M_L 2.4 Veldegem (BE) Earthquake of 2 August 2011

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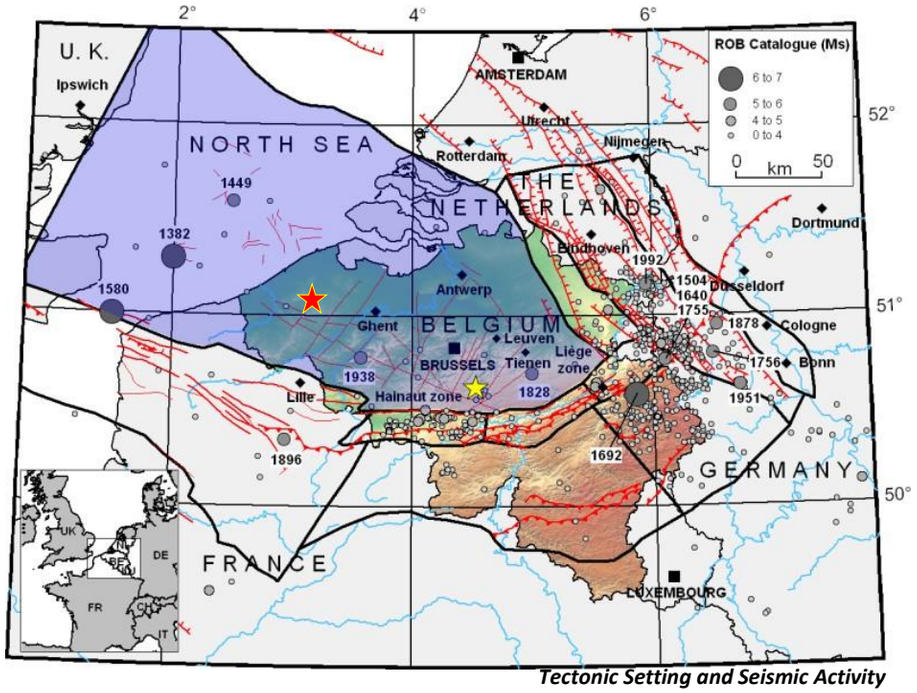
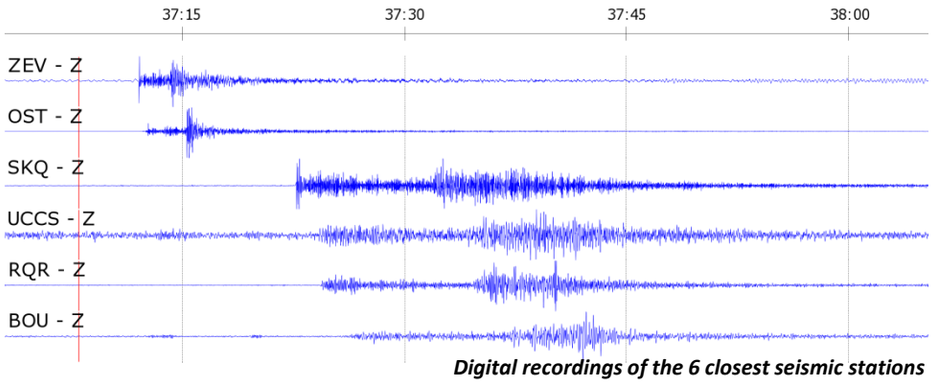


Tectonic Setting and Seismic Activity

A magnitude M_L 2.4 earthquake occurred on 2 August at 18:37 UTC (20:37 Local Time) some 15 km to the SSW of Bruges, Belgium (Red star on Figure above). From seismological data (see, for example, the seismograms of the 6 closest seismic stations below), the epicenter is located at 51.09°N and 3.16°E (± 2 km) at a depth of 6 ± 3 km.

This earthquake occurred in a geological unit called Brabant Massif that extends towards England. Although earthquakes don't occur every day, the Massif has known large ones in the recent past. The largest known is the 1382 damaging event in the Strait, with an estimated magnitude equals to 6. The 11 June 1938 damaging earthquake of magnitude M_S 5.0 provoked damages in the vicinity of Zulzeke-Nukerke. Between 2008 and 2010, a seismic sequence occurred south of Brussels, with more than 300 low magnitude earthquakes (Yellow star on the figure above).



Digital recordings of the 6 closest seismic stations

The earthquake of 2 August in Veldegem was largely felt in the communes of Zeldegem, Oostkamp, Torhout, Brugge and Jabbeke. The table (side) shows the number of formularies submitted for each commune, for which we received at least 3 forms.

