

The age and reworking of Cathaysia crustal basement

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U-Pb dating and Hf isotope analysis of detrital zircons have been used to analyse the crustal evolution of the eastern and western parts of the Cathaysia Block in SE China. Zircons from the Oujiang River in eastern Cathaysia indicate that the basement is dominantly Paleoproterozoic (1850-1870 Ma, 2100-2400 Ma) in age with minor Archean components; it was extensively reworked in Jurassic-Cretaceous time (100-155 Ma) to produce the widespread Yanshanian magmatic suite. Both the 1850-1870 Ma event and the Yanshanian magmatism show wide ranges in Hf-isotope composition, consistent with mixing between crustal and juvenile magmas. Marked downstream changes in the relative proportions of zircon age populations emphasize the care required in using detrital zircon data to estimate continental growth rates. Zircons from the North River indicate that the crust of western Cathaysia was generated mainly during Neoproterozoic time, although it contains some Archean (2500-3500 Ma) to Mesoproterozoic components. This crust was strongly reworked during Caledonian (ca 450 Ma), Indosinian (ca 240 Ma) and Early Yanshanian (ca 160 Ma) thermal events; there is little evidence for juvenile crustal growth in any of these events. The distinct patterns of crustal evolution suggest that eastern and western Cathaysia may represent separate microcontinents, accreted to the older Yangtze craton, and transposed by extensive strike-slip faulting along major sutures.