3D basin and petroleum system modelling in the North Sea Central Graben - a Dutch, German, Danish cross-border study

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Geological
Analysis and
Resource
Assessment of selected
Hydrocarbon systems

GEUS TNO BGS 1835 brgm Instituto Geológico y Minero de España

GARAH main objectives

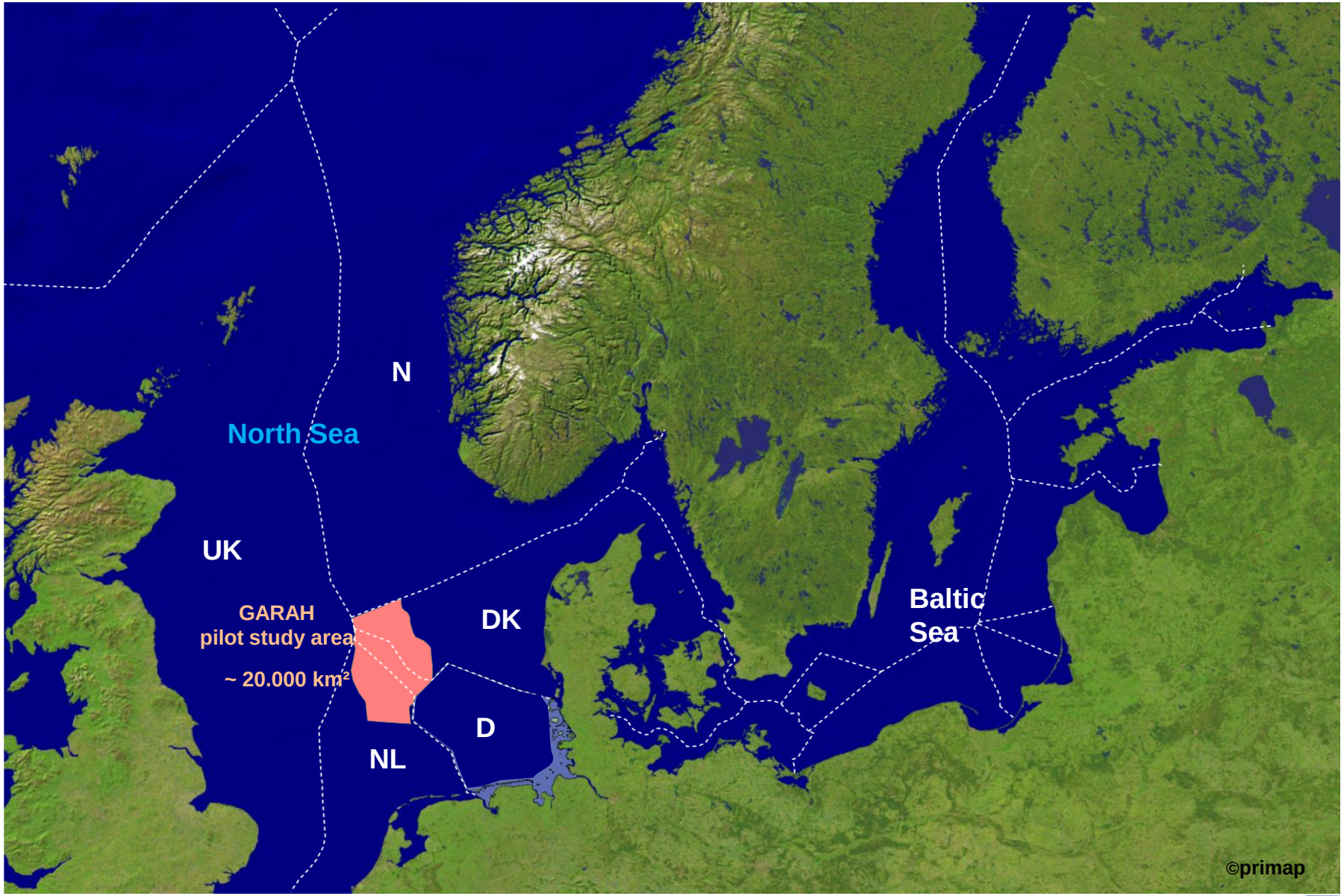
Main GARAH objectives

- Cross border merging and harmonization of geological and geophysical data and interpretation
- Evaluation of the North Sea petroleum systems

GARAH - 3D- Pilot study - North Sea Central Graben

- First cross-country 3D basin and petroleum system model Denmark – Netherlands - Germany
- Incorporating results of recent seismic mapping campaigns carried out by the Dutch (TNO), Danish (GEUS) and German (BGR) geological surveys
- In-place resource assessment of selected petroleum systems

