



Thermochronology of zircon grains from the Coastal Range of Taiwan: exploring source and exhumation history

LA. Kirstein (1), A. Carter (2) and Y-G. Chen (3)

(1) School of GeoSciences, University of Edinburgh, West Mains Road, Edinburgh, EH9 3JW, U.K., (2) School of Earth Sciences, Birkbeck College, University of London, Malet Street, London, WC1E 7HX, U.K., (3) Department of Geosciences, National Taiwan University, No.1, sec. 4th, Roosevelt Road, Taipei 10617, Taiwan, ROC.

(linda.kirstein@ed.ac.uk / Fax: +44 131 6683184 / Phone: +44 131 6504838)

The Coastal Range of eastern Taiwan consists of Miocene arc-related volcanic rocks unconformably overlain by sediments. These sediments were deposited in a collisional basin adjacent to the developing accretionary wedge to the west, and so potentially contain the earliest record of the evolution of the modern Central Range. The depositional age of the sediments has been well constrained both from biostratigraphy and by magnetostratigraphy to be Plio-Pleistocene (<6 Ma). The Pliocene-Pleistocene Paliwan Formation contains turbidites dominated by metasedimentary rock fragments and are thought to be derived from the evolving Central Ranges to the east.

Combined fission track and U-Pb age dating of zircon grains from the Paliwan Formation of the Coastal Ranges highlights the importance of Central, Eastern and southeast China as a sediment source. U-Pb dating of detrital zircon grains from the Shiulien and Shuimuting stratigraphic sections reveal age clusters related to a series of tectonic events in East Asia including the Indosinian (250-300 Ma), the Caledonian (400-500 Ma) and the Luliangian (1800-2000 Ma) and local island arc volcanism (25 Ma). Similar peak ages are revealed by deconvolution of zircon fission track grain ages. Together the data provide strong evidence that either the material was not directly sourced from the evolving Central Ranges to the east and that palaeocurrents are important or that these sediments were original cover and sediments related to recent exhumation have been lost from the basin.