

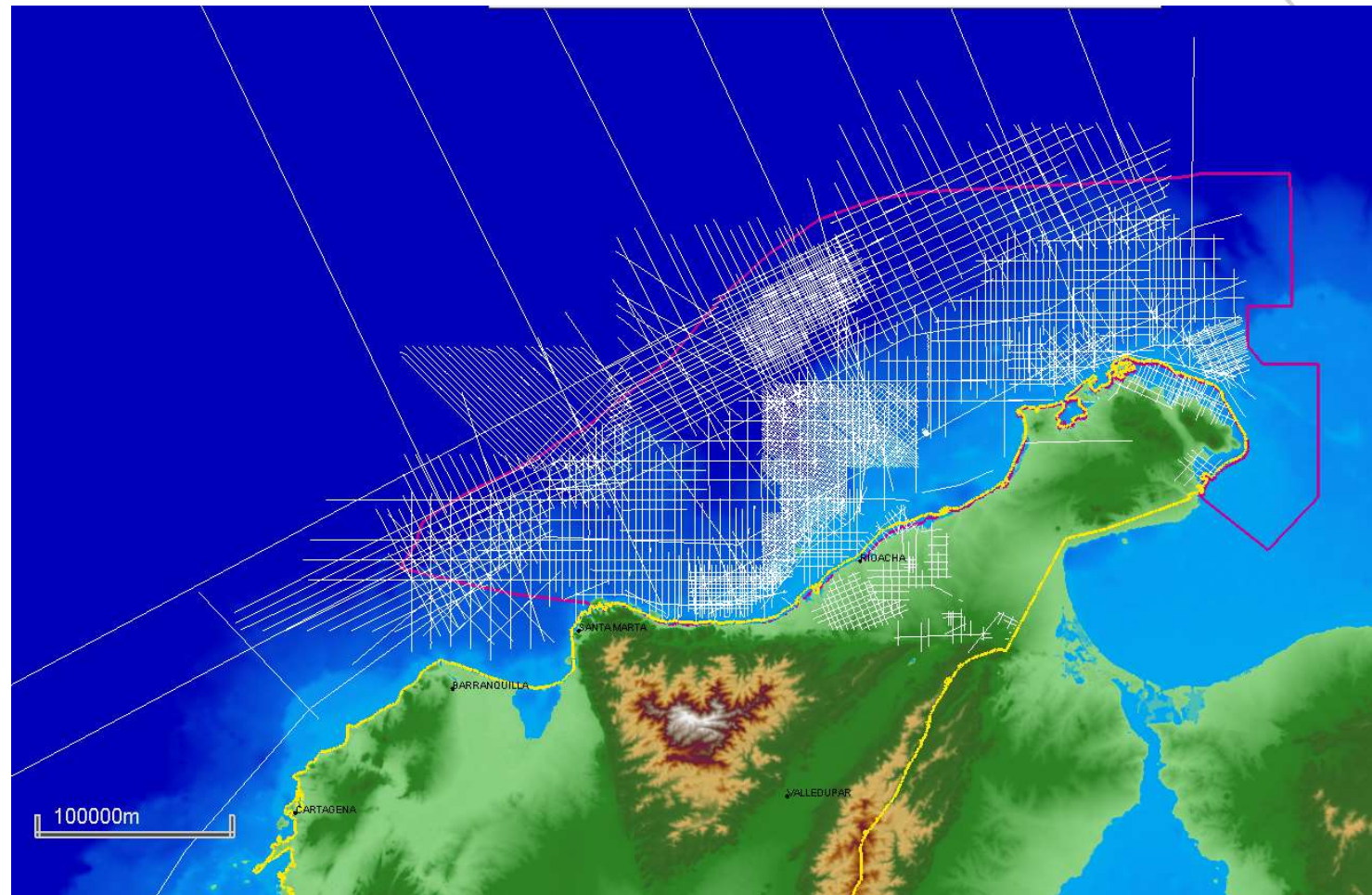
COLOMBIA ROUND 2021



GEOLOGICAL INTEGRATION, PETROLEUM SYSTEMS AND PROSPECTIVITY OF COLOMBIA'S FRONTIER BASINS:

