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Buried but preserved: the Proterozoic Arubiddy Ophiolite, Madura Province, Western Australia

by

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Abstract

We describe a previously unidentified Proterozoic ophiolite complex situated in the Madura Province in southeastern Western Australia. The Madura Province is almost entirely covered by Mesozoic to Cenozoic basin rocks but new basement drillcores have revealed oceanic crustal assemblages that record continental marginal basin formation followed by oceanic subduction and basin closure. The Pinto Basalt has E-MORB/OIB chemical affinity and $\epsilon\text{Nd}_{(1600\text{ Ma})}$ from 2.54 to + 3.3. It formed by mantle upwelling beneath extending crust in an ocean-continent transition zone and must be considerably older than c. 1389 Ma adakite that intrudes it. The Sleeper Camp Formation comprises mafic metavolcaniclastic schist intruded by metadolerite and plagiogranite veins. Zircon crystals from the metavolcaniclastic schist yield a dominant age component and maximum depositional age of 1536 ± 13 Ma. The metadolerite and plagiogranite veins have zircon crystallization ages of 1479 ± 8 Ma and 1471 ± 5 Ma, respectively. Interlayered basalt and sediments of the Malcolm Metamorphics

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