Seismic polarity reversal anomaly in the lower Paleocene on 2D seismic data in Tongerlo

A seismic polarity reversal anomaly has been observed on a 2D seismic line (nr 12) from a VITO survey in eastern Limburg from 2007 (VITOLIM). This anomaly is situated in the lower Paleocene at the top of an anticline.

See also

Seismic ampliture anomalies in Flanders

Anomaly

On seismic line nr 12 of the VITOLIM survey, near the village of Tongerlo, a local anticline was observed. At the top of this anticline, several strong reflectors are abruptly affected by a polarity reversal in the Lower Paleocene strata. The reflectors above and below do not show this behaviour, which suggests that it is a local phenomenon and can probably not be caused by for example a graben structure. Such a polarity reversal might be indicative for fluid/gas migration (Onajite, 2014). AVO (Amplitude Versus Offset) analysis could provide more insights on the nature of this geomanifestation. However, as the available seismic gathers have not been processed appropriately, no AVO analysis could be conducted. Appropriate pre-stack processing and requirements need to include amplitude preservation, multiple attenuation, zero phasing and pre-stack time migration.

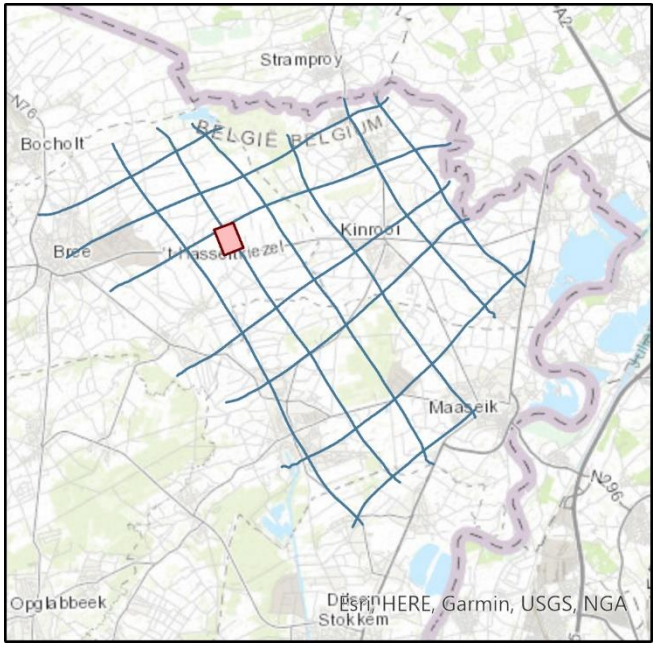

Figure 1: Location of the Tongerlo anomaly (red square). Blue lines mark the seismic lines of the 2007 VITO seismic survey in eastern Limburg on which the geomanifestation was inferred.

Data

ID	Coordinates (EPSG: 3034)		Seismic anomaly	Depth
	X	Y		m
Tongerlo polarity reversal	3707859.10	2716845.37	Polarity reversal	1050-1100

This file is part of the GeoConnect³d project that has received funding by the European Union's Horizon 2020 research and innovation programme under grant agreement n.731166.

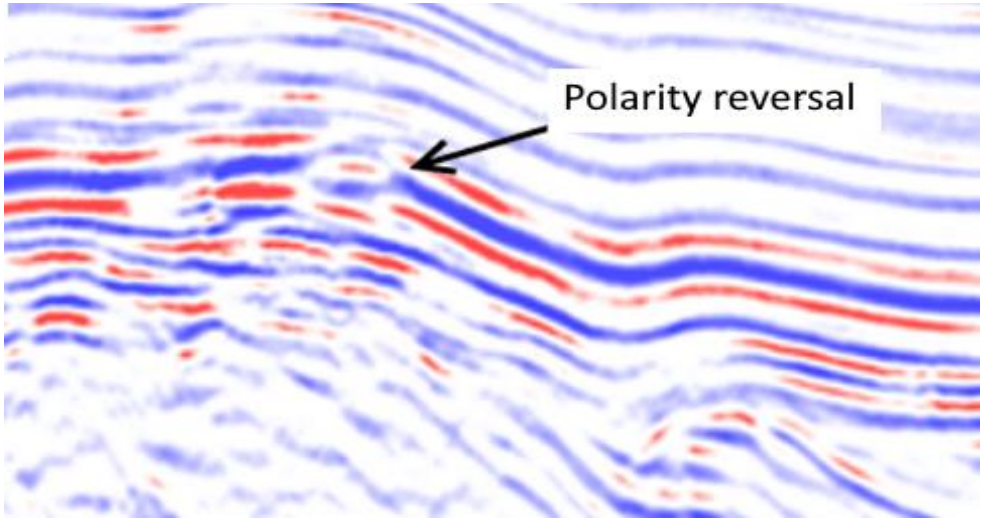

Figure 2: Seismic image showing the polarity reversal at the top of an anticline in lower Paleocene strata

Reference

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

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