GEUS TNO BGR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North Sea
UK
GARAH
pilot study area
~ 20.000 km²
DK
D
NL
Baltic
Sea
©primap

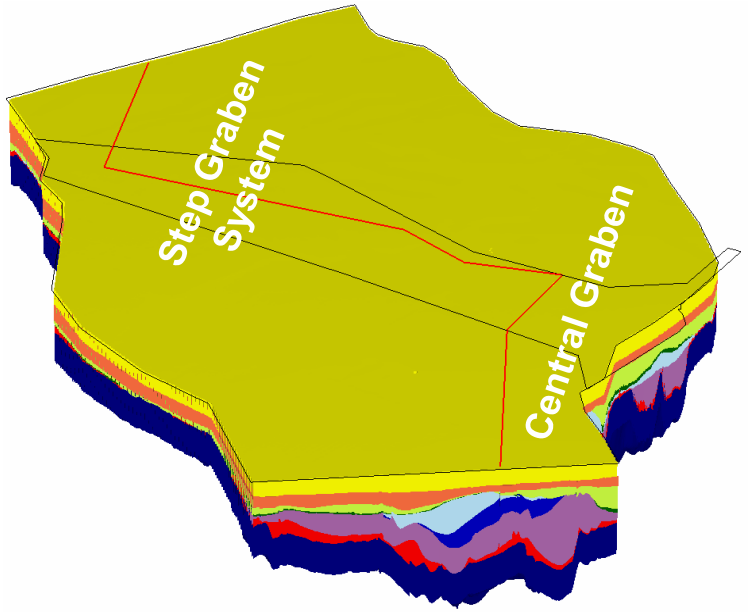
GEUS

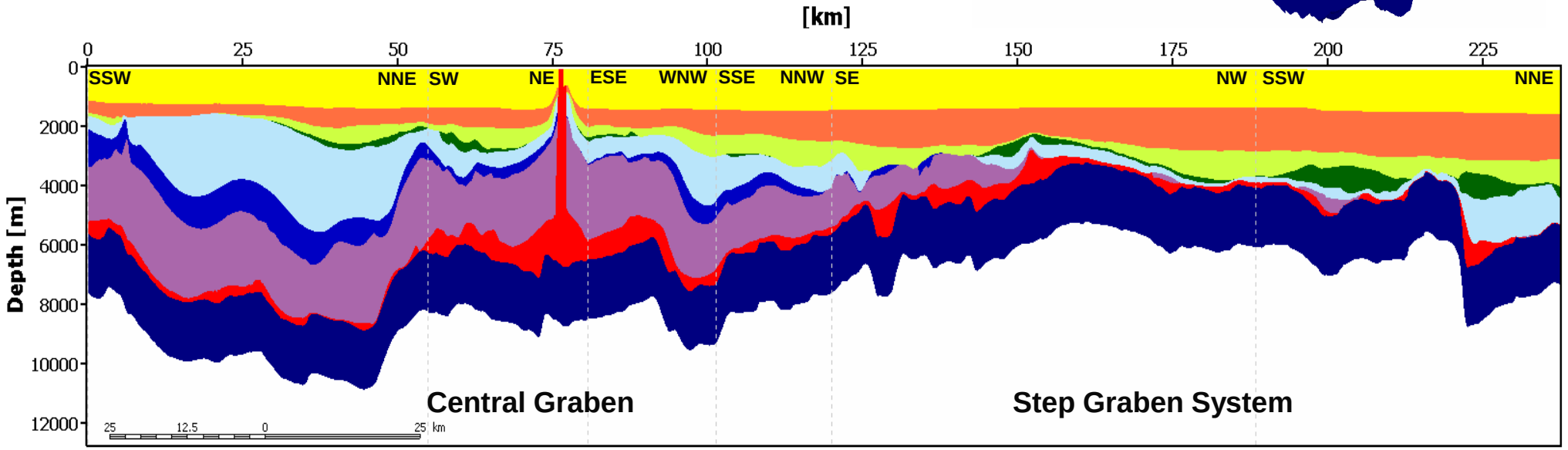
TNO

BGR

Neogene
Palaeogene&Lower Neogene
Upper Cretaceous
Lower Cretaceous
Upper Jurassic
Lower Jurassic
Triassic
Zechstein
Basement

