MAGE

MARINE ARCTIC GEOLOGICAL EXPEDITION

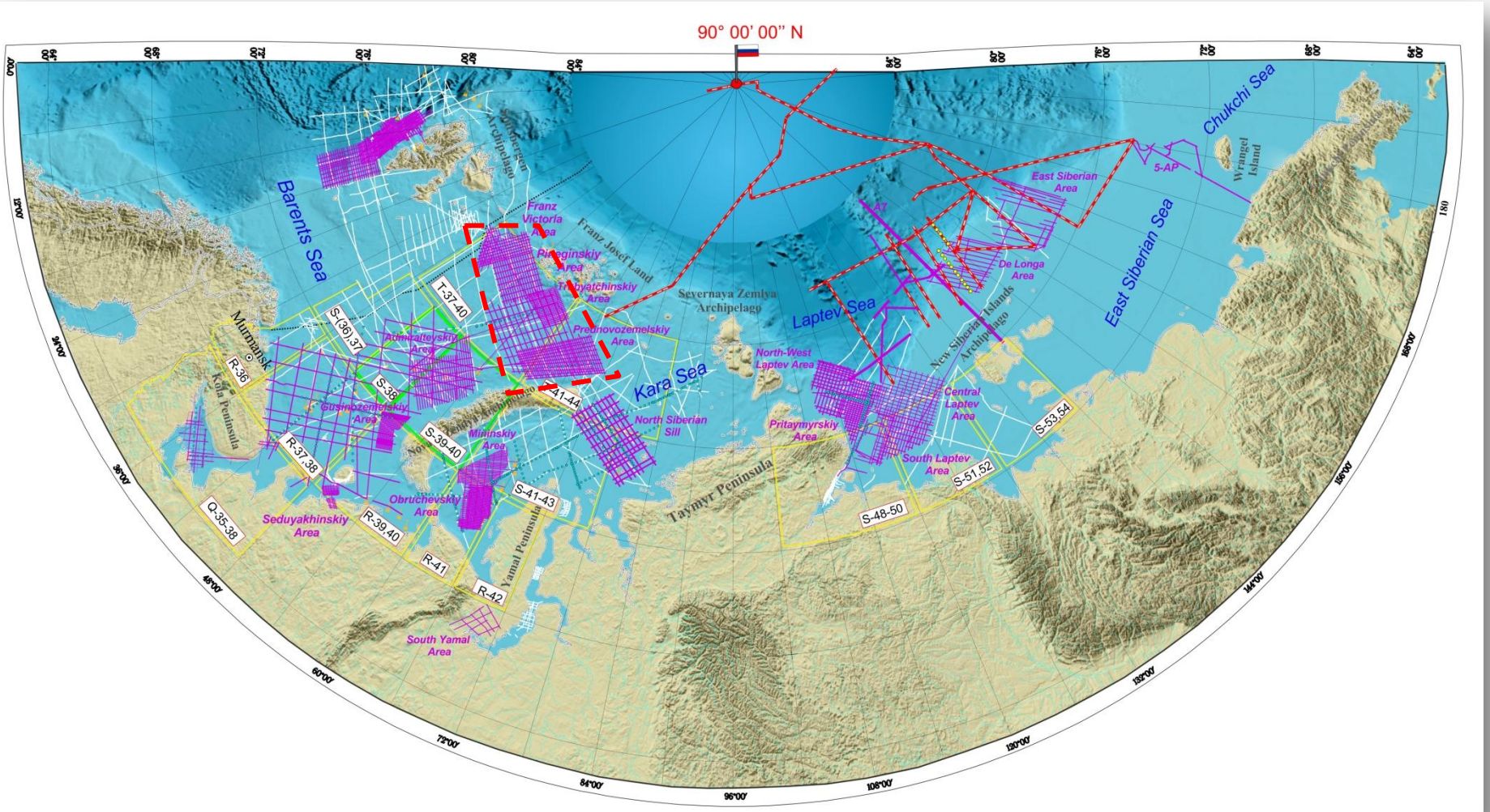
Discovery of a new potential hydrocarbon bearing province in the north-west of the Russian Arctic, creation of its generalized geological model and cost estimate of mineral resources

G.S. Kazanin, I.V. Zayats, S.I. Shkarubo, S.P. Pavlov, V.V. Shlykova, A.V. Kuznetsov

