

Paper 55

Lithosphere structure and dynamics of the Banda Arc Collision Zone, eastern Indonesia

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The processes leading to continental collision and accretion are still relatively poorly understood. The Banda Arc in eastern Indonesia is one of the few parts of the world presently undergoing the initial stages of an active collision. Prior to about 3 million years ago, the oceanic portion of the Indo-Australian plate north of Australia was being subducted towards the north under the southern margin of South East Asia. Since the arrival of the Australian continent at the subduction zone, the continental margin has been subject to inversion. A collision orogen has been formed immediately south of the volcanic Banda Arc creating

the outer arc islands including Timor. A multi-disciplinary regional study of geology and geophysics of this area has been undertaken in order to assess the structure and mode of deformation within this critical region. A compilation of all historical hypocentres and fault plane solutions shows the trajectory of the subducting slab and the existence of discrete zones of weakness within it. A deep seismic reflection profile recently acquired by BIRPS (UK) and MCI (Indonesia) is also presented here and shows for the first time the deep structure of a volcanic arc and an active collision zone.
