



XIXth century earthquakes in Belgium, the Netherlands and western Germany

Elisabeth Knuts (1), Bernard Dost (2), Pierre Alexandre (1), and Thierry Camelbeeck (1)

(1) Royal Observatory of Belgium, Brussels, Belgium, (2) Royal Netherlands Meteorological Institute, De Bilt, Netherlands

Since the last quarter of the XXth century, the rules of the historic criticism are applied in the study of the past earthquakes thanks to the collaboration between seismologists and historians. Various monographs have already been published on the historic seismicity of Belgium, Netherlands and nearby regions but few about the XIXth century. The list of the shocks arisen in those regions is not clearly established. For the major earthquakes, we can find useful monographs that were published at the time of the events. However there is a lack of information about smaller earthquakes that are mentioned in the Belgian, Dutch, French and German catalogs. For those smaller events it is often not possible to determine the zone of perceptibility. Sometimes we cannot even take for sure that the reported event is a real one.

The aim of our study is to overcome this gap. Taking into account the rules of historical criticism, we read all the available bibliography, undertook researches in the archives and made an analysis of the press in order to establish a reliable list of earthquakes. Several categories of sources were used: narrative and administrative sources, contemporaneous studies, letters sent to the scientific institutions and press. We could confirm that 84 earthquakes are real and determine a list of fake earthquakes that are unfortunately present in the traditional catalogs. In the list of fake earthquakes, we highlighted several events that we consider doubtful and that require additional researches, especially several earthquakes in mining zone. We compiled our results as a four-column table providing the date of the earthquake, the supposed epicenter, the number of founded sources and the number of macroseismic datapoints. Based on the macroseismic datapoints, we estimated the intensities for every great phenomenon according to EMS-98 scale. The map of the epicenters indicates that the most active zone in the area during the XIXth century is the Lower Rhine Graben, at the border between Belgium, Germany and the Netherlands.

Keywords: historical seismicity, doubtful earthquake, fake earthquake, macroseismic map.