GUAJIRA OFFSHORE BASINS

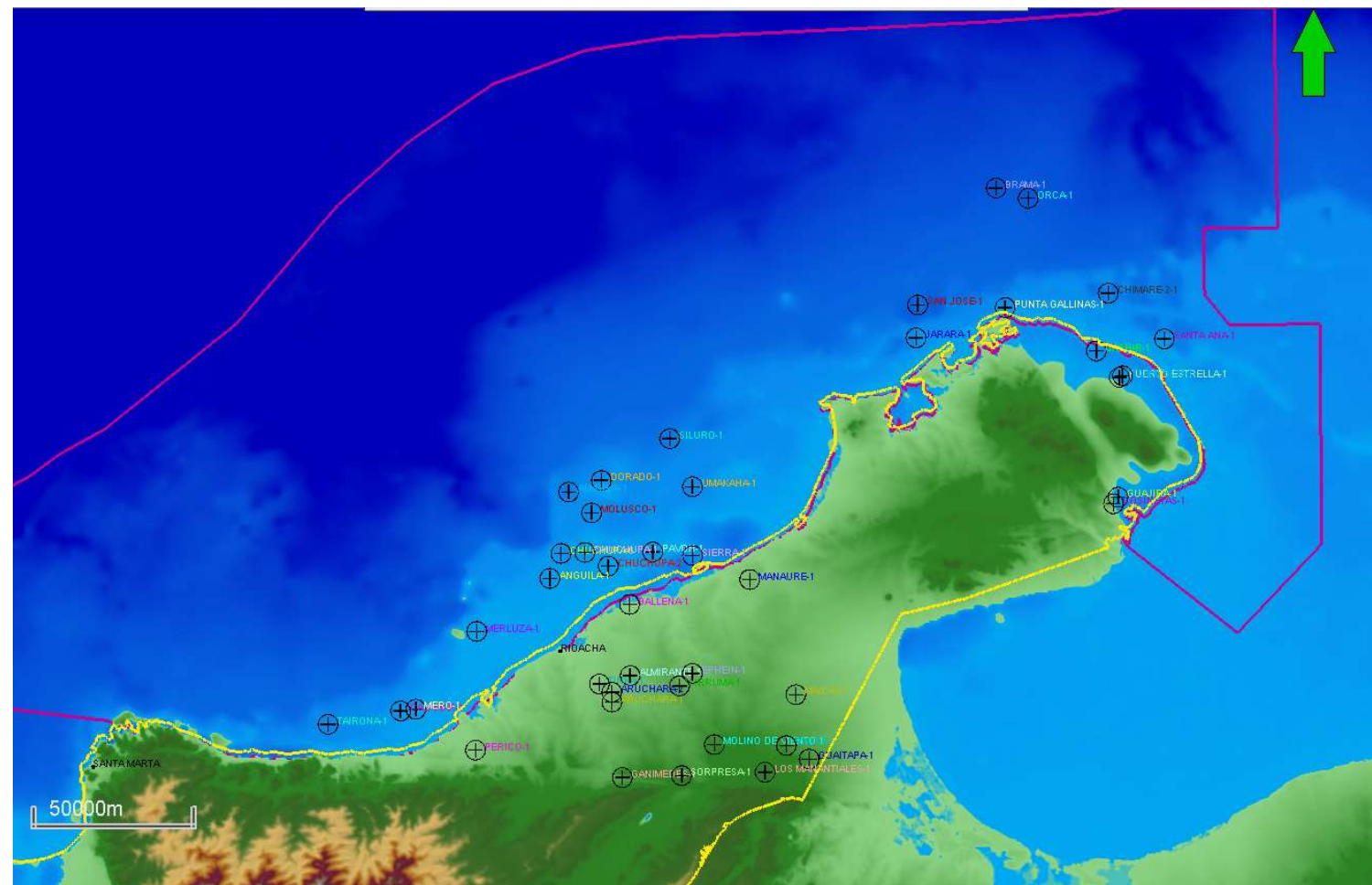
JULY 2021



DATA BASE

**44.534 km 2D
SEISMIC**

42 WELLS



DATA BASE

**44.534 km 2D
SEISMIC**

42 WELLS

FINDINGS

- 3 tectono-stratigraphic provinces were identified
- The study area displays a complex tectonic history associated with the relative movement between the Caribbean and South American plates. No evidence of subduction processes were identified.
- Multiple overlapped basement generation processes have been identified, which affect and control the sedimentary sequence evolution.
- Cretaceous and Eocene sequences has been identified locally in the basin.

FINDINGS

- Depocenters generated by differential tectonic activity control stratigraphic changes and distribution of reservoirs, source rocks and traps.
- The presence of hydrocarbon shows in most wells suggests active migration processes.
- Good reservoir intervals are present throughout the basin in different sequences. Oligocene and Lower Miocene are the best exploration targets.
- **Both stratigraphic and structural traps were identified throughout the basin, showing unexplored potential.**

FINDINGS

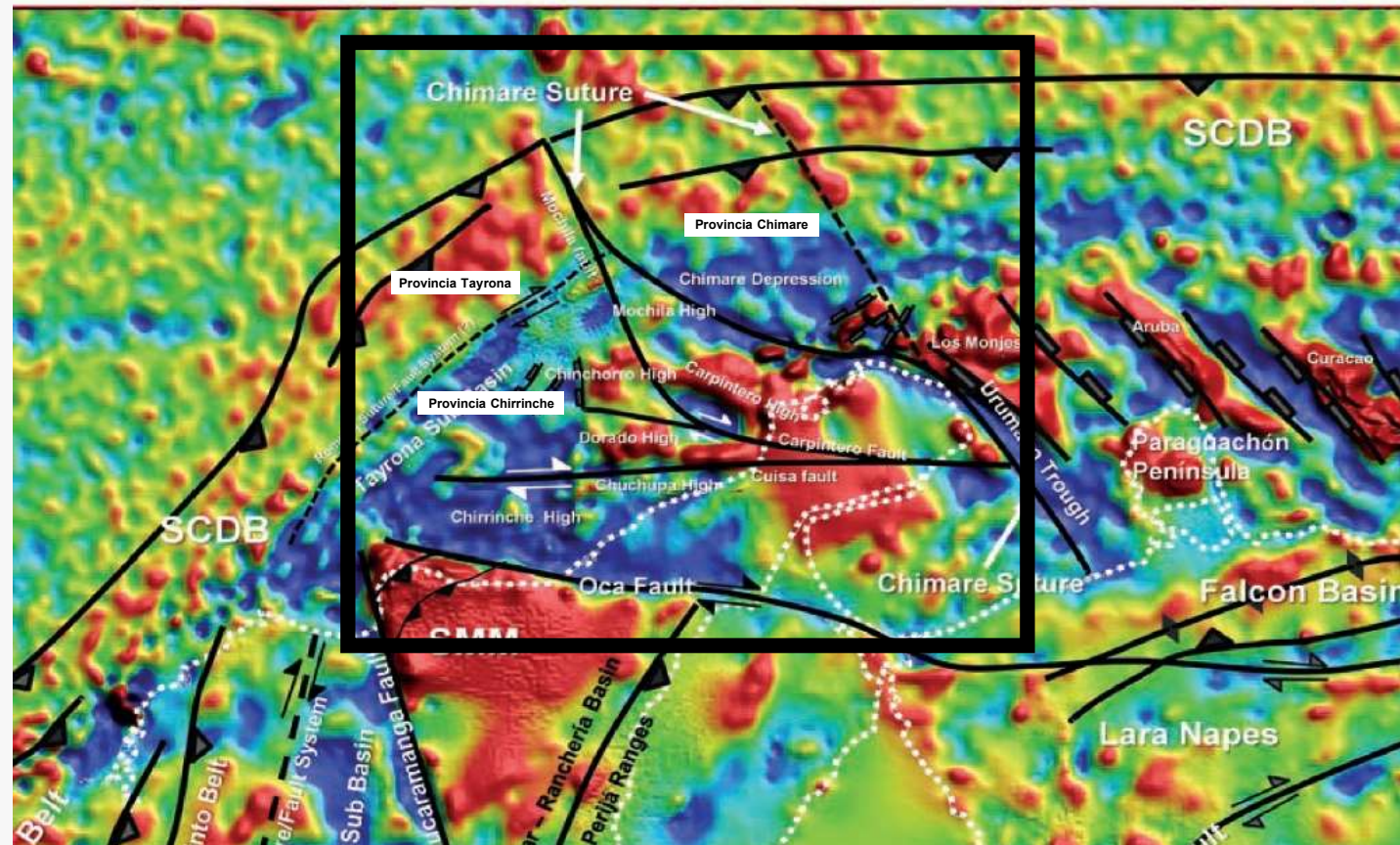
- The North-easternmost Onshore Guajira is connected with the Gulf of Venezuela depocenter that contains prolific Cretaceous Source Rocks.
- The petroleum system modeling indicates that the Cretaceous source rocks reached hydrocarbon generation and expulsion in the Guajira Offshore basin.
- The petroleum system modeling results explain the hydrocarbons found in the basin and the thermogenic hydrocarbon manifestations reported in different piston core and indicate that there is a higher probability of finding liquid hydrocarbons north of the Guajira Offshore basin, associated with the Chimare and Urumaco depocenters

