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Cenozoic Reconstruction of Southwest Pacific

Poles of opening and spreading rates for some of the well-studied marginal basins in the southwest Pacific have been redetermined. Times of opening range from Late Cretaceous–Paleocene in the Tasman basin to middle Pliocene in the Bismarck Sea. The observed magnetic lineations in most of these basins show a relatively short duration of opening and relatively small area of total opening. Most of the smaller basins are bounded by troughs and arcuate island chains, some of which are inferred to be trenches and volcanic arcs situated along paleoconvergent boundaries. At least four successive paleoconvergent boundaries are believed to have formed between the Pacific and the Indian-Australian plates during the Cenozoic. Combining the newly determined poles of opening, spreading rates, and paleoplate boundary locations, a series of palinspastic maps of the southwest Pacific have been constructed for these times, relative to a fixed hot-spot frame of reference for both the Pacific and Indian-Australian plates.