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A re-evaluation of the Kumta Suture in western peninsular India and its extension into Madagascar

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Abstract

It has long been recognised that Madagascar was contiguous with India until the Late Cretaceous. However, the timing and nature of the amalgamation of these two regions remain highly contentious as is the location of Madagascar against India in Gondwana. Here we address these issues with new U-Pb and Lu-Hf zircon data from five metasedimentary samples from the Karwar Block of India and new Lu-Hf data from eight previously dated igneous rocks from central Madagascar and the Antongil-Masora domains of eastern Madagascar. New U-Pb data from Karwar-region detrital zircon grains yield two dominant age peaks at c. 3100 Ma and c. 2500 Ma. The c. 3100 Ma population has relatively juvenile $\epsilon_{\text{Hf}}(t)$ values that trend toward an evolved signature at c. 2500 Ma. The c. 2500 Ma population shows a wide range of $\epsilon_{\text{Hf}}(t)$ values reflecting mixing of an evolved source with a juvenile source at that time. These data, and the new Lu-Hf data from Madagascar, are compared with our new compilation of over 7000 U-Pb and 1000 Lu-Hf analyses from

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