

## Accepted Manuscript

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PII: S1367-9120(18)30305-5  
DOI: <https://doi.org/10.1016/j.jseaes.2018.07.038>  
Reference: JAES 3600

To appear in: *Journal of Asian Earth Sciences*

Received Date: 9 October 2017  
Revised Date: 22 July 2018  
Accepted Date: 22 July 2018

Please cite this article as: Yang, W., Wang, M., Zheng, D., Du, Y., Late Triassic sedimentary record from the Nanzhao Basin and implications for the orogeny in the Qinling Orogenic Belt, central China, *Journal of Asian Earth Sciences* (2018), doi: <https://doi.org/10.1016/j.jseaes.2018.07.038>

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# Late Triassic sedimentary record from the Nanzhao Basin and implications for the orogeny in the Qinling Orogenic Belt, central China

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## ABSTRACT

The Upper Triassic strata within the Nanzhao Basin are thought to have formed in response to the Qinling Indosinian Orogeny. Thus, the provenance record of this succession can be used to trace the basin-mountain interactions by using petrology and zircon geochronology. The Upper Triassic sandstones of the Nanzhao Basin are composed of a moderate proportion of quartz along with a comparable volume of feldspar and lithic fragments and the compositions plot mainly within orogenic source areas. The detrital zircon age spectra of these strata display six prominent age peaks at 232 Ma, between 420 and 442 Ma, and at 750, 914, 1828, and 2452 Ma and are inferred to have been derived from the South Qinling Belt, North Qinling Belt, and southern North China Block. The sediments sourced from the South Qinling Belt are thought to have evolved from Triassic volcanic rocks to basement units indicating that an unroofing process occurred within this orogenic region. In contrast, the North Qinling Belt acted as a continuous source, while the southern North China Block evolved into an accessory source in the late stages of the basin evolution. It is apparent that the Nanzhao Basin received an influx of clastic detritus from both the southern and northern source areas indicating that this region was isolated within the North Qinling Belt. Thus, the Nanzhao Basin can be defined as a wedge top depozone of the southern North China foreland basin system. Tuff zircons with a single age peak at 225 Ma are thought to be related to a volcanic eruption that occurred towards the southern margin of the South Qinling Belt. This hypothesis implies the existence of subduction along the Mianlve Suture before the early Late Triassic, which is consistent with both oblique collision and unequal margin collisional models.

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