



HEAT FLOW AND CONJUGATE MARGIN DEVELOPMENT IN THE WOODLARK BASIN

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The Woodlark Basin is a young rift (<8.4 Ma) that is actively opening at rates from 25 to 67 mm/yr. Along strike the basin undergoes a transition from rifting to seafloor spreading separating conjugate rifted margins. Marine heat flow values along the rift and conjugate margin segments were determined from thermal gradient and in situ conductivity measurements made using a 3 m Lister-type violin bow probe. Most temperature gradients are linear and where measurements from deeper ODP drilling sites are available they are in good agreement indicating little environmental disturbance. Some of the highest heat flow values are located near an area of active core complex formation at the western end of the rift and may be associated with ductile lower crustal extrusion forming the domal core complexes. High heat flow also characterizes the area near the continental breakup. In detail, the heat flow high in this area is not aligned ahead of the spreading center but is displaced to the south. A low angle normal fault is mapped in the area ahead of the spreading center and possible fluid flow associated with this fault may be lowering heat flow values in its vicinity. The rifted continental margins separated by oceanic crust show typically high heat flow values which, in several cases decrease abruptly toward the oceanic crust. This abrupt decrease in heat flow near the ocean-continent transition may be associated with hydrothermal circulation in lava flows near the continental breakup or in early formed oceanic crust.