MAGE

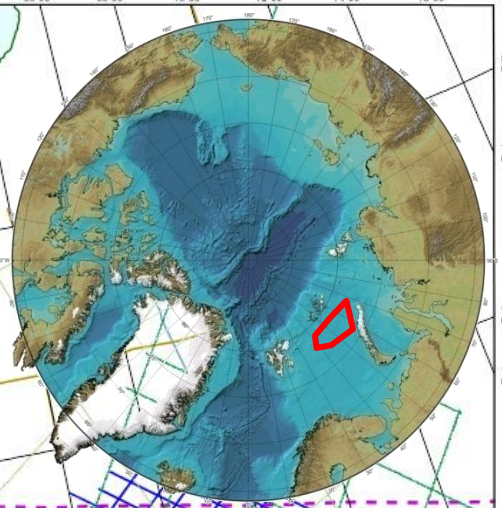
Marine Arctic Geological Expedition

RECENT GEOLOGICAL-GEOPHYSICAL SURVEYS OF MAGE ON THE ARCTIC SHELF



RV Nikolay Trubyatchinsky

RV Geolog Dmitry Nalivkin



RV Professor Kurentsov

RV Geofizik

Nagurskaya-1

Vernadskaya

Pakhtusovskaya

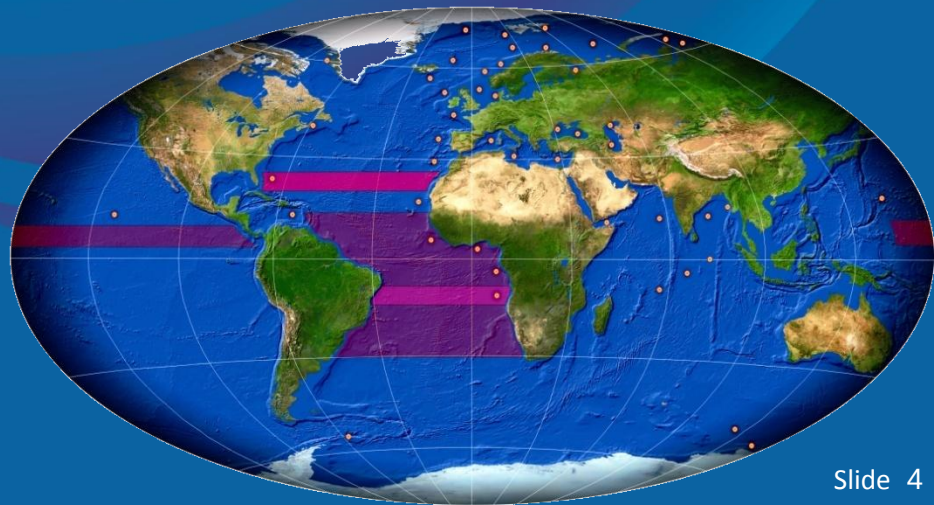
NOVAYA ZEMLYA ARCHIPELAGO

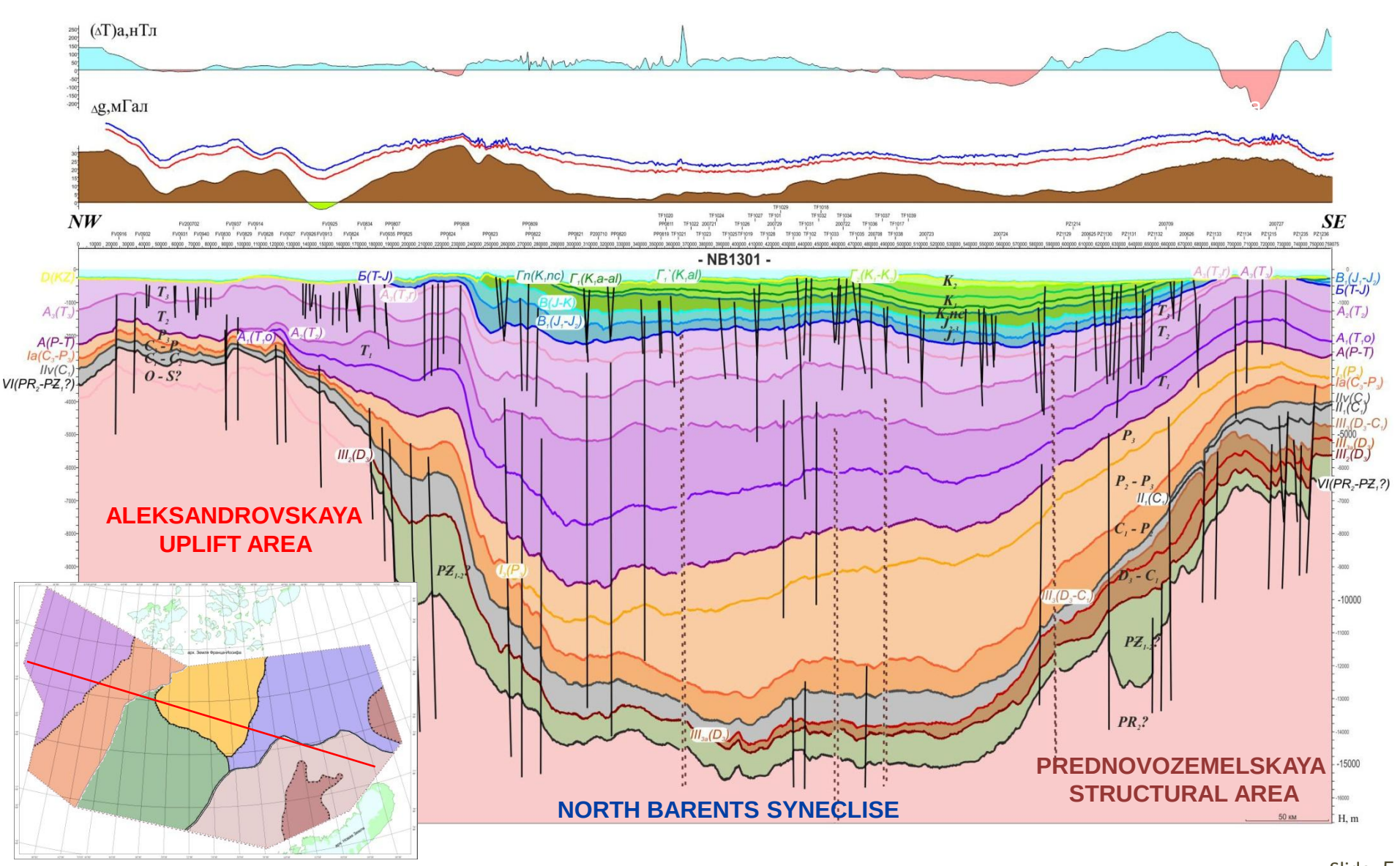
50 км

KEY GEOLOGICAL OBJECTIVES

Creation a data resource for government agencies to make licensing decisions is the main result of the regional geological exploration

- **Building a structural and tectonic framework of the area;**
- **Seismic facies' analysis of geological petroleum plays;**
- **Petroleum geological zoning of the area;**
- **Quantitative estimation of the area's resource potential and its subsoil value.**

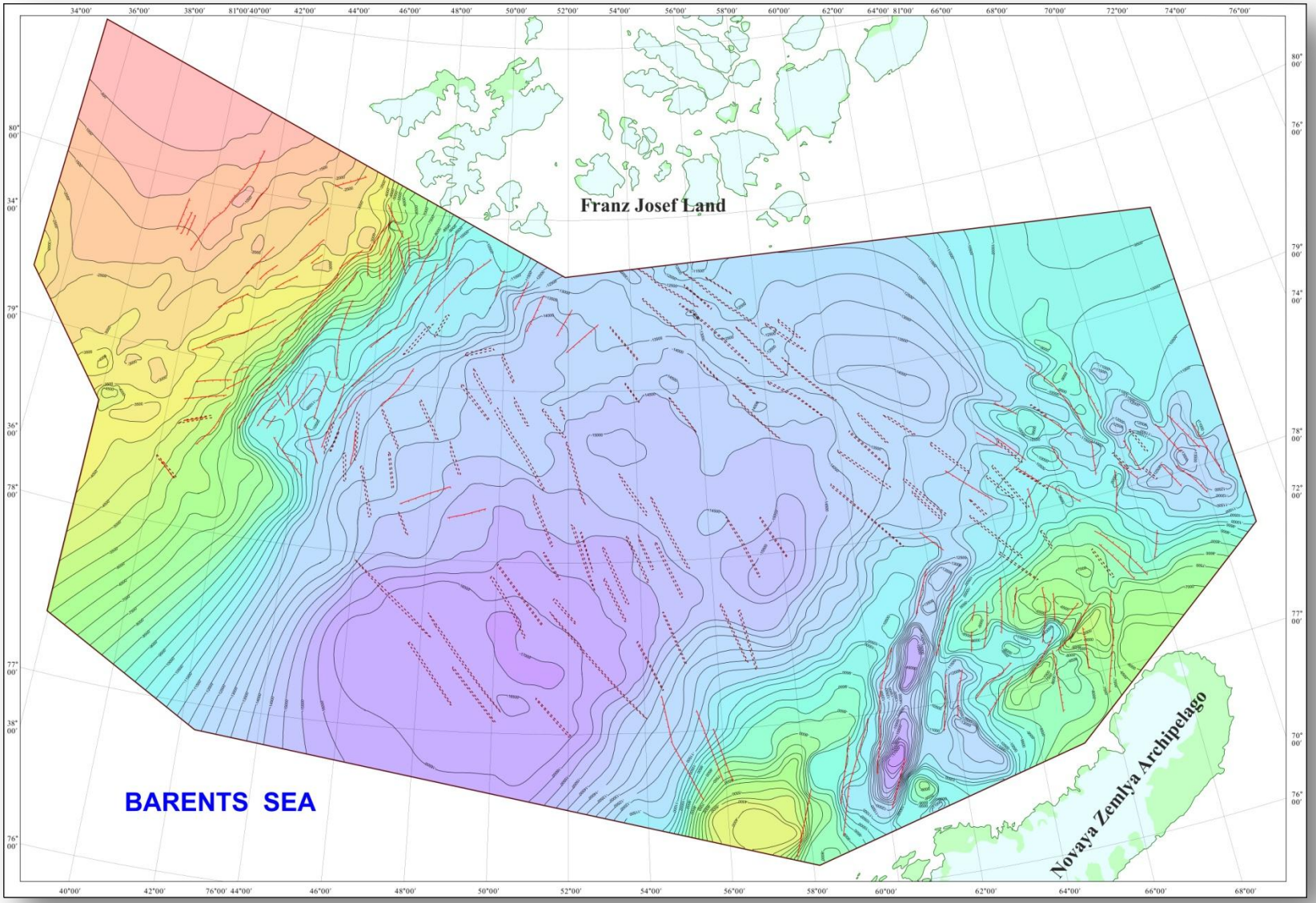



(ΔT)a,нТл
Δg,мГал
NW
SE
- NB1301 -
ALEKSANDROVSKAYA UPLIFT AREA
NORTH BARENTS SYNECLISE
PREDNOVOZEMELSKAYA STRUCTURAL AREA
50 км
H, m

