

# **Paleoproterozoic granitic magmatism and associated sedimentary basin from the Susong complex zone in the Dabie orogen, China**

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The Dabie orogen in the middle part of the Qinling-Dabie-Sulu orogenic belt of China is formed by the northward subduction of the South China Block beneath the North China Block in the Triassic and exposed the largest area of UHP rocks in the world [1,2,3]. It consists of a series of fault-bounded rock units with various metamorphic grades and evolutionary histories [3,4]. Among of them, the Susong complex zone (SZ) is a relatively low-grade metamorphic unit located in the southern part of the Dabie orogen. It mainly consists of garnet-mica-quartz schist, granitic gneiss, quartzite, marble, meta-sandstone, graphite schist and phosphate rock series with subordinate metabasalt/garnet amphibolite, meta-gabbro, rodingite and meta-serpentinite.

This study performed whole-rock element geochemistry, and zircon SHRIMP U-Pb dating and Hf isotope analyses on granitic gneisses, meta-rhyolitic tuffs and meta-sandstones from the SZ. The results reveal that: (1) the protolith ages for the studied granitic gneiss and meta-rhyolitic tuffs are ~2.0 Ga, and their precursors were derived from remelting of the Neoproterozoic basement rocks with epidote-amphibolite facies metamorphic overprinting in the late Triassic; (2) The zircons from meta-sandstones are mainly composed of Paleoproterozoic magmatic origin with a few Neoproterozoic inherited zircons, indicating that the meta-sandstones' source area were the coeval Paleoproterozoic magmatic rocks and thus their sedimentary age should be ~2.0 Ga. In this regard, the formational tectonic setting of the precursors for the meta-sandstones and coexisting meta-rhyolitic tuffs here were closely related to those of the granitic gneisses. Combined with the whole-rock element and Hf isotope analysis, therefore, these new data provide for the first time solid constraints on the Paleoproterozoic (~2.0 Ga) arc-continent collision, and related granitic magmatism and basin sediments in the northern margin of the South China Craton.

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