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## Eoarchean to Paleoproterozoic crustal evolution in the North China Craton

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The early evolution of continental crust, particularly its lower layer, during the first 2.0 billion years of Earth history remains enigmatic. Here, we present the first coupled in-situ U-Pb, Lu-Hf and O isotope data for the Precambrian zircons from fourteen deep-crustal xenoliths from five localities in the North China craton. The results show that: (1) the oldest (3.82–3.55 Ga) known lower crustal rocks were survived in the southern part of this craton; (2) the Eo-Paleoarchean zircons have predominant sub-chondritic Hf isotope compositions and elevated  $\delta^{18}\text{O}$  values, suggesting Lu-Hf fractionation and crust-hydrosphere interactions on the Earth can be traced back to Eoarchean or even earlier; (3) a secular change in zircon O isotopes documents an increase in recycling rate of surface-derived materials into magmas at the end of Archean, which, in turn, is possibly linked to modern style subduction processes and maturation of the crust at that time.