MAGE

Marine Arctic Geological Expedition

A STRUCTURAL MAP OF THE BASEMENT



MAGE

Marine Arctic Geological Expedition

PALEOZOIC AND MESOZOIC SEDIMENTARY COVER

Early mid-Paleozoic sequence

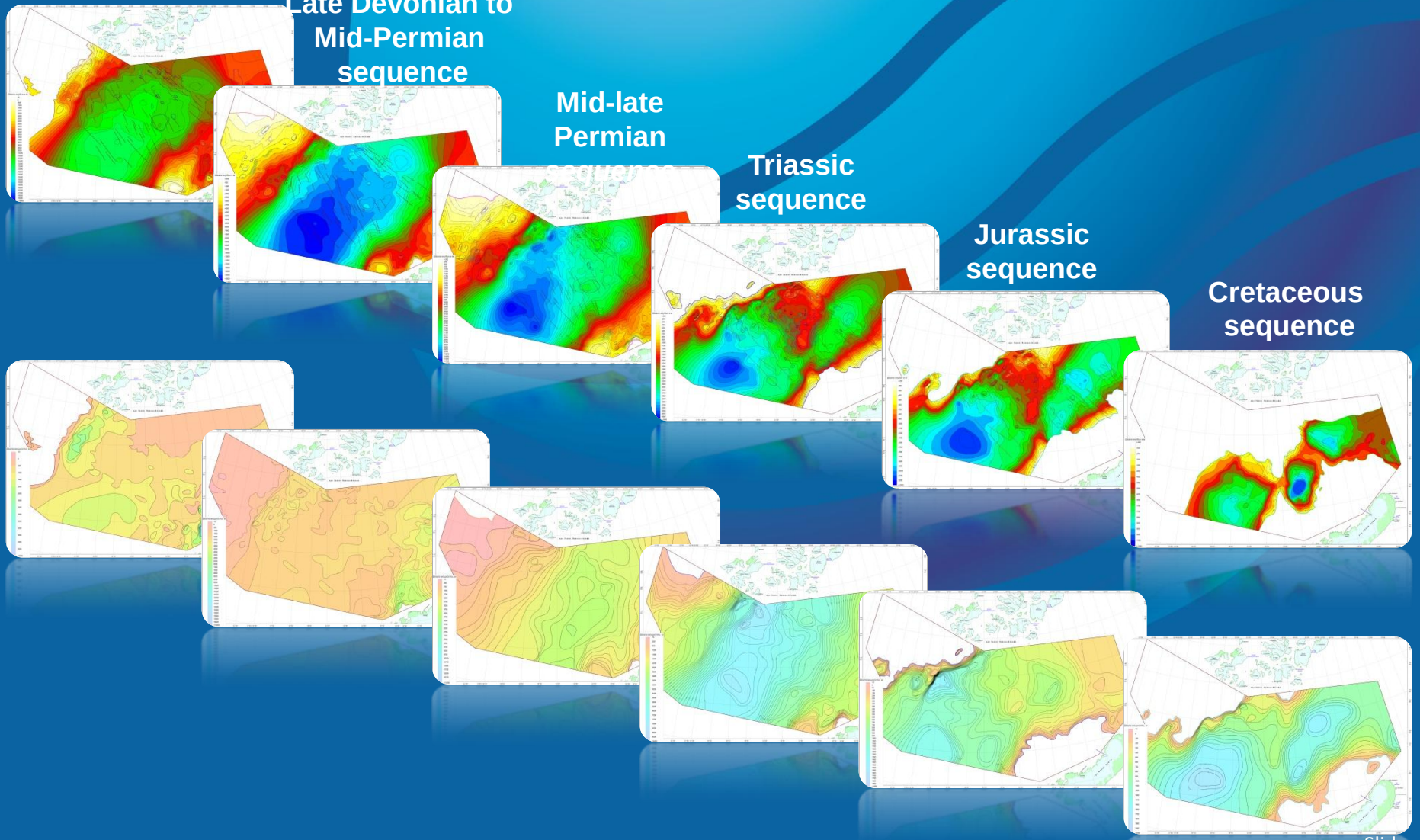
Late Devonian to Mid-Permian sequence

Mid-late Permian

Triassic sequence

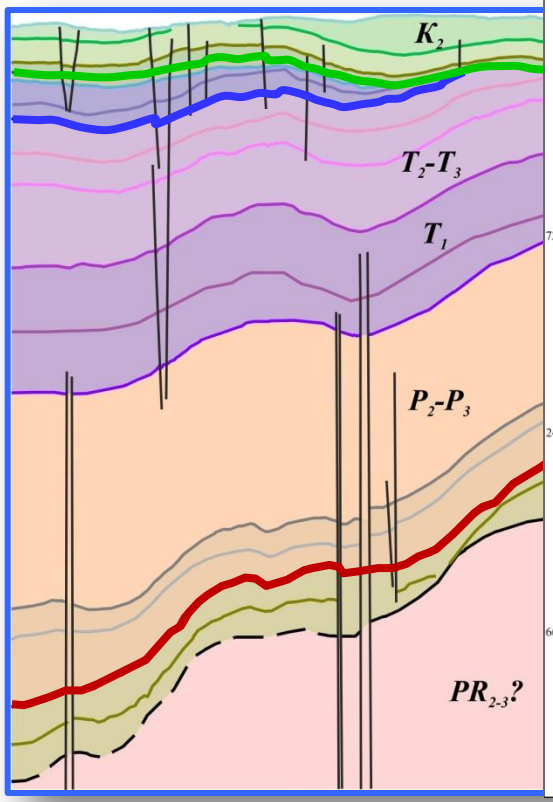
Jurassic sequence

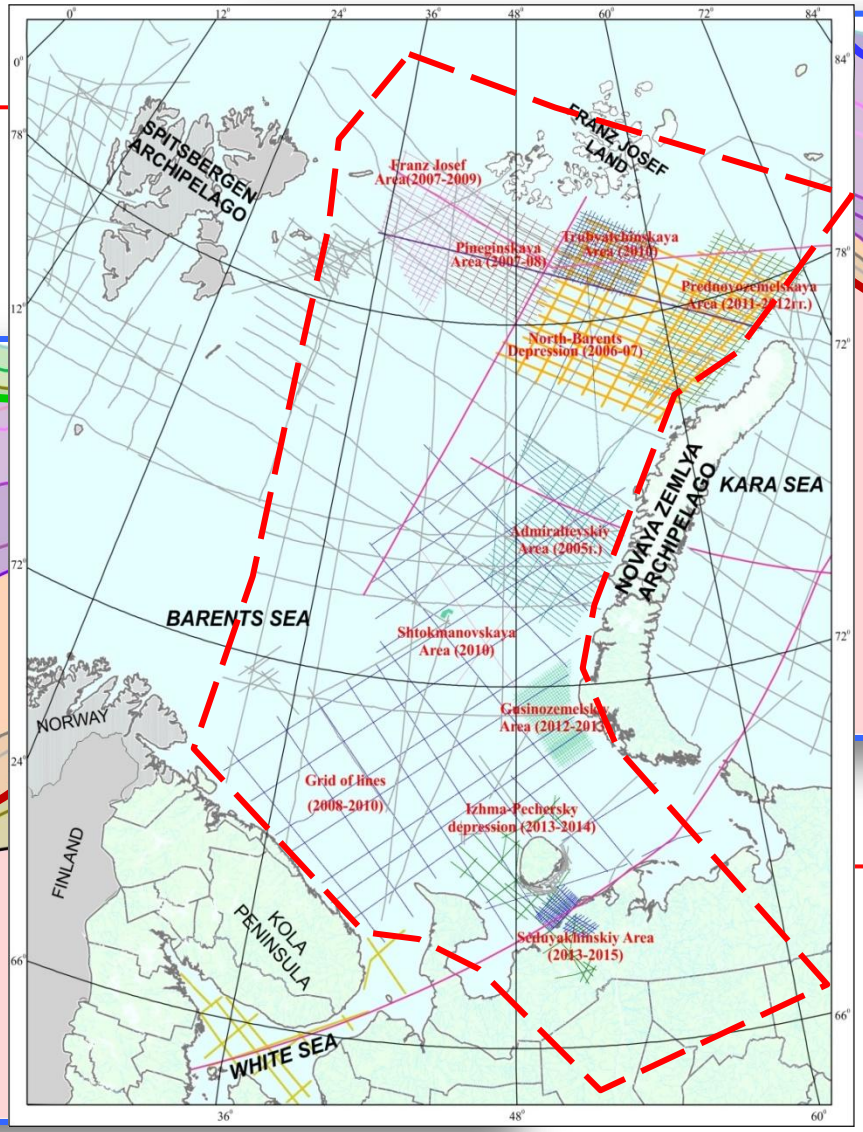
Cretaceous sequence

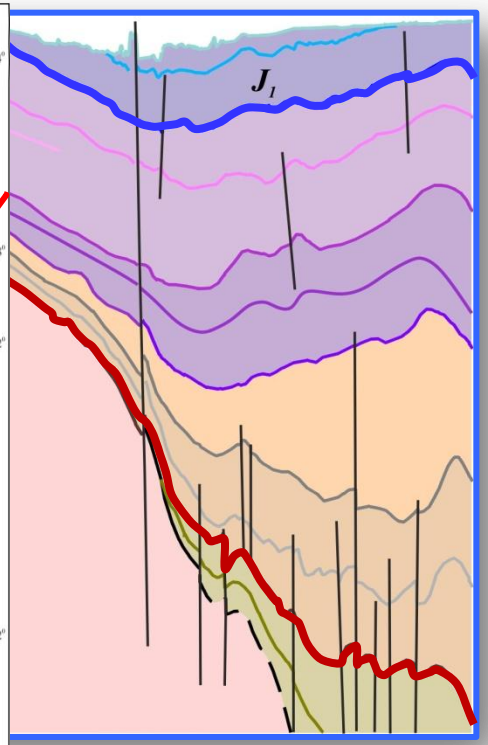


Mid-Devonian tectonic stability

ALEKSANDROVSKAYA UPLIFT AREA



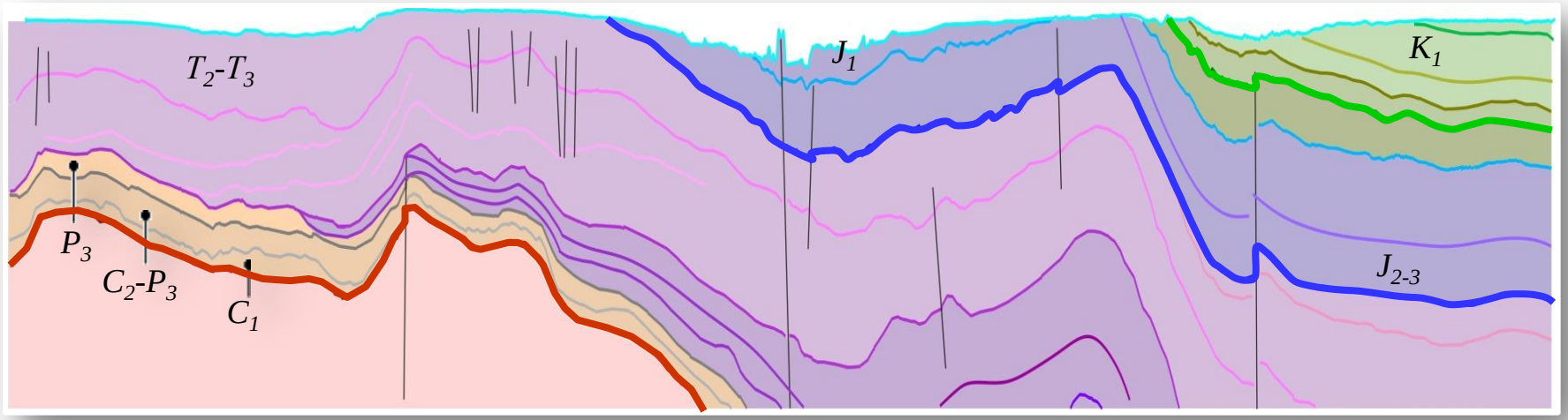