Guajira Study Area

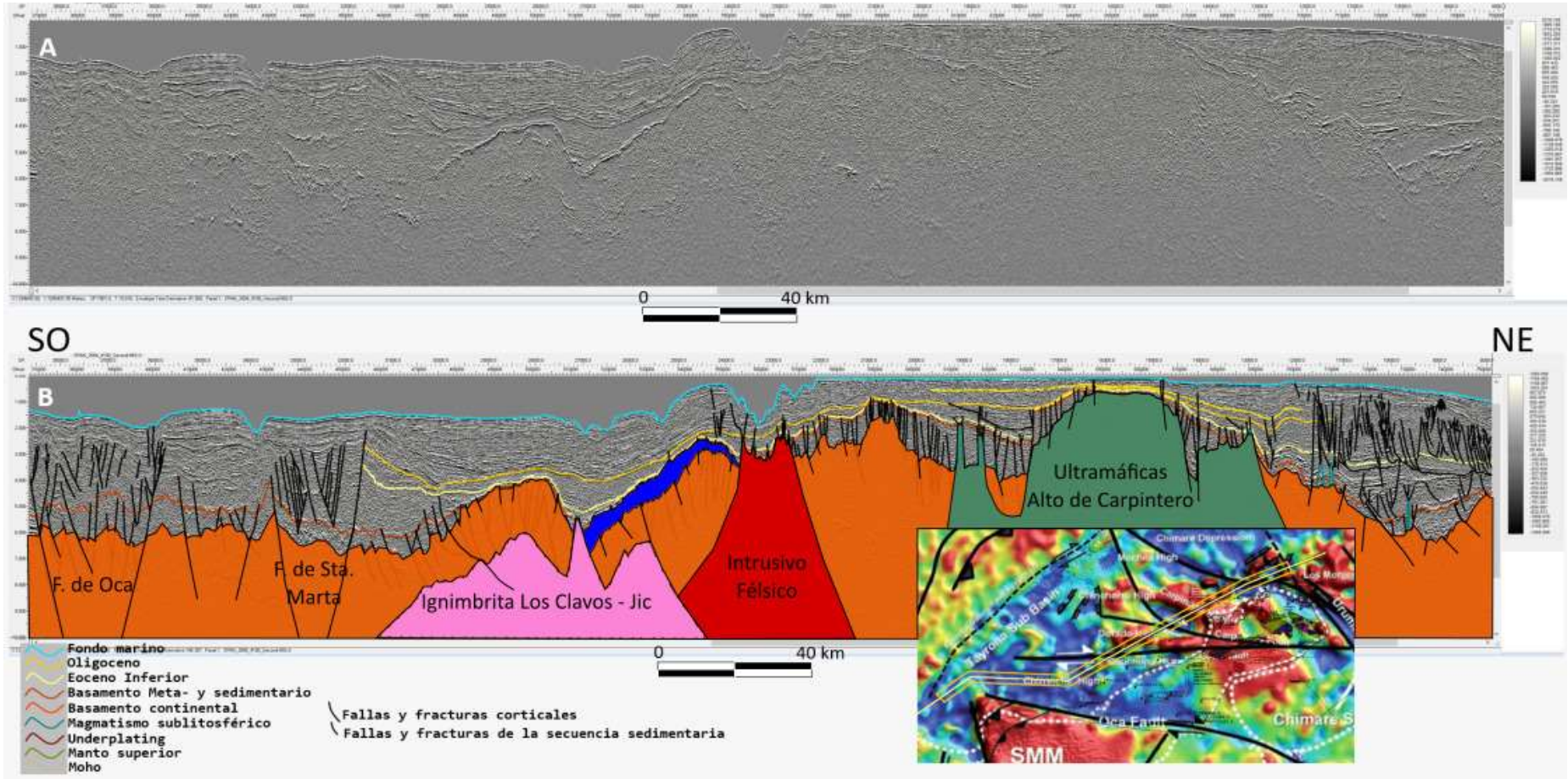
Tectono-Stratigraphic Provinces

Bouguer Free
Air Gravimetry

Londoño et al.
2015



Tectono Stratigraphic Provinces



WSW

ENE

energía

9193.0

13193.0

17193.0

21193.0

25193.0

29193.0

GUA - 2014 - 024P1-030 pstm

3000
3500
4000
4500
5000
5500
6000
6500
7000
7500
8000

Chimare Fault

Tairona Province

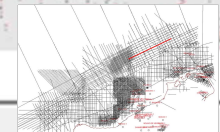
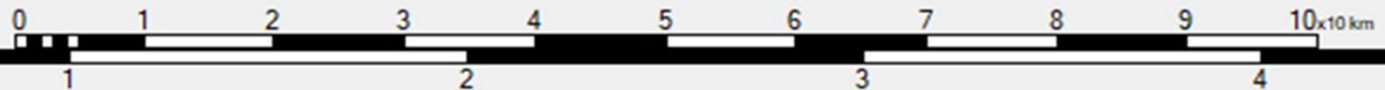
Chimare Province

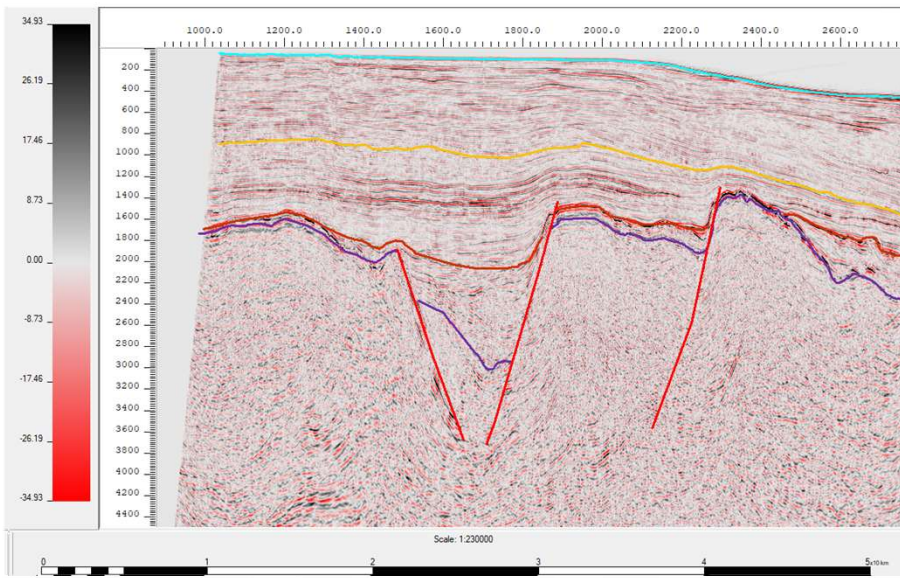
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Shift 0

