 Zhangquda Site*

The Zhangquda Site is near Yeqing Village, Zhiqu Township, Zhiduo County, Yushu Tibetan Autonomous Prefecture, Qinghai Province. It is located about 6 km from the Bise Site, comprising several small panels of petroglyphs, which are scattered among many schist blocks on the hillside slope. Zoomorphs also dominate in Zhangquda Site, mainly as bovid and cervid images (Fig. 24).

*4.2 Sang Arthur Palace Ruins Site*

This site is near Reqing Village, Angsai Township, Zaduo County, Yushu Tibetan Autonomous Prefecture. Several petroglyphs here are distributed on the wall of a rockshelter. The motifs are dominated by stupa images, which account for most of them (Fig. 25). Presumed depictions of the Sun and Moon also occur. Groove details of these engravings suggest that apparently, all of them were made with metal tools, placing them relatively late.



*Figure 23. The main section of the second petroglyph panel of Bise Site, showing that the cervid petroglyph is the dominating motif.*

## 5. Conclusion

The animal-style petroglyphs are the dominant themes from the Qinghai-Tibet Plateau and the northern steppes, which reflect the nomadic culture of the northern steppe and are also influenced by Siberian cultures such as Okunevo and Andronovo (Tang and Zhang 2001). The petroglyph images were produced mainly by the percussive method. Some of them feature the transverse S-shaped or spiral decorative detail inside the animal's body typical of the Scythian art style (Li and Ma 2014). Among the zoomorphic petroglyphs, animals of various types account for about 90% of all images, suggested to include depictions of yak, deer, rock sheep, dog, horse, tiger, camel and eagle.

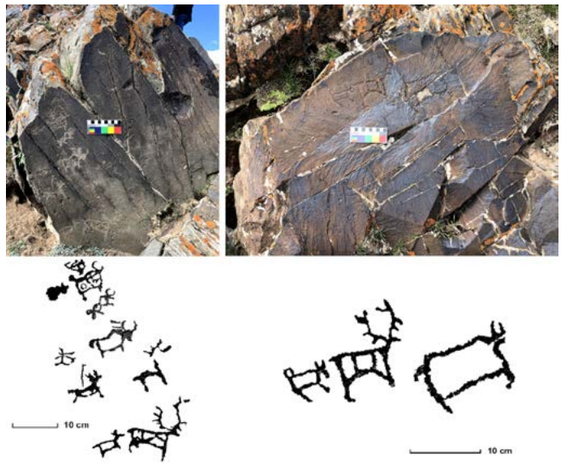

*Figure 24. Zoomorphic petroglyphs created on two of the decorated blocks at the Zhangquda Site.*

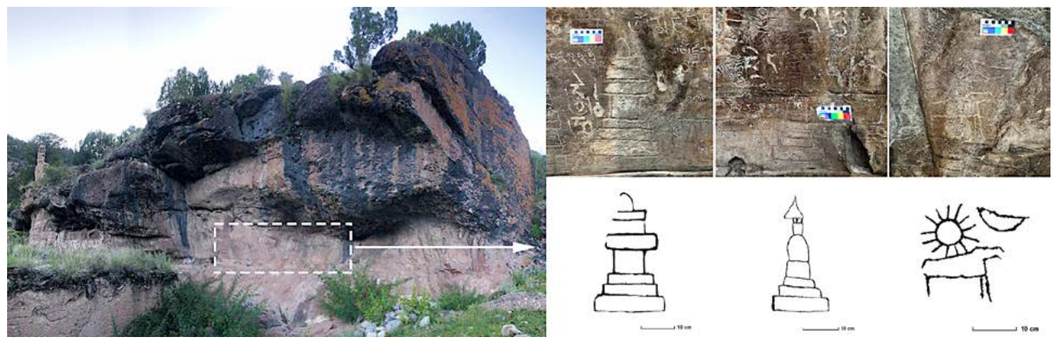

*Figure 25 (below). (Left) Panoramic view of the Sang Arthur Palace Ruins Site; (right) the images of 'stupa' and petroglyphs of Sun and Moon.*

There are considerably fewer anthropomorphs, and there are also a few images related to Buddhism, such as stupas, swastika symbols, and other symbols such as the Sun and the Moon. These petroglyphs were made very exquisitely and seemed to occupy an important position in the early Tibetan religion.

The microerosion dating result secured from this rock art expedition to one of the regions of the Qinghai-Tibet Plateau in western China has produced the first scientific attempts of rock art age estimation for Yushu rock art. It suggests that the examined petroglyphs in the Yushu region can be traced back to the Early Metal Age. As in the case of the Indian subcontinent, the Bronze Age and Iron Age are hard to distinguish, so scholars suggested that 'Early Metal Age' should be used instead of the Bronze and Iron Ages, which probably began about 1000 BCE and ended in the 6th century CE, before the rise of the Tubo Dynasty (Tong 1985). According to the latest archaeological data, however, the Early Metal Age is thought to begin around 2000 BCE (Institute of Archaeology et al. 1999: 228). It is worth noting that some petroglyphs created by metal tools seem to be of relatively recent times. Thus, the 2019 rock art dating expedition in western China has added to the rapidly growing corpus of scientific data about China's rock art.

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## REFERENCES

Bednarik, R. G. 2019. Advances in microerosion analysis. *Rock Art Research* 36(1): 43–48.

Gai S. 1985. *Yinshan yanhua* [Yinshan rock art]. Inner Mongolia People's Publishing House, Hohhot.

Institute of Archaeology, Chinese Academy of Social Scien ces, Bureau of Cultural Heritage of Tibet Autonomous Region 1999. *Lhasa Qugong*. Chinese Encyclopedia Publishing House, Beijing.

Li Y. and Ma C. 2014. Ancient petroglyphs discovered in the Tongtian River basin in Nantong, Qing Province. *China Cultural Relics News* 24/10/2014 (008): 1–2.

Lari J. 2018. *Yushu yanhua kaocha* [Research of rock art of Yushu], pp. 103–222. Sichuan Nationalities Press.

Tang H. and Zhang W. 2001. *Qinghai yanhua* [Qinghai rock art]. Science Press, Beijing.

Tang H., G. Kumar., Liu W., Xiao B., Yang H., Zhang J., Lu X. H., Yue J., Li Y., Gao W. and R. G. Bednarik 2017. The 2014 microerosion dating project in China. *Rock Art Research* 34(1): 40–54.

Tian G. and Guo S. 1986. *E'er duo si shi qing tong qi* [Ordos-style bronzes]. Cultural Relics Publishing House, Beijing.

Tong E. 1985. A review of Tibetan archaeology [Xizang kaogu zongshu]. *Cultural Relics* (*Wenwu*) 9: 9–19.

Wei J. 1989. Liangcheng Guoxian Yaozi mudi [Guoxian Yaozi cemetery, Liangcheng County]. *Journal of Archaeology* 1: 57–81.

Zhang W. 2010. Yinshan diqu hu yanhua chou yi [A discussion on tiger-themed petroglyphs in Yinshan rock art]. *Inner Mongolia Social Sciences* 5: 52–56.

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