



## Seismic high amplitude anomaly in the Genk Member on 2D seismic data in Neeroeteren

A seismic high amplitude anomaly or bright spot in combination with a velocity pull-down and a shadow zone has been observed on a 2D seismic line (nr 13) from a VITO survey in eastern Limburg from 2007 (VITOLIM). The high amplitude anomaly is situated in the Genk Member (Bolderberg Formation) and in the vicinity of the Cenozoically active Elen fault (Breuk\_70 in the Structural Framework).

### See also

[Seismic amplitude anomalies in Flanders](#)

### Anomaly

Near the village of Neeroeteren, the Elen fault crosses a 2D seismic line (nr 13) from the VITOLIM survey. In close vicinity of this fault, at the seismic interval that is interpreted as the Genk Member, a seismic high amplitude anomaly in combination with a velocity pull-down was observed. Underneath the anomaly, a shadow zone occurs. Such an anomaly is typical for gas bearing layers. The fact that this anomaly is situated in the lignite-rich Genk Member makes it plausible that indeed substantial amounts of gas can be locally present. Deckers (2015) also observed high amplitude seismic anomalies in the Genk Member on seismic lines of the same survey, but further to the northeast, which might also be related to gas entrapment. Contrary to this anomaly, however, those of Deckers (2015) seemed unrelated to a nearby major fault, but rather to Mass Transport Deposits in the Genk Member.

AVO (Amplitude Versus Offset) analysis could provide more insights on the nature of this anomaly. However, as the available seismic gathers have not been processed appropriately, no reliable AVO analysis could be conducted. Appropriate pre-stack processing steps and requirements need to include amplitude preservation, multiple attenuation, zero phasing and pre-stack time migration.

### Data

ID	Coordinates (EPSG: 3034)		Seismic anomaly	Depth m
	X	Y		
Neeroeteren seismic high amplitude anomaly	3708318.38	2713217.42	High amplitude including shadow zone	450-650

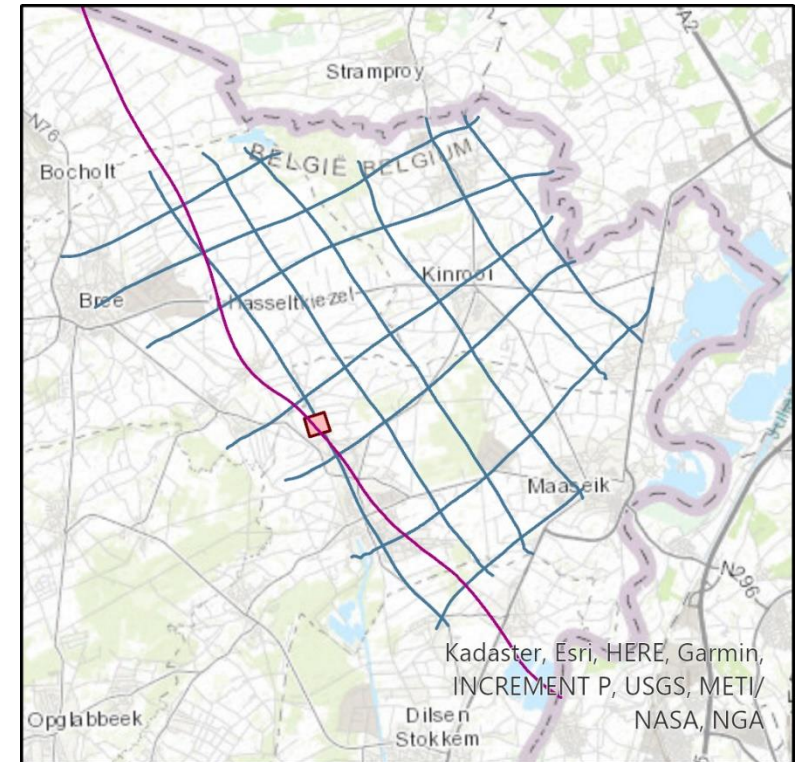


Figure 1: Location of the Neeroeteren anomaly (red square). Blue lines mark the seismic lines of the 2007 VITO seismic survey in eastern Limburg on which the geomanifestation was inferred. The purple line is the Elen fault (Breuk\_70 in the Structural Framework)

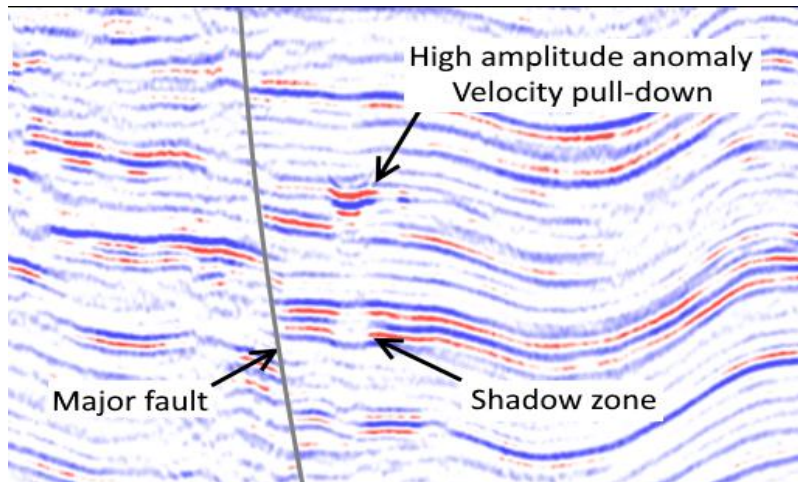


Figure 2: Seismic image showing the high amplitude anomaly or bright spot with adjacent velocity pull-down and shadow zone. The major fault indicated on the picture is fault 70, in common literature known as the Elen fault.

## Reference

Onajite, E., 2014. Chapter 14 - Understanding Reflection Coefficient in Seismic Data Analysis Techniques in Hydrocarbon Exploration, p. 213-228.

Deckers, J., 2015. Middle Miocene Mass Transport Deposits in the southern part of the Roer Valley Graben. *Marine and Petroleum Geology*, 66 , 653-659.

## Cite this source

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