

Pre-Miocene Birth of the Yangtze River

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The development of fluvial systems in East Asia is closely linked to the evolving topography following India-Eurasia collision. Despite this, the age of the Yangtze River system has been strongly debated, with estimates ranging from 40-45 Ma, to a more recent initiation around 2 Ma. Here, we present new ⁴⁰Ar/³⁹Ar ages from basalts interbedded with fluvial sediments from the lower reaches of the Yangtze together with detrital zircon U/Pb ages from sand grains within these sediments. We show that a river containing sediments indistinguishable from the modern river was established before ~23 Ma. We argue that the connection through the Three Gorges must post-date 36.5 Ma because of evaporite and lacustrine sedimentation in the Jiangnan Basin before that time. We propose that the present Yangtze River system formed in response to regional extension throughout eastern China, synchronous with the start of strike-slip tectonism and surface uplift in eastern Tibet and fed by strengthened rains caused by the newly intensified summer monsoon. Birth of the eastward flowing Yangtze River around the Oligocene/Miocene boundary changed largely the 'source to sink' regime in the East Asia-West Pacific region

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