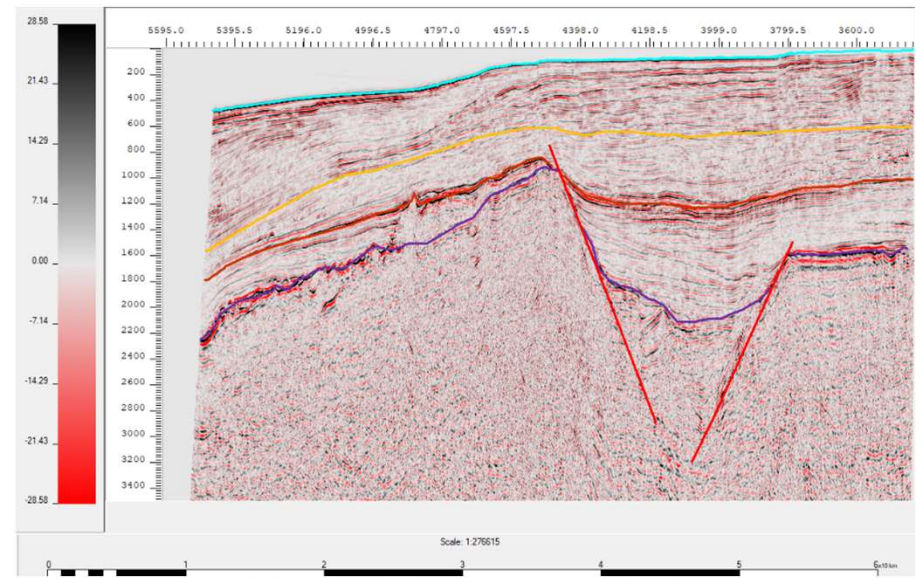
Polarity +

Scale: 1:537279

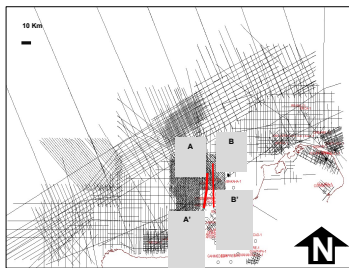




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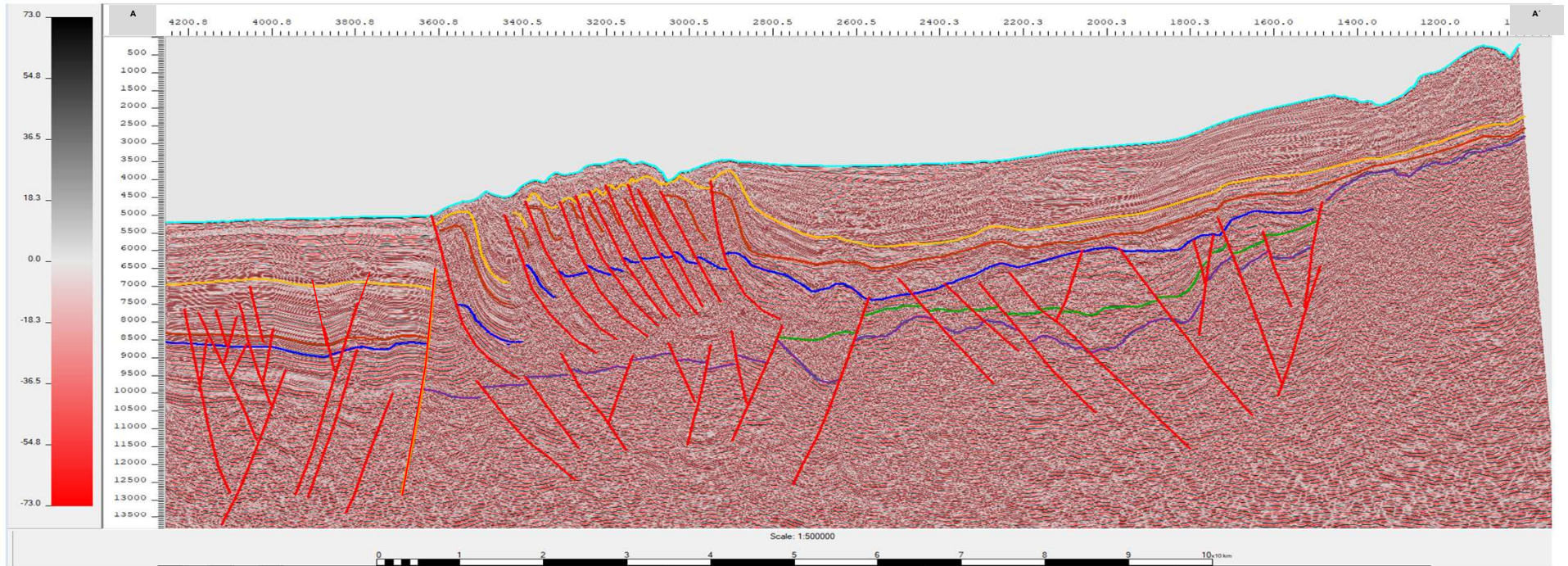


- S. 1 Pleistoceno
- S. 3 Mioceno Sup.
- S. 5 Mioceno Medio
- S. 7 Mioceno Inferior
- S. 11 Cretácico
- Basamento
- Corteza Oceánica

