OPHIOLITES OF THE YARLUNG-TSANGPO SUTURE ZONE (TIBET)

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A discontinuous belt of ophiolitic massifs marks the Yarlung-Tsangpo suture zone of southern Tibet. Although tectonically disrupted, almost complete sequences are found at Luobusa to the east and Xigaze to the west. The Luobusa ophiolite comprises a mantle and transition zone sequence, overthrust northwards onto Cenozoic molasse deposits and the Cretaceous Gandese batholith. It forms the basement of an island arc sequence of basaltic-andesites, rare dacites, siliciclastic sediments and cherts, exposed at Tsetung. Near Xigaze, ophiolitic rocks, are found in a series of klippen which constitute a north-facing thrust assemblage. Although all elements of an ophiolite are observed, the section has been tectonically attenuated by early normal and subsequent strike-slip faults. New data show that the ophiolites formed above a subduction zone, and existing models, which invoke the origin of the ophiolites at a mid-ocean ridge and their juxtaposition with other rocks in a simple south-facing arc-forearc-trench system by subduction of contiguous oceanic crust that once lay between India and Asia, are clearly incorrect. Our new findings, such as the suprasubduction origin of the ophiolites, the early northward-directed thrusting, the formation of oblique-slip basins, require new models for the tectonic evolution of the Yarlung-Tsangpo suture zone.