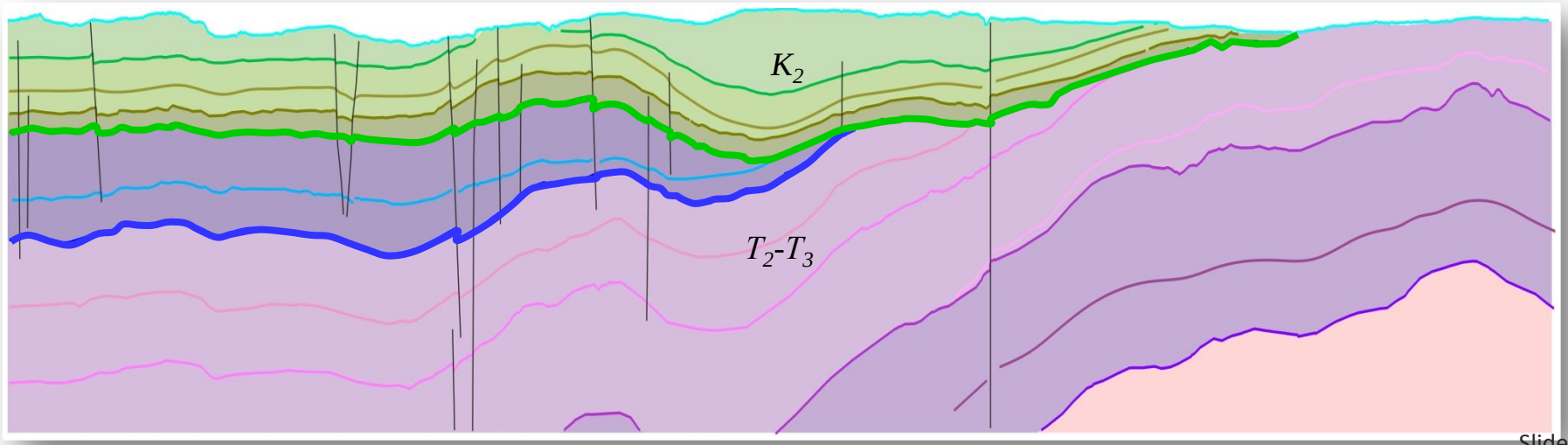
PREDNOVOZEMELSKAYA STRUCTURAL AREA

Post-Triassic and Post-Neocomian Tectonic Stability

ALEKSANDROVSKAYA UPLIFT AREA



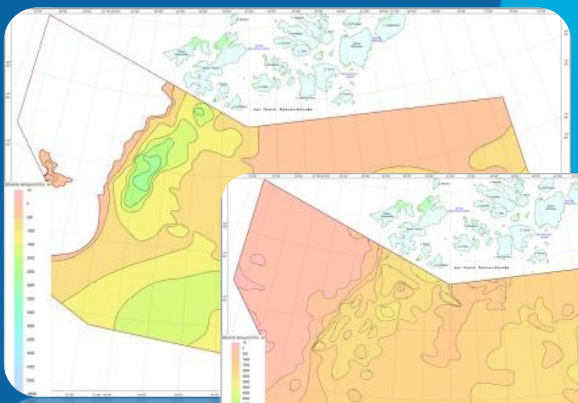
PREDNOVOZEMELSKAYA STRUCTURAL AREA



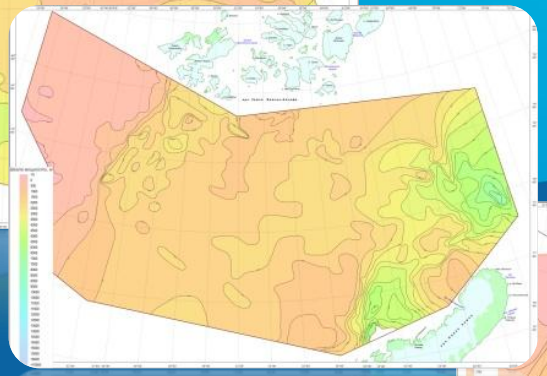
MAGE

Marine Arctic Geological Expedition

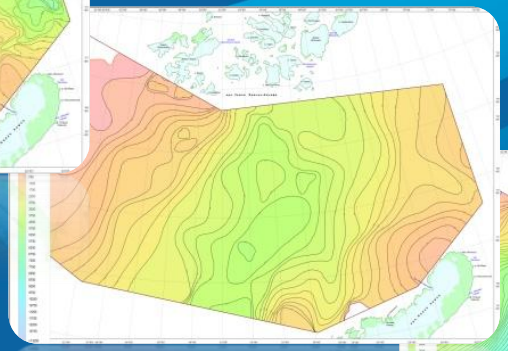
A THICKNESS MAP OF GEOSEISMIC SEQUENCES

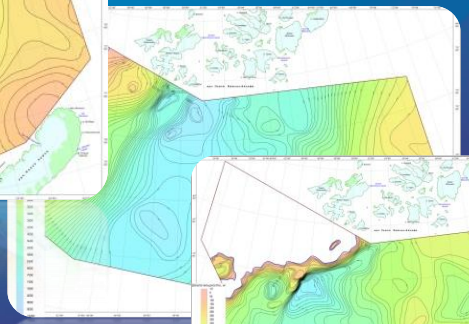


Late Devonian to Permian sequence

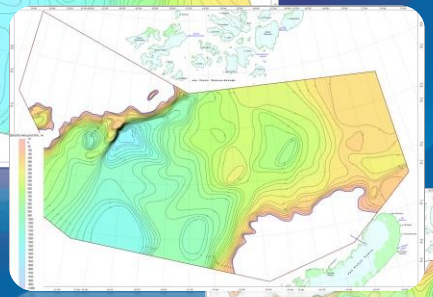


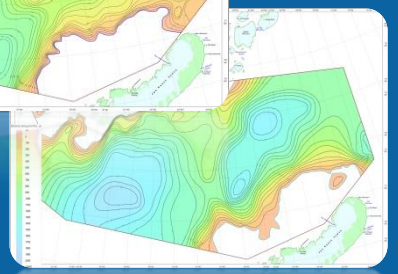
Triassic sequence





Jurassic sequence

