



Pre-instrumental seismicity in Central Africa using felt seisms recorded mainly at the meteorological stations of DRC, Rwanda and Burundi during the colonial period

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Seismic hazard assessment and mitigation of catastrophes are primarily based on the identification and characterization of seismically active zones. These tasks still rely heavily on the existing knowledge of the seismic activity over the longest possible time period. The first seismic network in Equatorial Africa (IRSAC network) was operated from the Lwiro scientific base on the western shores of Lake Kivu between 1953 and 1963. Before this installation, the historical record of seismic activity in Central Africa is sparse. Even for the relatively short period concerned, spanning only 50-60 years, the historical record is far from being complete. A first attempt has been made by Herrinckx (1959) who compiled a list 960 felt seisms recorded at the meteorological stations between 1915 and 1954 in Congo, Rwanda and Burundi. They were used to draw a density map of felt seisms per square degree. We completed this data base by exploiting the meteorological archives and any available historical report to enlarge the database which now reaches 1513 entries between 1900 and 1959.

These entries have been examined in order to identify possible historical seismic events. Those are defined by 3 or more quasi-simultaneous records observed over a relatively short distance (a few degrees of latitude/longitude) within a short time difference (few hours). A preliminary list of 115 possible historical seisms has been obtained, identified by 3 to 15 different stations. The proposed location is taken as the average latitude and longitude of the stations where the felt seisms were recorded. Some of the most important ones are associated to aftershocks that have been felt at some stations after the main shocks. The most recent felt seisms have been also recorded instrumentally, which helps to validate the procedure followed. The main difficulties are the magnitude estimation and the possible spatial incompleteness of the recording of felt seism evidence at the margin of the observation network. The distribution of these historical felt seisms match the distribution of the instrumental epicenters. The results obtained may be used to complete the existing catalogues of historical seismicity.

Herrinckx, P. (1959). Séismicité du Congo belge. Compilation des seismes observés aux stations climatologiques entre 1909 et 1954. Académie royale des Sciences coloniales. Classe des Sciences naturelles et médicales. Mémoire in 8°. Nouvelle série, 11(5), 1-55