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Seismicity studies of the Okavango Delta Region and the environs, Botswana.

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The history of Botswana's major seismic events have been initiated by two earthquakes that occurred on the 11th of September and 11th of October 1952 with M_L Richter magnitudes of 6.1 and 6.7 respectively, in the Okavango Delta Region (ODR). Not much is known and documented about the seismicity of a larger coverage of Botswana primarily because of very limited seismological stations, with only nine in the existing network for national monitoring of earthquakes, which are biased on the north-western part of Botswana, the ODR. However, this study shows that micro-seismic activities are distributed not only on the northern part of Botswana, but also in other parts of the country such as the Kweneng west, Kweneng east and the southern part as well. Based on 327 events extracted from data compiled by the International Seismological Centre (ISC), the frequency-magnitude distribution (FMD) of earthquakes in Botswana from 1966 to 2012 was estimated, b -value and a -value for the entire interface catalogue were found to be 0.89 and 4.56, respectively, by the use of 'eye-fitting' method. The completeness magnitude (M_c) was found to be 3.7. The M_c indicates the magnitude above which 100% of all earthquakes can be detected. The objective of this study was to produce maps that show the spatial distribution of seismicity within Botswana, to assist in quest of hazard mitigation.

Keywords: Seismicity, b -value, Okavango Delta Region, Completeness magnitude