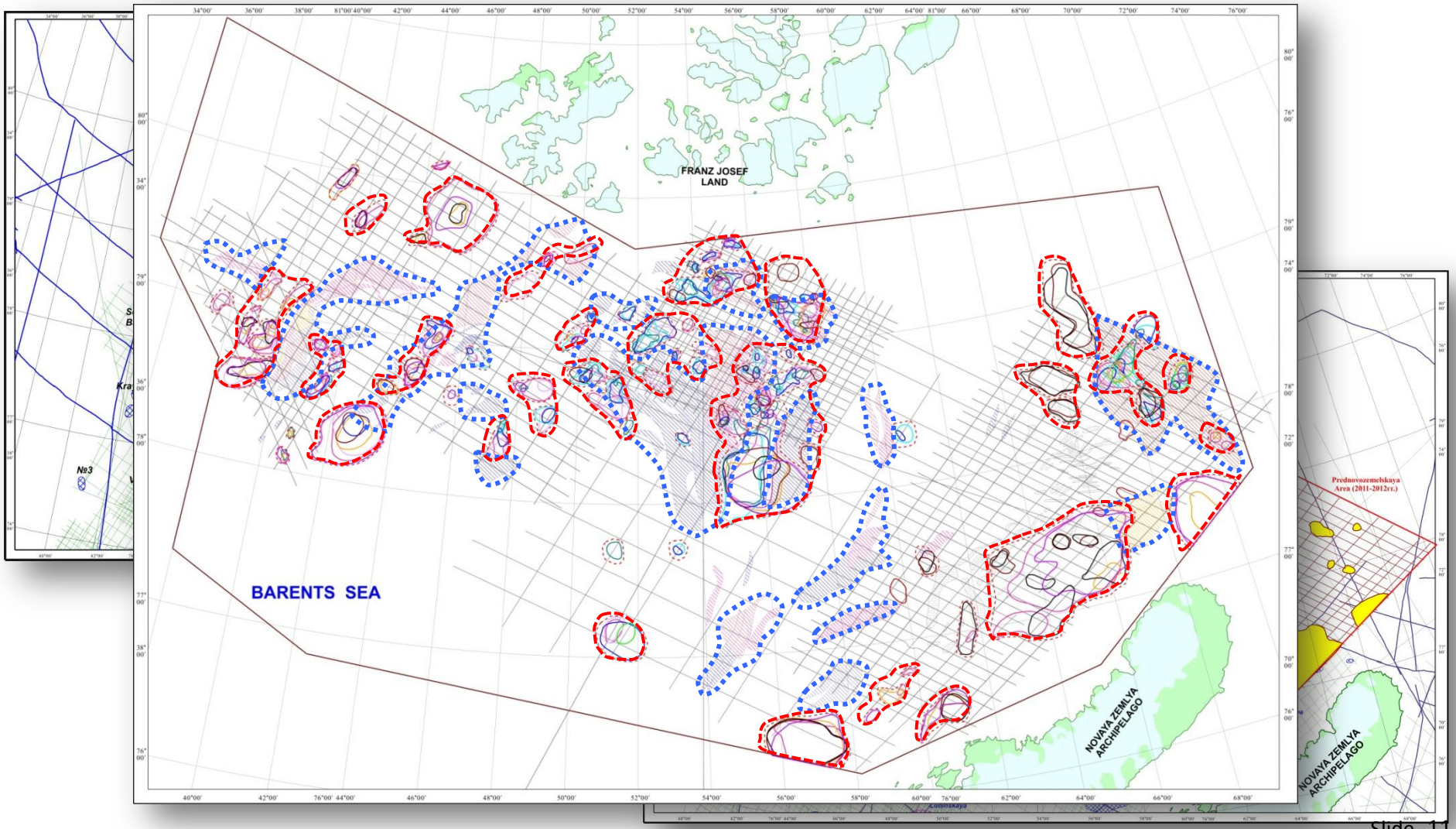




Cretaceous sequence

STRUCTURAL FACTORS OF HYDROCARBON POTENTIAL

Seventy-nine local anticline structures with a total area over 42,000 sq. km



Mid-late Devonian period:

The entire territory was an area exposed to denudation.

Late Devonian to Mid-Permian period:

North Barents syneclise – deepwater sedimentation;

Aleksandrovskaya uplift area – shallow carbonate sedimentation with a periodic erosion;

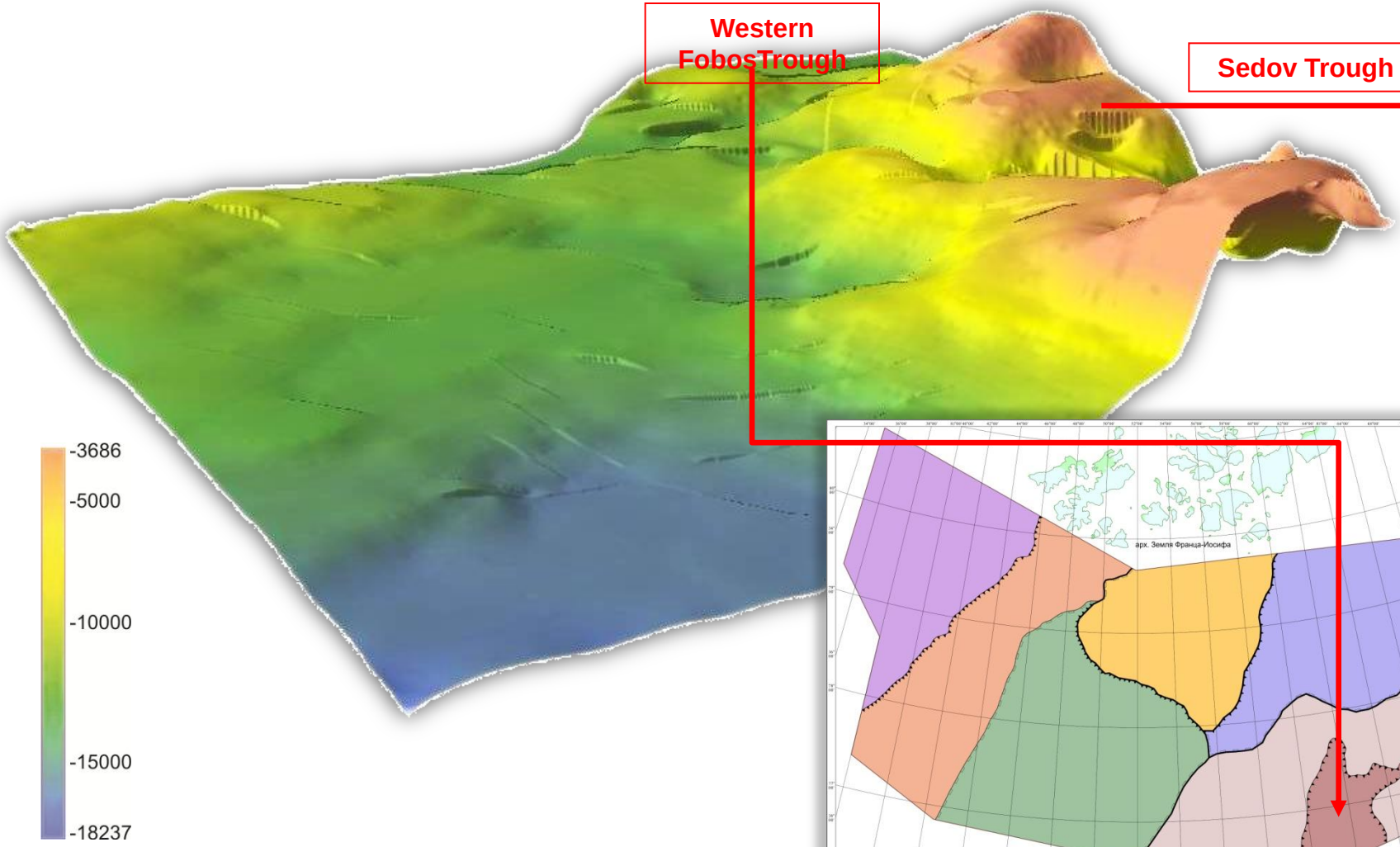
Prednovozemelskaya structural area – uncompensated sedimentation in the slope of the sedimentary basin.