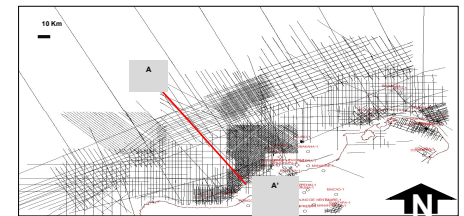
CHIRRINCHE PROVINCE



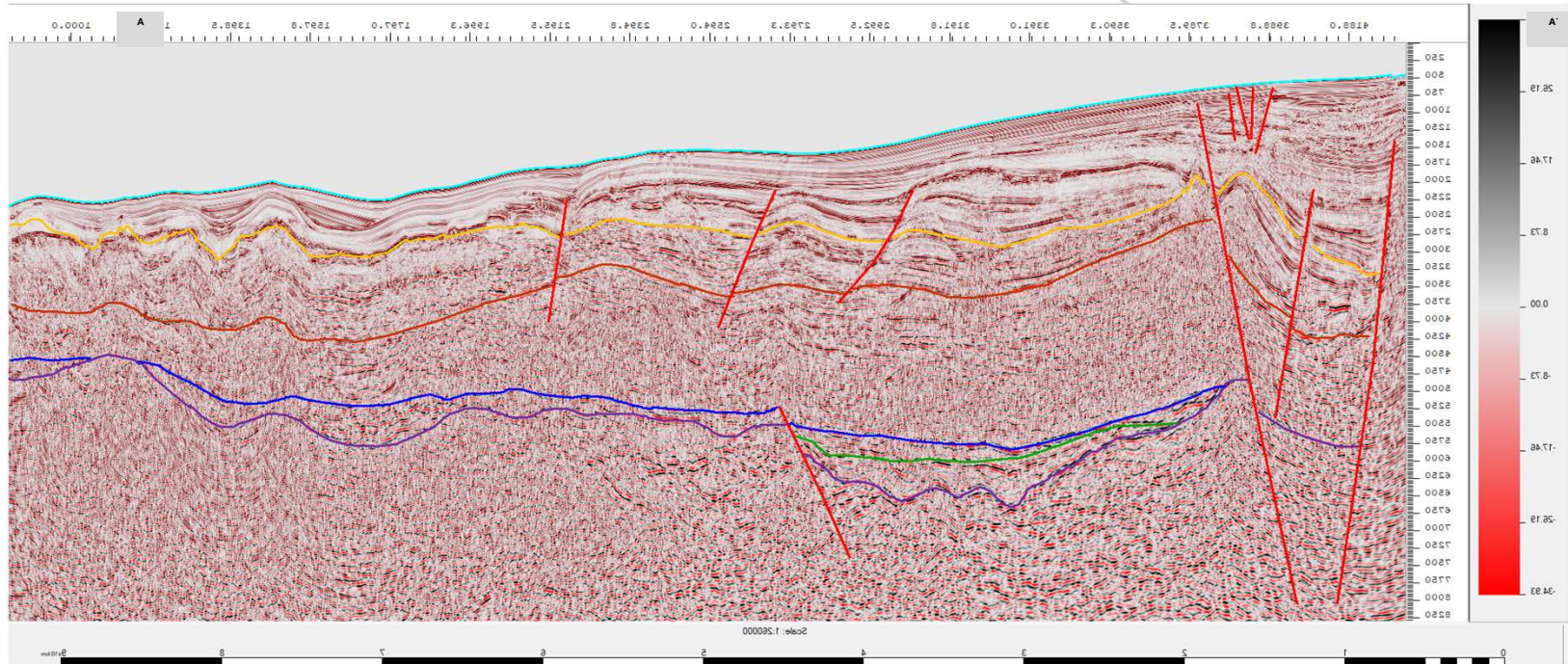
Chirrinche province



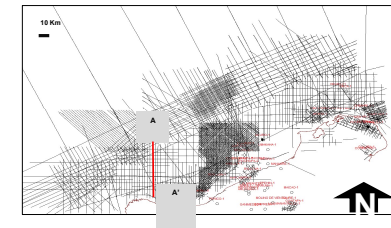
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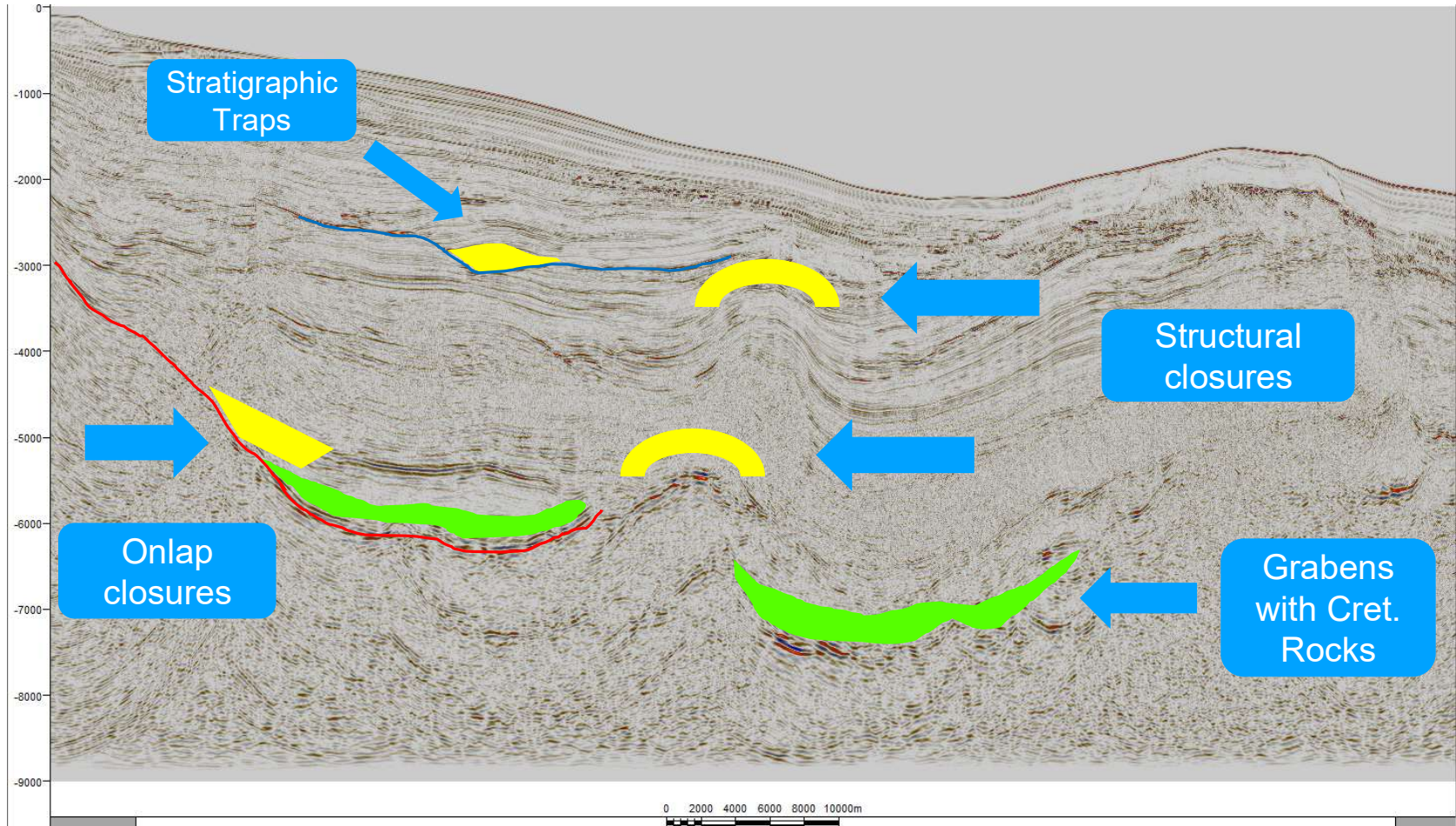
Chirrinche province



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Chirrinche province



STRUCTURAL TRAPS

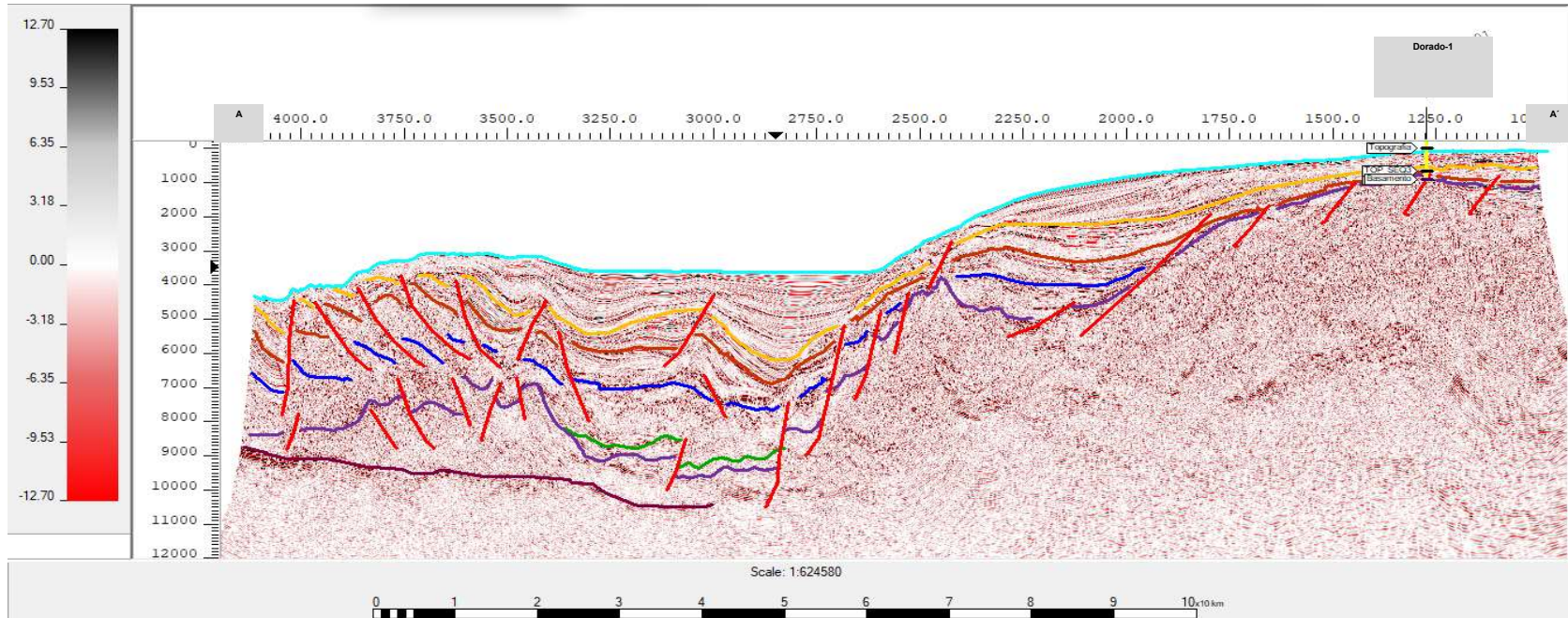
Anticlines Associated with Imbricated Fault System



