Ophiolites represent fragments of ancient oceanic lithosphere, tectonically incorporated into continental margins during plate subduction or remained in the subduction–collisional orogenic belt. They provide important information on the operating time, the mechanism of the tectonic plates, global tectonic evolution as well as the reconstruction of the supercontinent. As the only area exposed representative Archean continental crust, Huangling dome is an important window to study the early crustal evolution of the Yangtze craton. Recent research on Huangling dome provides important records of the high-grade metamorphism and post-collisional magma related to paleoproterozoic collisional orogeny. In this contribution, we report for the first time a suite of Paleoproterozoic (Orosirian) ophiolitic mélange belt (named Shuiyuesi Ophiolitic Mélange) exposed in the Archean–Paleoproterozoic Kongling Complex from the northern Huangling Dome. The mélange belt is 3–12 km wide, and contains a structurally complex tectonic mixture of garnet gneiss, mica-graphite schist, marble, quartzite, banded iron formation (BIFs), and tectonic blocks of metamafic-ultramafic blocks/slices and TTG gneisses. Metamafic-ultramafic rocks commonly occur as lenses, boudins and layers within the metamorphic supracrustal rocks are composed mainly of serpentinized harzburgite, meta-olivine pyroxenite, metapyroxenite and amphibolite (metadiabase, metagabbro and metabasalt). Geochemical characteristics show that serpentinized harzburgite are LREE-enriched metasomatic abyssal residual mantle peridotite, the meta-olivine pyroxenites, metapyroxenites and amphibolite facies metamorphism and strong deformation. In addition, the formation age of quartz monzonitic dyke crosscutting the serpentinized harzburgite is 1999 Ma, giving minimum emplacement age for the mafic–ultramafic complex. The field relationships suggest that the metamafic-ultramafic blocks are possible oceanic crust fragments incorporated into the suture zone during the accretionary-collisional process. So, we inferred a southeast-dipping subduction system (present orientation) in north Huangling Dome at middle paleoproterozoic (~2.15–2.0 Ga) which is end up with collision between the eastern and western microcontinents mainly consist of Archean TTG gneiss.

The metamafic–ultramafic complex and meta-supracrustal rocks combined into an ophiolitic mélange suffered paleoproterozoic (2.0–1.95 Ga) amphibolite-granulite facies metamorphism and strong deformation. In addition, the formation age of quartz monzonitic dyke crosscutting the serpentinized harzburgite is 1999 Ma, giving minimum emplacement age for the mafic–ultramafic complex. The field relationships suggest that the metamafic-ultramafic blocks are possible oceanic crust fragments incorporated into the suture zone during the accretionary-collisional process. So, we inferred a southeast-dipping subduction system (present orientation) in north Huangling Dome at middle paleoproterozoic (~2.15–2.0 Ga) which is end up with collision between the eastern and western microcontinents mainly consist of Archean TTG gneiss.

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