

Abstract

Kenya has had a seismic station since 1963 as part of the World Wide Standardized Seismograph Network (WWSSN). In 1990, the University of Nairobi in collaboration with GeoForschungsZentrum (GFZ) started to build up a local seismological network, the Kenya National Seismic Network (KNSN), which operated for about ten years between 1993-2002. This, however, experienced a myriad of problems ranging from equipment breakdown, vandalism and lack of spares. Kenya is seismically active since the Kenya rift valley traverses through the country from north to south bisecting the country into eastern and western regions. In the central part, the Kenya rift branches to form the NE-SW trending Kavirondo (Nyanza) rift. The Kenya rift valley and the Kavirondo (Nyanza) rift are the most seismically active where earthquakes of local 2.0 – 5.0 occur. Furthermore, \leq magnitude (MI) in the order of historical records show that earthquakes of magnitudes of the order of 6.0 have occurred in Kenya. Such large magnitude earthquakes \geq MI include the January 6, 1928 Subukia earthquake (MI 7.1) and an aftershock (MI 6.2) four days later, as well as the 1913 Turkana region earthquake (MI 6.2). Since early 1970's, numerous seismic investigations have been undertaken in Kenya in order to understand the formation and structure of the Kenyan part of the East African rift valley. Earthquake data from these studies is, however, rather disorganized and individual datasets, including that acquired during the period 1993-2002, cannot furnish us with comprehensive information on the seismicity of Kenya for the past \sim 100 years. The purpose of this paper is, therefore, to review the seismicity in Kenya for the period 1906-2010 by utilizing data and results from different sources. The general seismicity of Kenya has been evaluated using historical data, data recorded by local seismic networks, the United States Geological Survey catalogue as well as earthquake data from the numerous seismic investigations by different individuals and research groups. On the basis of earthquake data from these sources, the entire N-S trending Kenya rift valley and the NE-SW trending Nyanza (Kavirondo) rift are characterized by a high rate of seismicity, and the USGS network has been effective in detecting local $M > 3.0$ earthquakes. A peculiar trend is exhibited by earthquakes of 5.1 in that these occur along the N-S and NE-SW trending Kenya rift \geq MI valley and the Kavirondo (Nyanza) rift zone respectively. Earthquake data from the various sources for the period 1906-2010 is complete for 4.4 earthquakes with a b-value of 0.79 which is characteristic of \geq MI tectonic active regions like rifts. There is need to revive and extend the KNSN for a greater coverage and effective seismic monitoring in Kenya.