

Maxim

Publieke samenvatting / Public summary

MAXIM project

Tectono-stratigraphy of the Dutch Central Graben during the late Jurassic period

Summary:

This project looked at multi-vintage and multi-source data to deliver an understanding of a broad range of processes related to reservoir distribution and quality in the Dutch Central Graben. In particular, it used new and innovative techniques and approaches to analyse the main elements of key syn-depositional systems on a regional and local scale. These included paleo-depocentres, the geometry and evolution of bounding paleo-topographic features, the geometry and distribution of geobodies, and the paleogeography of main sediment pathways. The project also added to our understanding of the evolution of the Dutch Central Graben compared with adjacent areas.

The economic value of the MAXIM project lies in the prospects it offers to find new sources of natural gas to support the Dutch economy in a managed transition to sustainable energy systems. This matters because current resources in the Netherlands are declining or due to be shut down in the near future, and importing gas has its own environmental penalties. These include the potential for methane leakage during production and transport, the potential investments and payback time required to make natural gas of a different composition to historic Dutch gas suitable for use in the Netherlands, and questions around security of

Projectinformatie / Project information

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Subsidiebedrag / Grant amount

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Algemene informatie / General information

Penvoerder / Secretariat

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supply.

This project mitigated risks for exploration partners and helps them to build their business case by providing conceptual models for hydrocarbon and reservoir potential that can be challenged by data and geological work. As a result, they have a better understanding of the complex margins and consequential sand distribution and characteristics, so aiding potential the future production of offshore gas in the Netherlands.

Background:

Upper Jurassic gas discoveries along basin margins in the Dutch Offshore highlight the potential for yet-to-be discovered reservoir sands in this complex basinal setting. Reservoir units within the Dutch Central Graben (DCG) include the Lower Graben, Upper Graben, Frieze Front and Scruff Greensand Formations. These stratigraphic units were deposited during periods of rifting and active salt withdrawal, and their characteristics present a challenging yet promising geological context for future gas exploration.

Project objective:

The overall goal of the MAXIM project was to better understand the tectono-stratigraphy of this area and to evaluate the potential for untapped reservoir sands along the DCG margins. This was done by establishing a new and robust 3D stratigraphic framework, building a revised structural framework, and by developing conceptual models based on quantitative bio-, chemo- and tectono-stratigraphic results. Key goals within this were to analyse margin-to-axis stratigraphy in relation to growth structures, to better understand the relationship between paleo-topographic evolution controlled by active tectonics and sedimentary architecture in a rift basin affected by salt tectonics, to obtain a better understanding of local depositional environments and the resulting properties, and to shed additional light on the present day basin margins' tectono-stratigraphic configuration and their evolution between the Base Kimmeridgian (155 Ma) and the top Ryazanian (140 Ma).

Project results:

This project represented the first ever three-dimensional investigation of the spatial and temporal relationship between salt tectonics, faulting, sediment transport and depositional environments in the entire Dutch Central Graben and in its peripheral basins. This research achieved all the goals set at the start. These included enhancing our understanding of the complex interplay between the marginal sedimentation within and outside of the Dutch Central Graben, evaluating the potential for untapped reservoir sands along the Dutch Central Graben margins, and analysing the margin-to-axis stratigraphy in relation to growth structures, within and outside the Dutch Central Graben. It was also possible to compare the findings with publicly available data covering the geology of surrounding countries.

De data in deze applicatie is afkomstig van de Rijksdienst voor Ondernemend Nederland (RVO) en wordt in samenwerking met de Topsector Energie ontsloten.

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