Late Permian period:

North Barents syneclise and Aleksandrovskaya uplift area – terrigenous sedimentation;

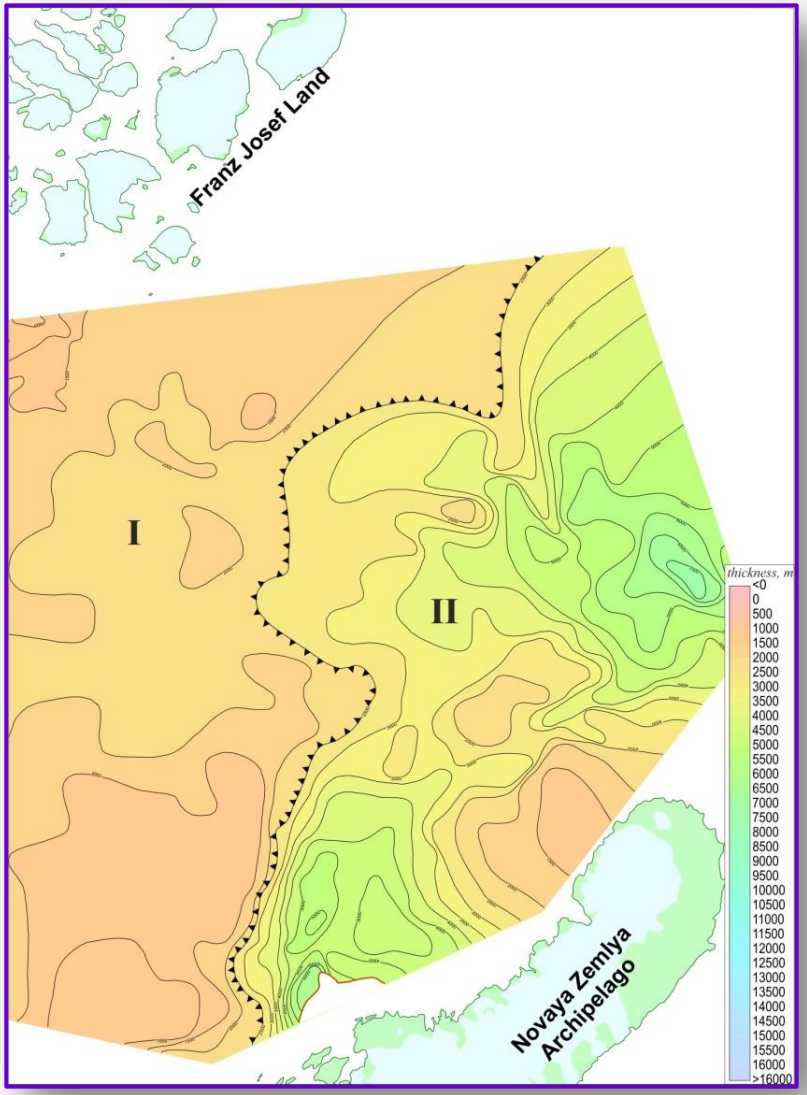
Prednovozemelskaya structural area – sedimentary material transit zone

An alluvial fan in the Western Fobos and the Sedov troughs

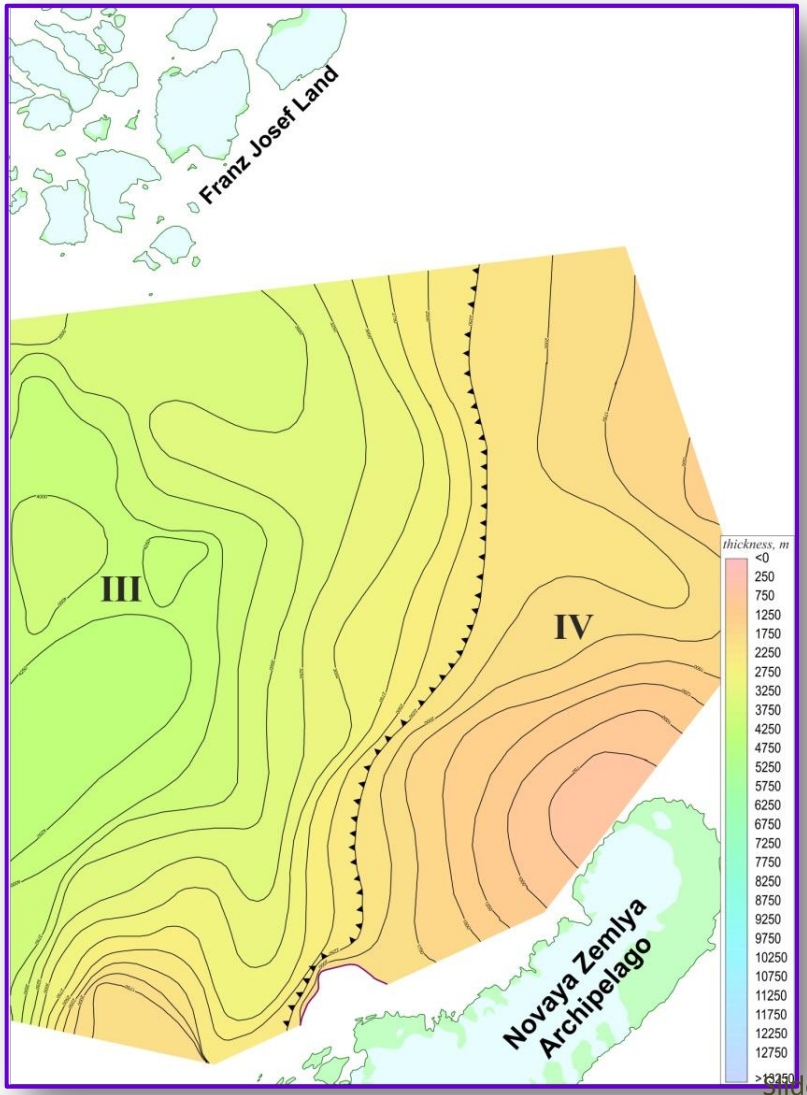


SEDIMENTATION CONDITIONS FOR HYDROCARBON POTENTIAL

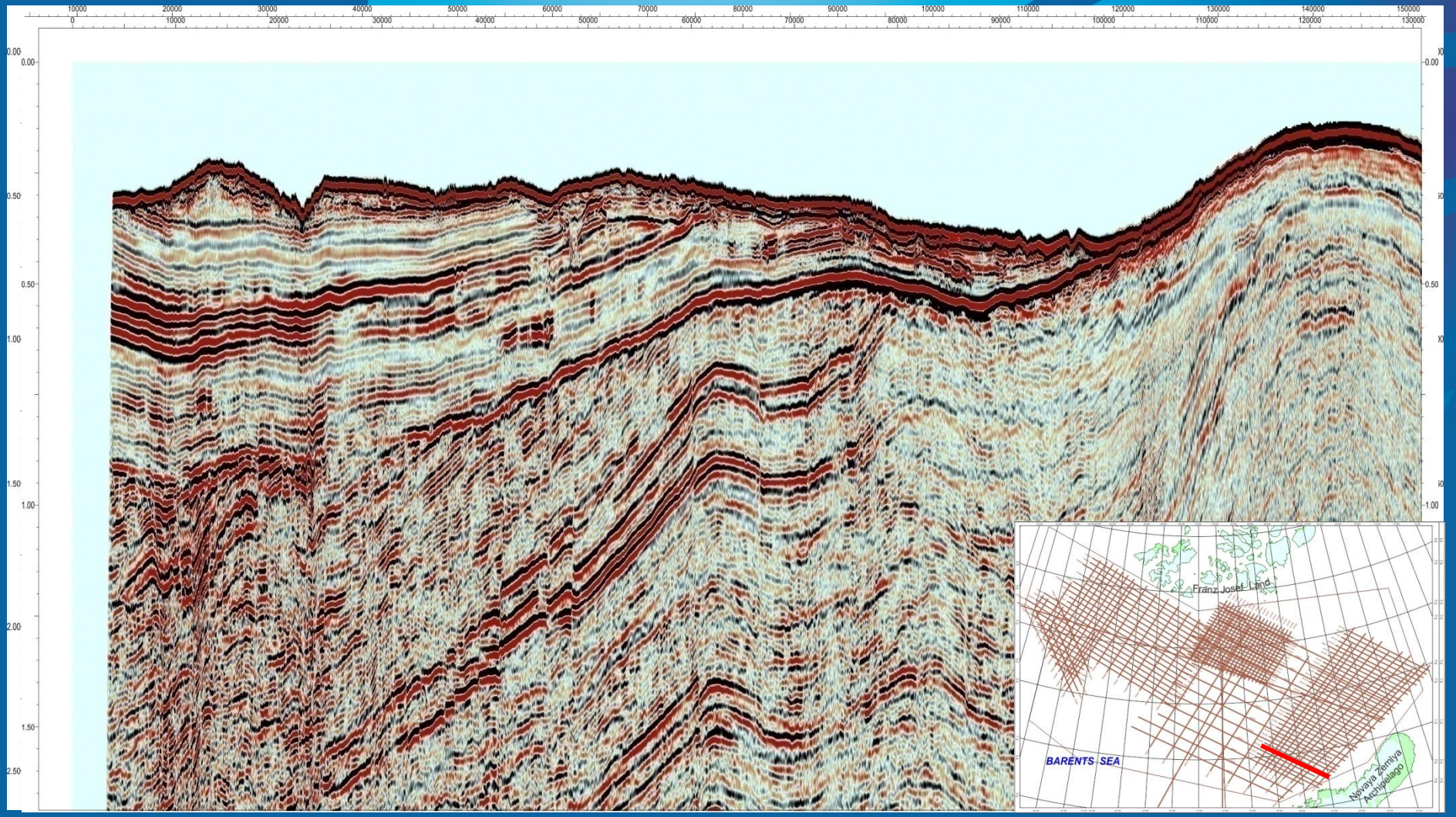
A thickness map of the Late Devonian to Carboniferous sedimentary strata (III2(D3) - Ia(C3-P3))