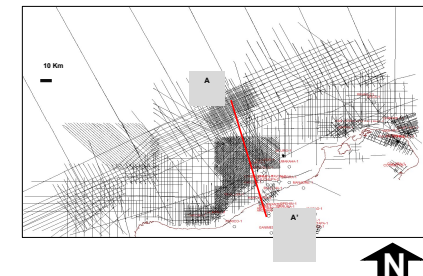
TAIRONA PROVINCE



Tayrona province

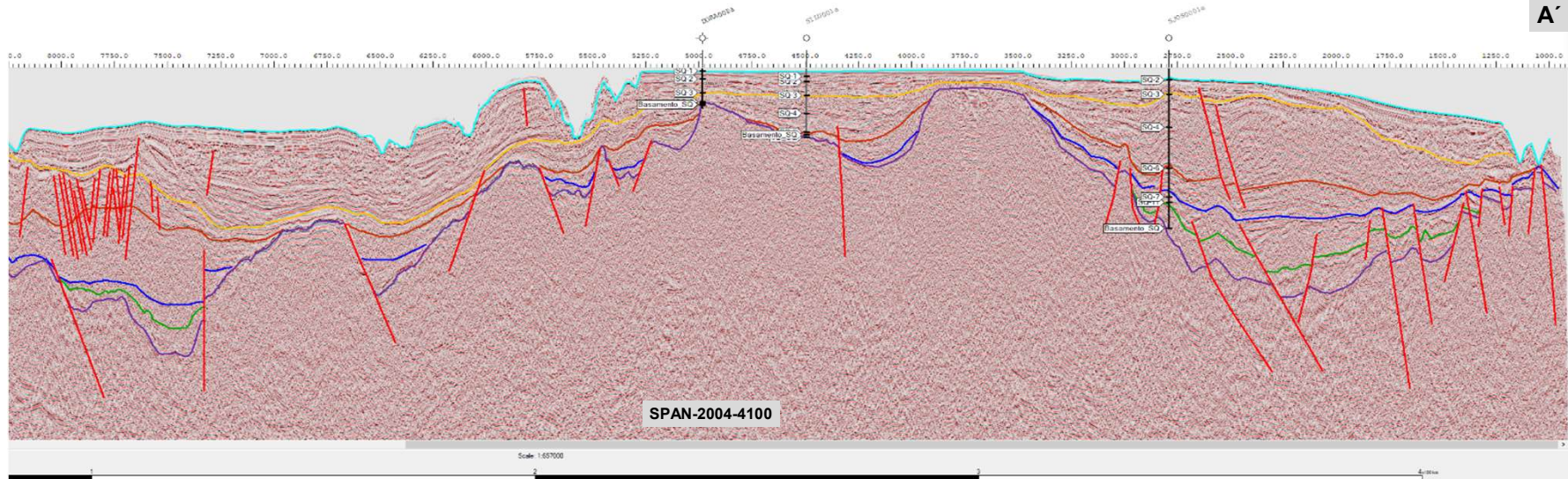


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- Basamento
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Tayrona province

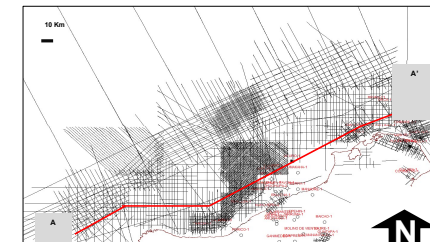
A



A'

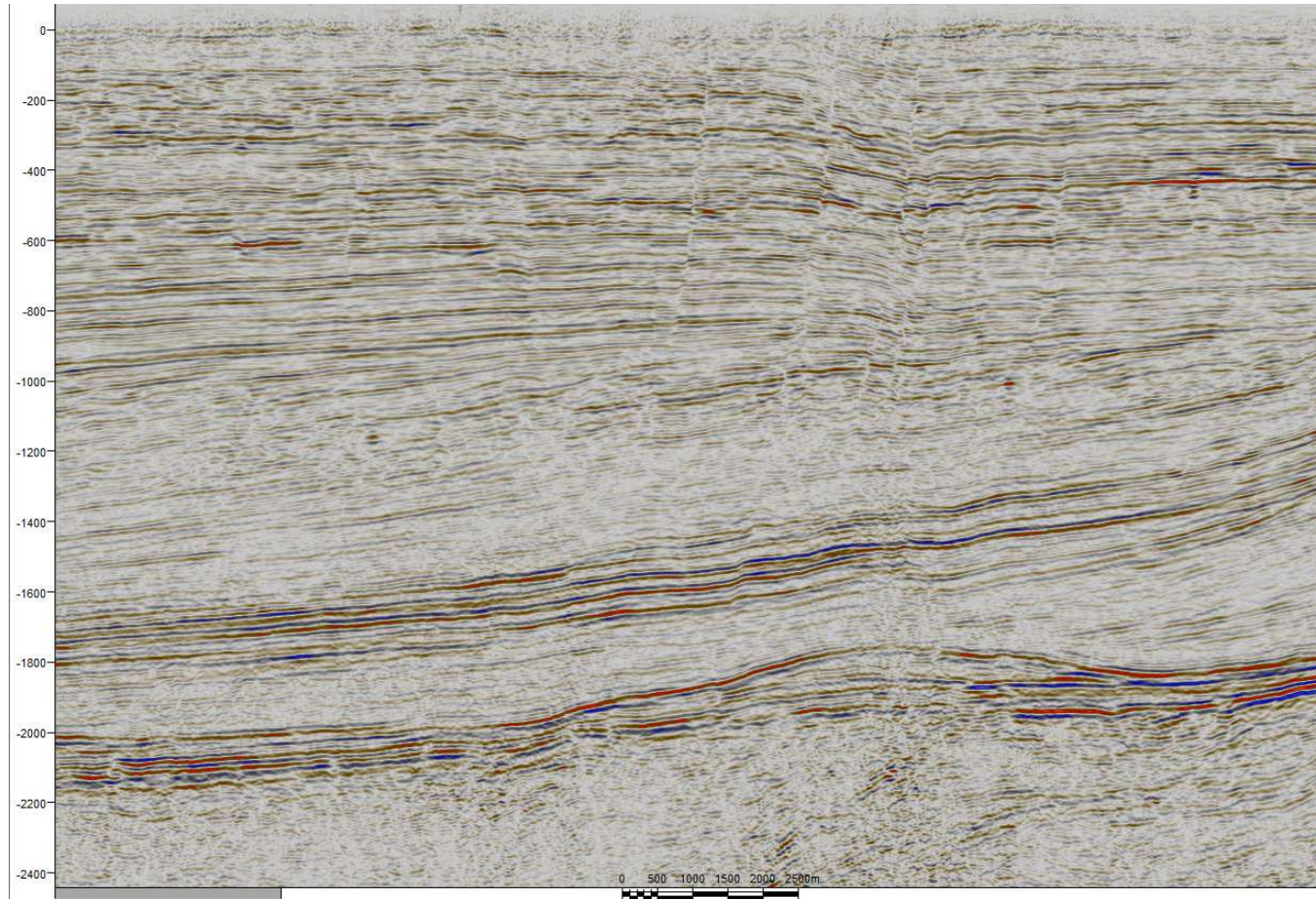
- S. 1 Pleistoceno
- S. 3 Mioceno Sup.
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- S. 7 Mioceno Inferior
- S. 11 Cretácico
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- Corteza Oceánica