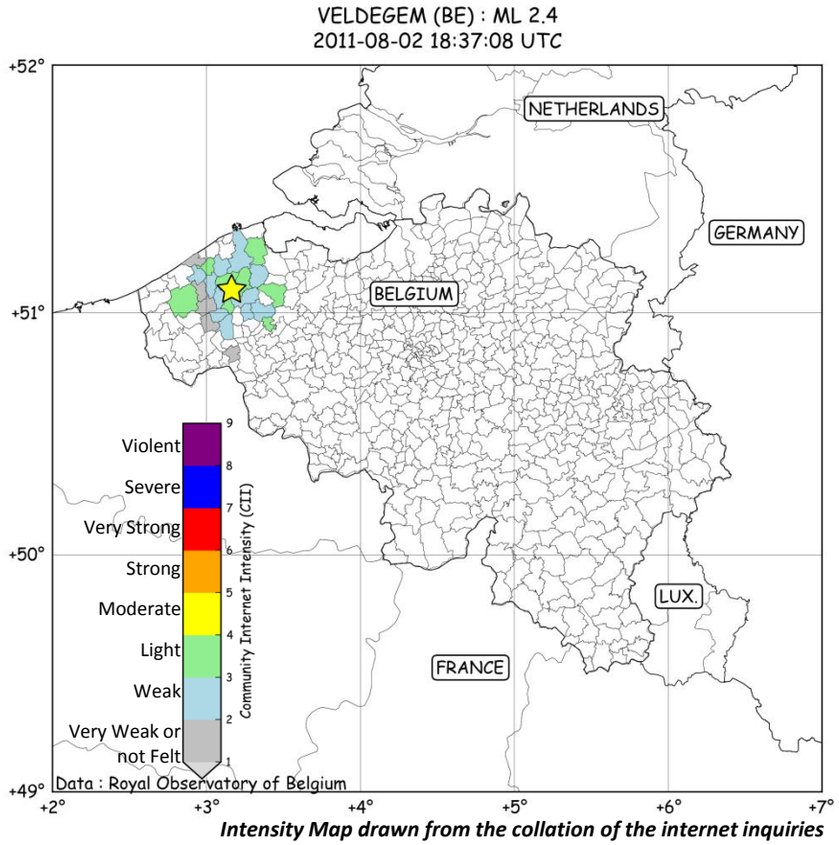
The small magnitude, the shallow depth and special properties of the Brabant Massif allow the vibration to have a quite high frequency content and could be heard, looking like an explosion or the thunder.

Minutes after the earthquake, people rushed to the www.seismologie.be website to find information and to tell us about what they just felt. The figure below shows the cumulative amount of visitors to the website (red) and the cumulative number of inquiries submitted (blue). There are smaller and larger steps in the curves that correspond to the various announces in the media (Twitter, website, news feeds of the press, etc.).

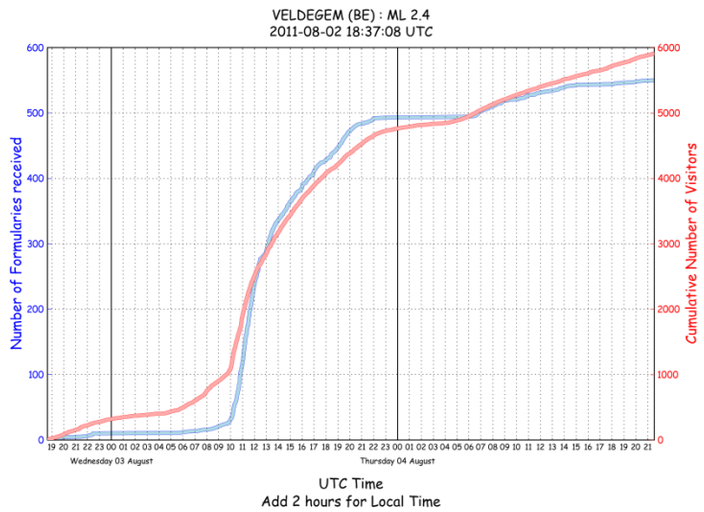
In the morning of Friday 5 August, the number of 551 inquiries has been reached. This large amount of data helps the ROB scientists studying the structure of the Belgian underground. The Intensity map (below) shows the average intensity calculated by the analysis of the internet inquiries submitted.

Commune	Zip	Distance (km)	Number
ZEDELGEM	8210	6.1	214
OOSTKAMP	8020	8.8	106
TORHOUT	8820	5.3	44
BRUGGE	8000	14.2	37
JABBEKE	8490	11.3	36
ICHTEGEM	8480	10.9	20
LICHTERVELDE	8810	7.3	16
WINGENE	8750	9.0	16
KORTEMARK	8610	11.0	8
GISTEL	8470	15.8	7
BEERNEM	8730	13.9	6
ROESELARE	8800	16.0	5
OUDENBURG	8460	15.4	4
HOOGLEDE	8830	13.8	3
KORTRIJK	8500	30.1	3

Number of submitted inquiries per commune



Intensity Map drawn from the collation of the internet inquiries



Visitors and Inquires on the website after the earthquake

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