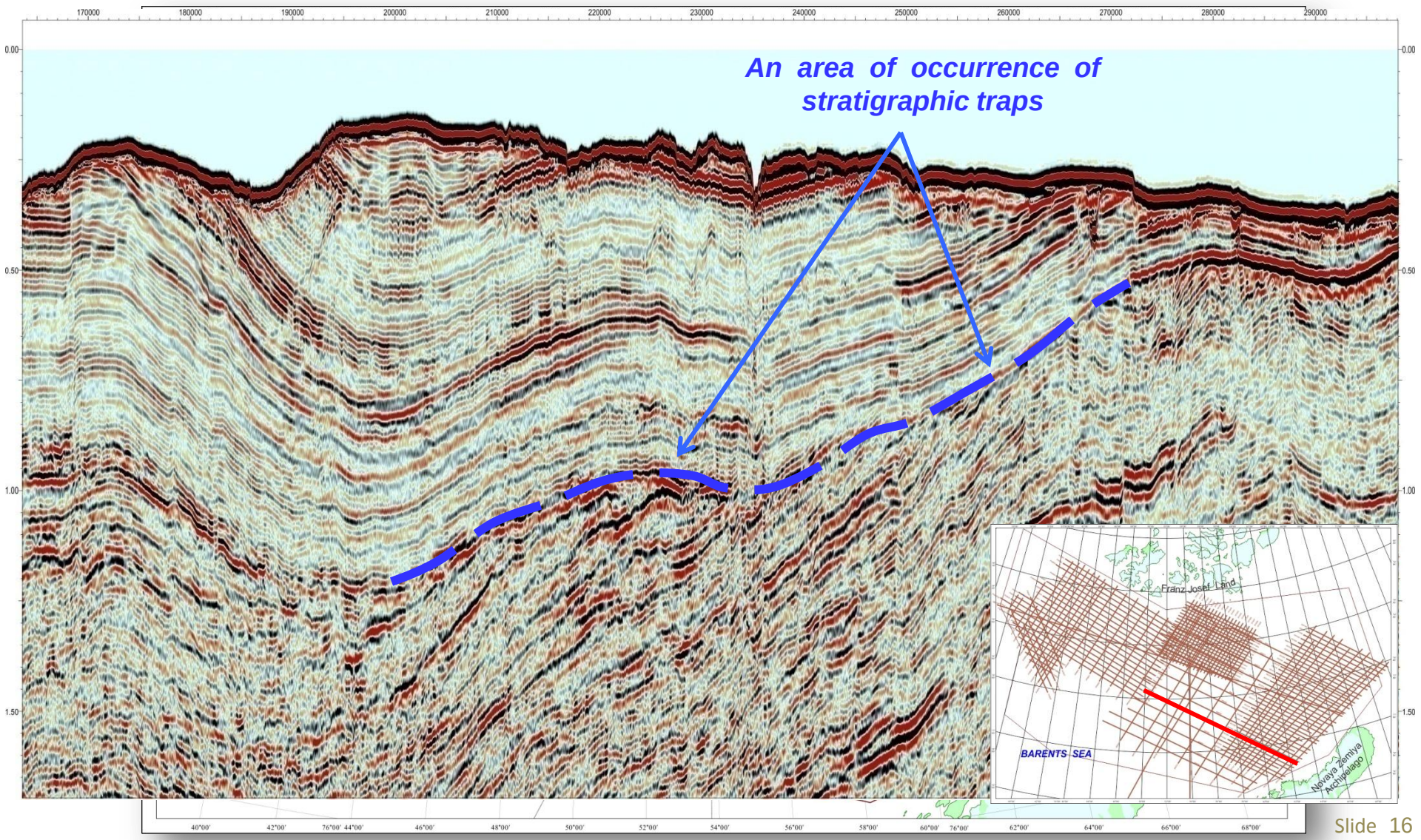
A thickness map of the Permian sedimentary strata (Ia(C3-P3) - A(P-T))



SEDIMENTATION



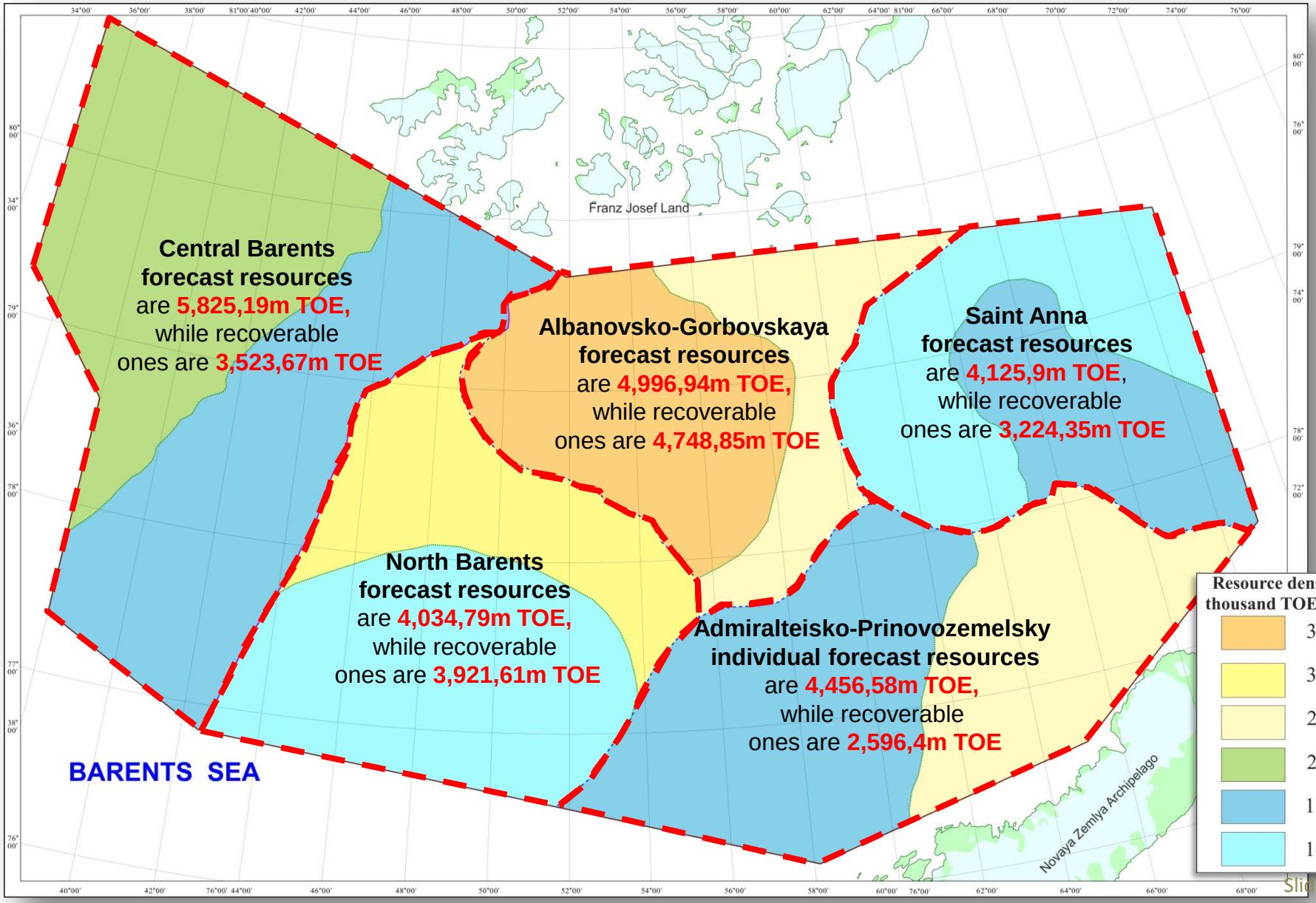
Areas of occurrence of non-structural traps



