

SEISMICITY STUDY OF BOTSWANA FROM 1966 TO 2012

Not much is known and well documented about the seismicity of a larger coverage of Botswana primarily because over the years, local seismic stations were biased to the north-western part of Botswana, to monitor the more seismogenic Okavango Delta Region. The objective of this study is to estimate the relative size distribution of seismic events (b-value), the rate of seismic activity (a-value), and associated stress condition prevailing in Botswana to assist in the quest of hazard mitigation. This study shows that micro-seismic activities of magnitude ranging from 1.3 to 5.7 are distributed not only on the northern part of Botswana, but also in other parts of the country such as the Southern (including Kweneng East and West), Central and Eastern Botswana. The b-value and a-value for the entire catalogue was found to be 1.2 and 6.3, respectively, implying a region of low stress dominated by small to moderate events. The minimum completeness magnitude (MC) was found to be 3.8. From this analysis, annual probabilities of occurrence for M4 and M5 events were found to be 67.2 % and 4.3 %, respectively, while M6 or larger event has an annual probability of 0.3 %.

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