



The Jiangnan belt in South China: a ca. 970-820 Ma accretionary orogenic belt in the Rodinia margin

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The Neoproterozoic Jiangnan orogenic belt records the accretion and collision of the bounding Yangtze and Cathaysia blocks in the South China Craton. The belt is divisible into the Northeast, Central and Southwest Terranes. The oldest succession exposed in the Northeast Terrane, the Shuangxiwu Group, consists principally of volcanic rocks and intrusive I-type granitoids within the age range of ca. 970-850 Ma, and display arc compositional and juvenile isotopic signatures. Both sedimentary and igneous suites of the group lack older detritus and xenocrysts, and the terrane is therefore interpreted to represent an oceanic arc terrane. Detrital zircons from the oldest sequences (Shuangqiaoshan, Lengjiayi, Fanjingshan and Sibao groups) in the Central and Southwest Terranes yield similar age spectra with one major age population at around 880–820 Ma, along with minor Paleoproterozoic and Archean ages. The dominance of detrital ages close to the deposition ages of these units, along with compositional data, indicate these sedimentary units accumulated adjacent to a magmatic arc. In addition, ca. 860-820 Ma meta-igneous suites of convergent margin features occur within these sequences, as do the ca. 835-820 Ma massive S-type granitoids and some localized I type granitoids. However, the oldest successions of the central Terrane contain less older grains, and S-type granitoids and detrital grains from the terrane are more juvenile and indicative of crustal growth. The presence of Mesoproterozoic and older zircons, both as detritus in the units and as xenocrysts within igneous rocks displaying a subduction-related signature, along with the compositional and isotopic data, place the Central and Southwest Terrane in an active continental margin. The convergent margin successions were strongly deformed and metamorphosed to greenschist facies and are unconformably covered by a series of undeformed regional extensional sequences referred to as the Nanhua System which initiated at ca. 815-810 Ma. Overall observations and data suggest the Jiangnan orogenic belt as an accretionary orogenic belt and dated at around 970-820 Ma, and the final assembly of South China occurred at sometime within 820-810 Ma. The age and nature of a younger accretionary orogenic belt are consistent with those models proposing for affinity of South China with India and Australia blocks in Rodinia, and a marginal position in the Rodinia configuration.