MAGE

Marine Arctic Geological Expedition

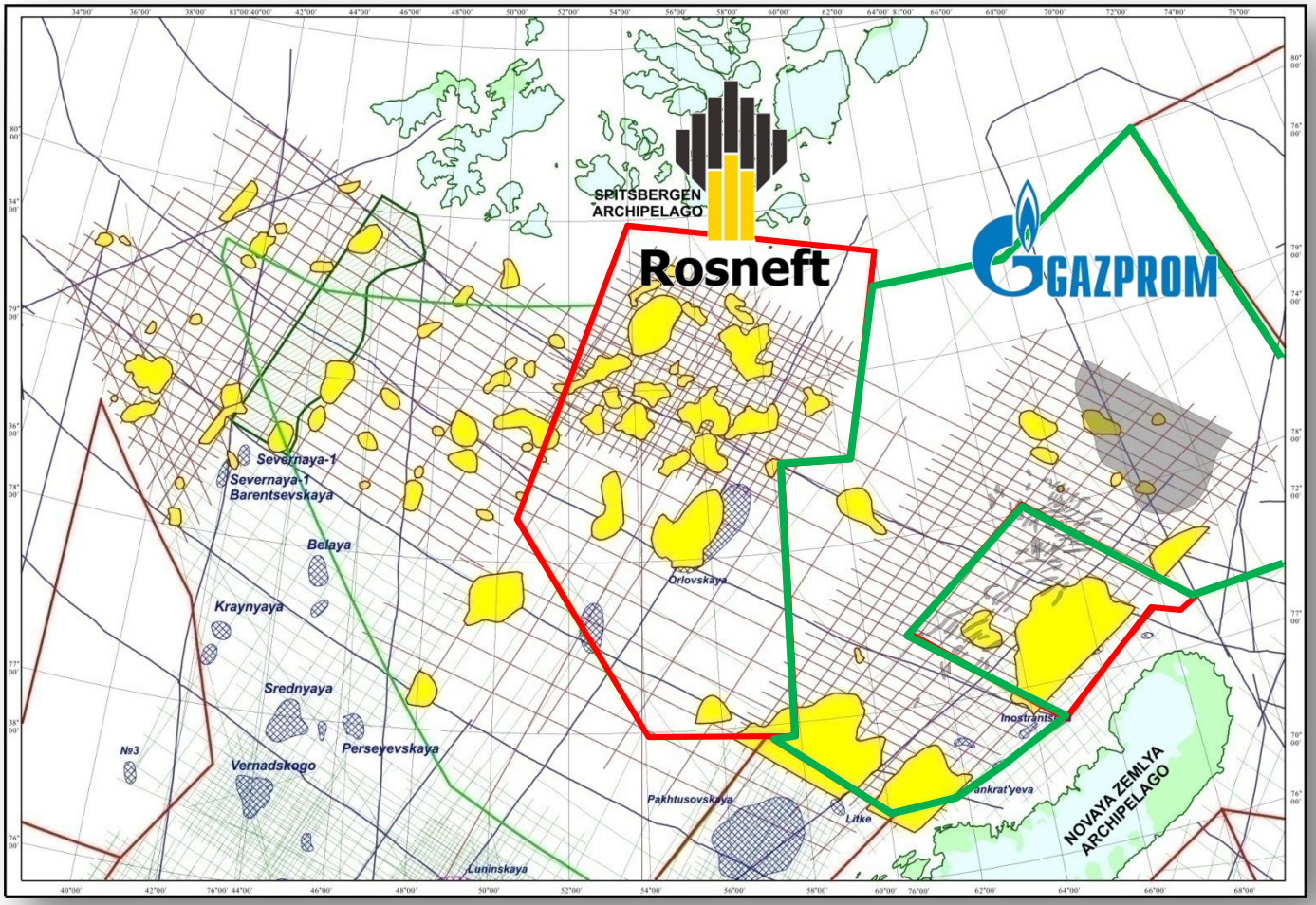
PETROLEUM GEOLOGICAL ZONING AND PREDICTION OF RESOURCE POTENTIAL



Currently, two subsoil users have three license blocks:

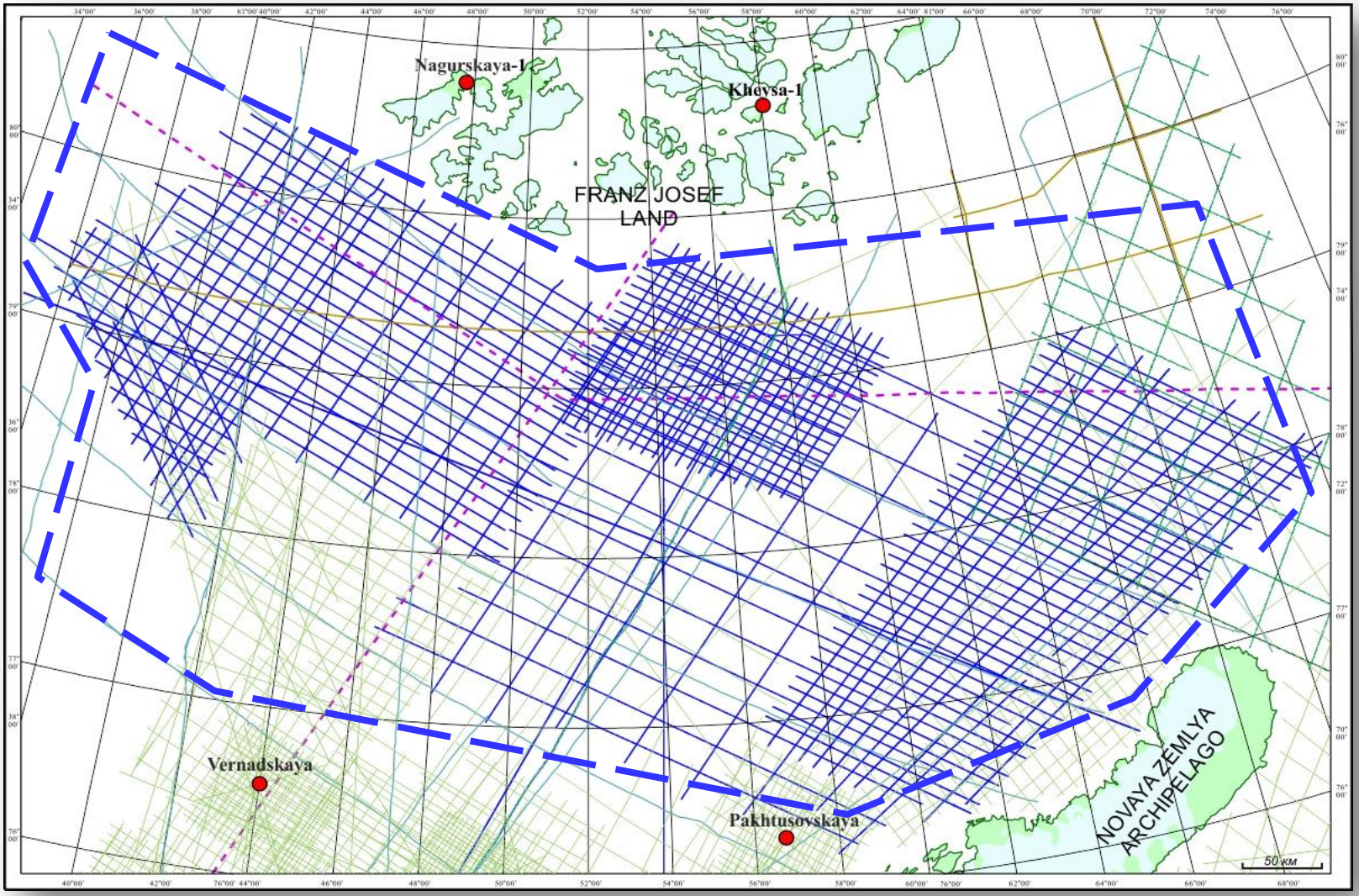
Rosneft – Varneksky and Albanovsky blocks

Gazprom – Kheysovsky block



CONCLUSION

A set of geological, economic, and operational factors lead to the conclusion that the Northern part of the Barents Sea is a new province with hydrocarbon potential



Thank you for your attention!