100 km

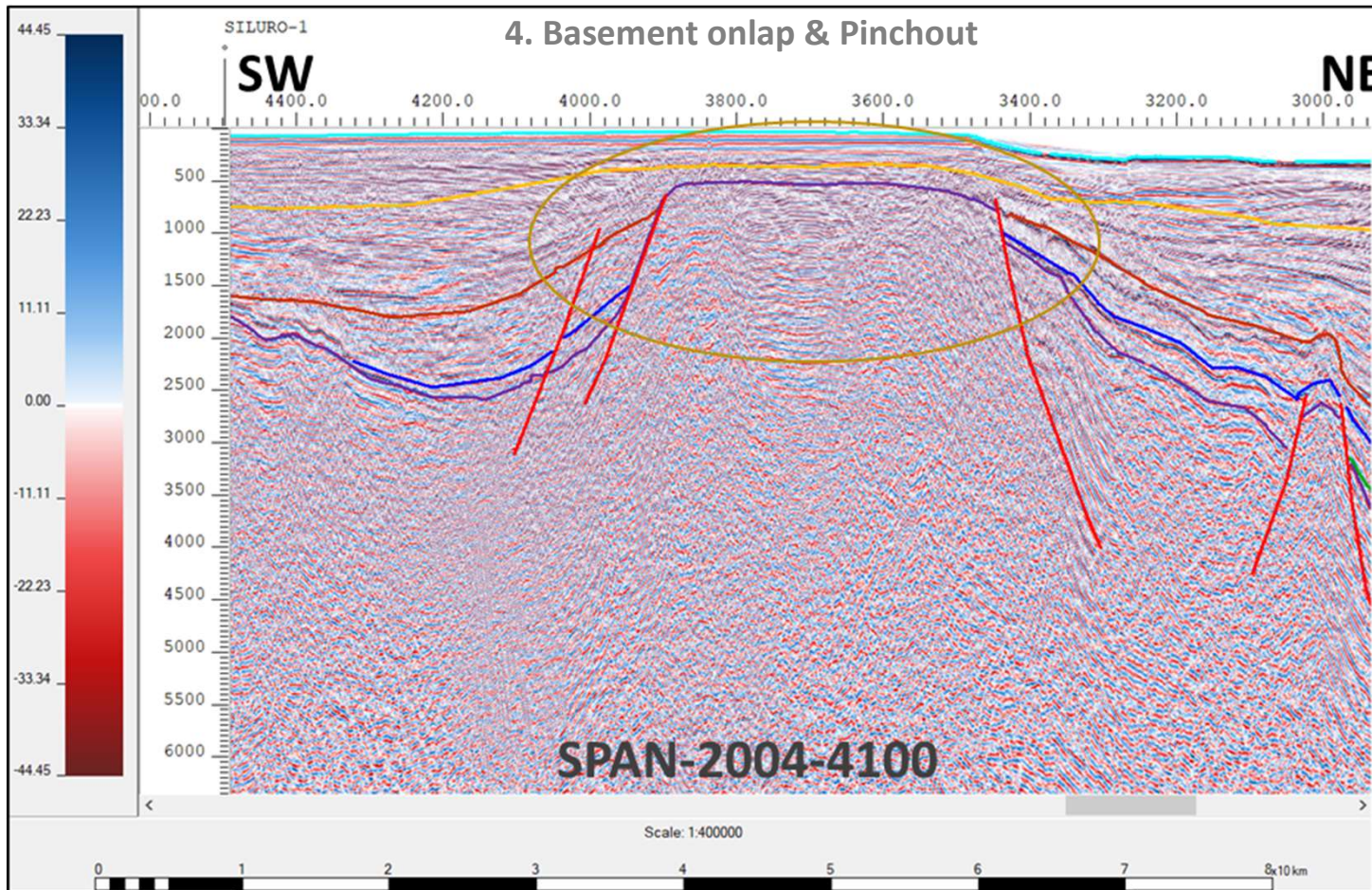


Stratigraphic Traps

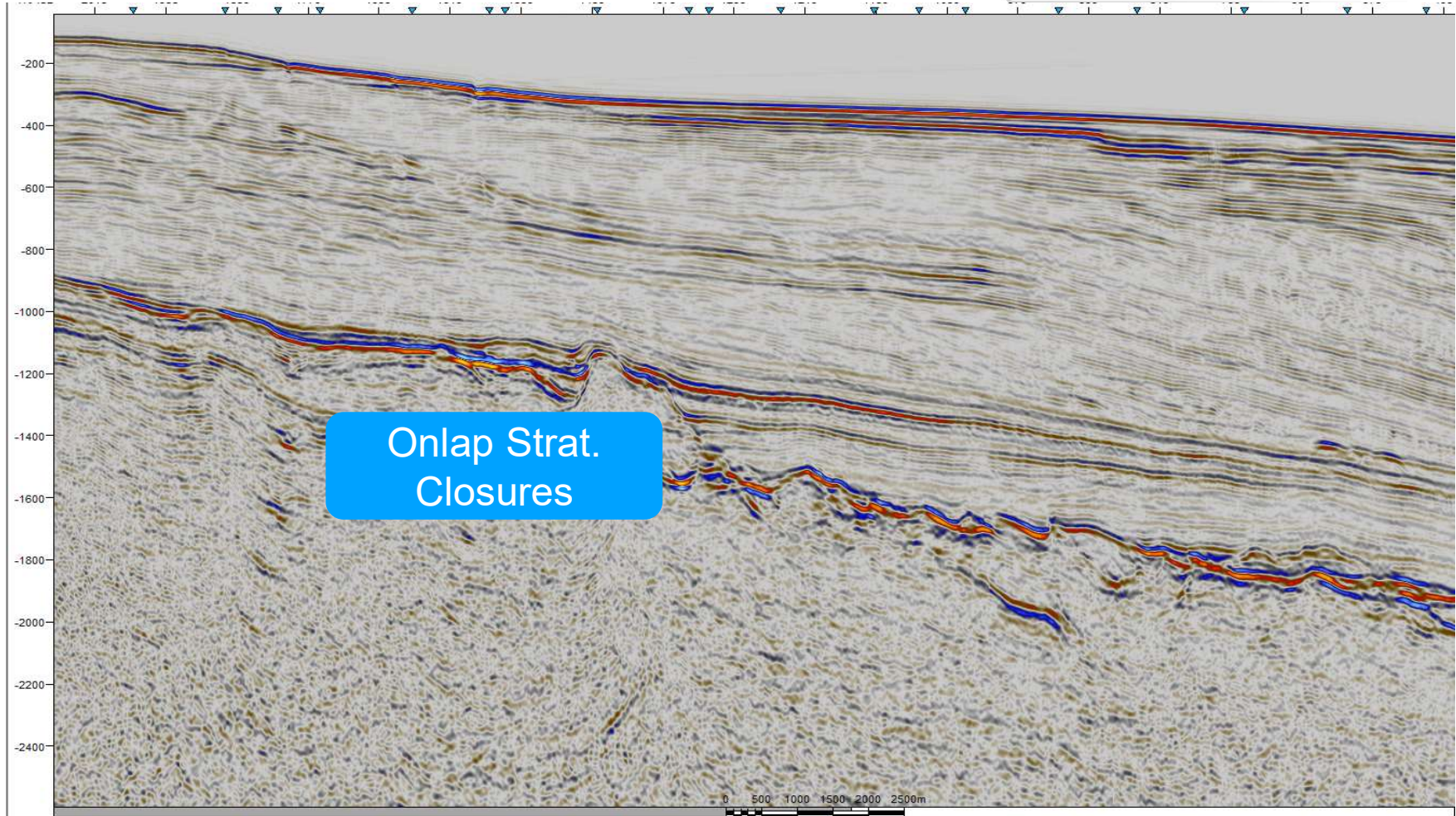
Miocene Carbonate Buildups