3D model of study area and cross-section





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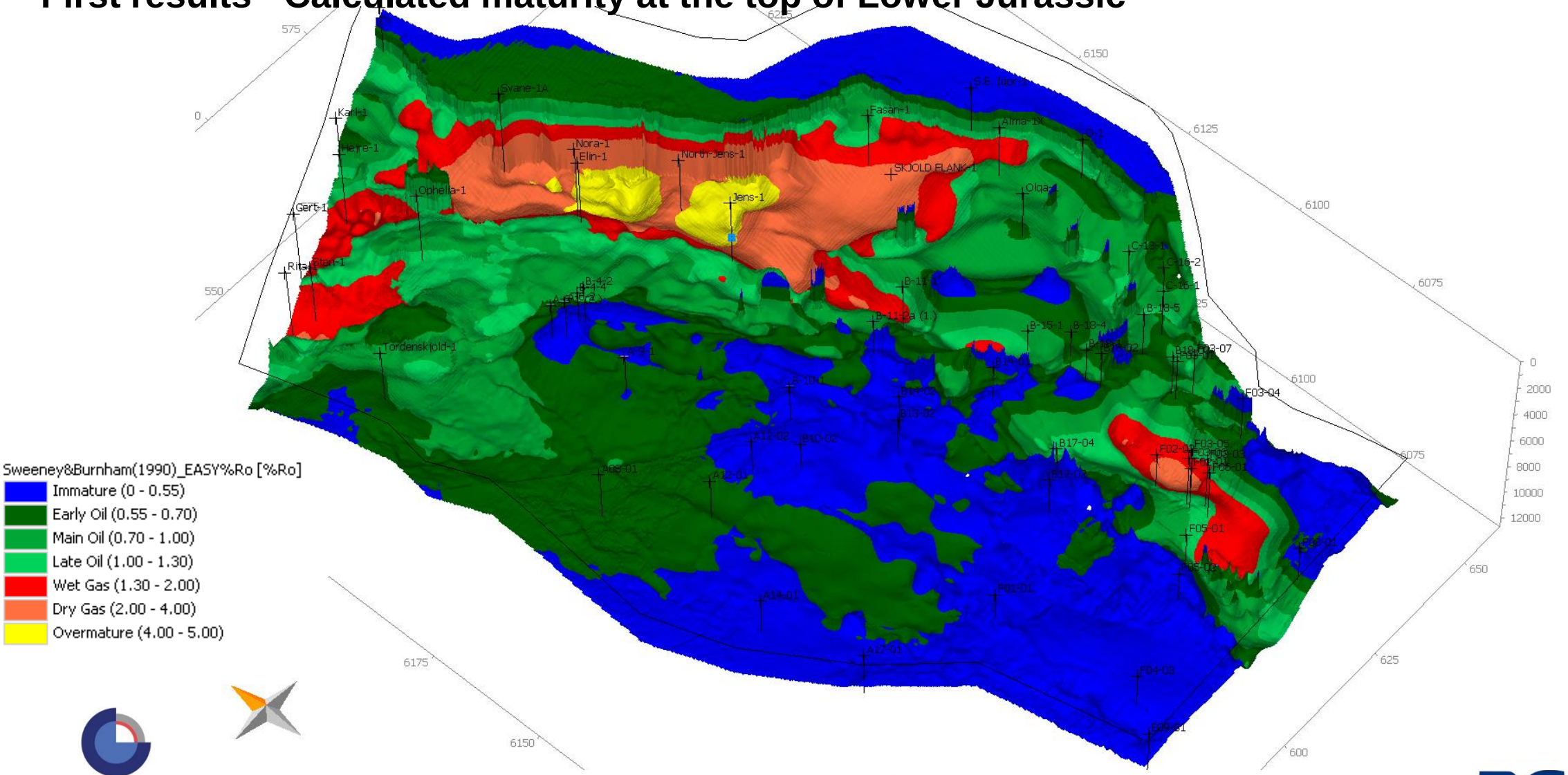
GARAH 3D model

Cross-border model

- Erosion estimates and harmonization of erosion events
- Source rock distribution and properties
- Petroleum system elements and plays
- Lithologies
- Calibration model
- Thermal history

First results - Calculated maturity at the top of Lower Jurassic



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Expected results and outlook

Main results

- Conventional and unconventional hydrocarbon generation and accumulation assessment for most important source rock intervals
- Comparison with previous assessments and results from within the project

Upcoming work

- Heat flow modelling of the study area
- Collection and comparison of unconventional resource assessments
- Definition of the main reservoir intervals
- Migration and accumulation modelling for the conventional assessment