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Detailed seismicity of the southern Indian Ocean

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The southern Indian Ocean contains three rift systems meeting at the Rodriguez triple juction, and numberous fracture faults. The details of these systems are still only superficially understood. The seismic coverage in this region is relatively poor, and those stations that do exist within the oceanic basin (GEOSCOPE stations RER, CRZF, PAF and AIS, and the IRIS/IDA stations COCO and MSEY) often have poor signal to noise ratios at high frequencies, leading to a large number of missed P or S wave obervations. In these conditions, it is hardly suprising that the traditional global earthquake catalogs (ISC catalog and USGS PDE catalog) are incomplete in their reporting of Mw 4.5-5.0 events in the region. Event location methods based on Rayleigh wave observations (Rouland et al. 2003, Esktrom 2006) seem to provide a more complete description of the seismicity of the Southern Indian Ocean and of Antarctica. In this study, we investigate in detail the seismicity of the Southern Indian Ocean. Our aim is to locate as yet undetected events in the region, and to provide focal mechanisms of these events where possible.