Stratigraphic Traps



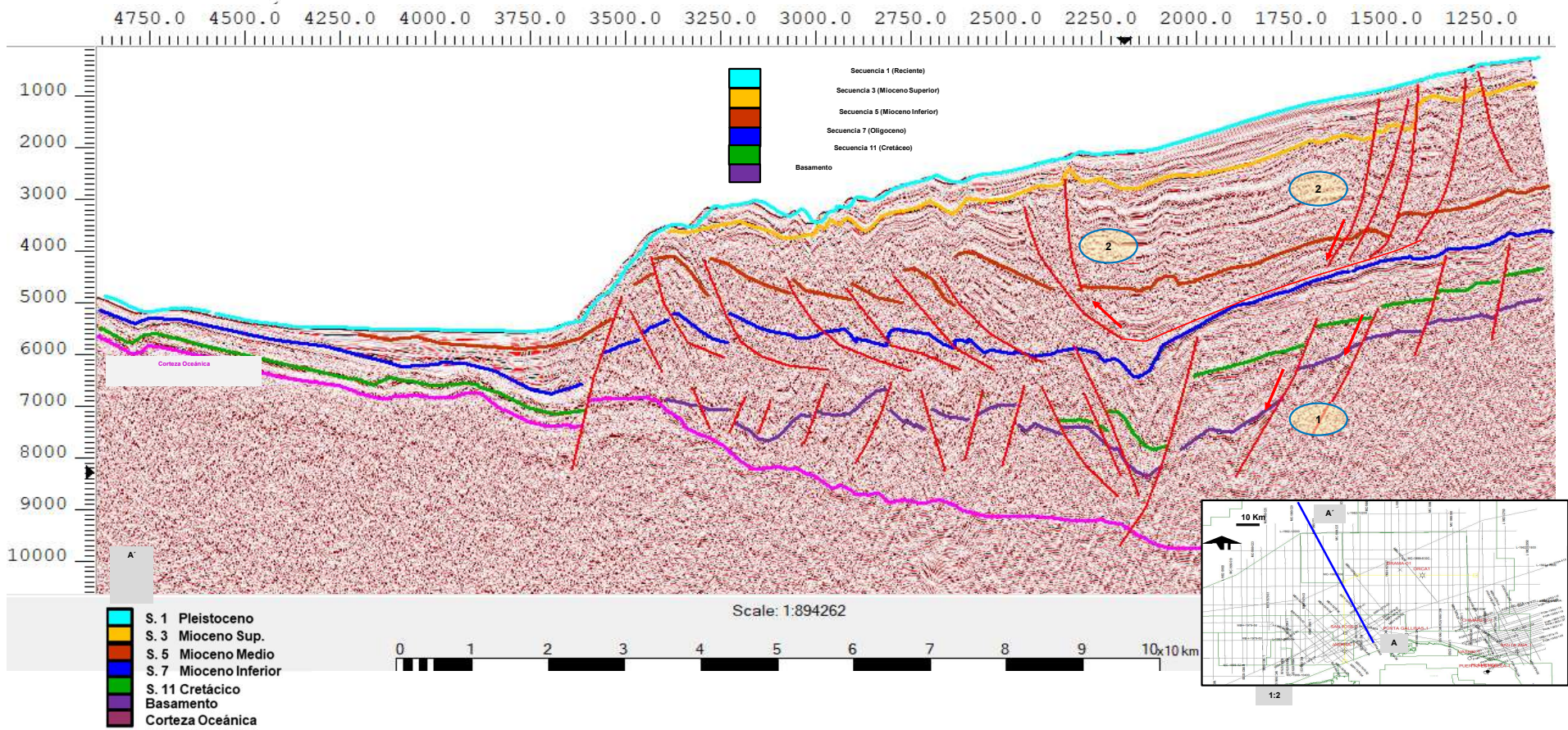
Tayrona province



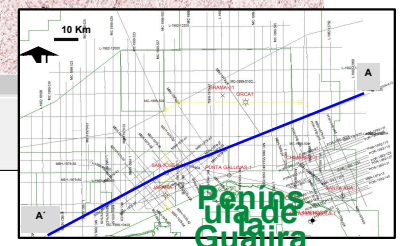
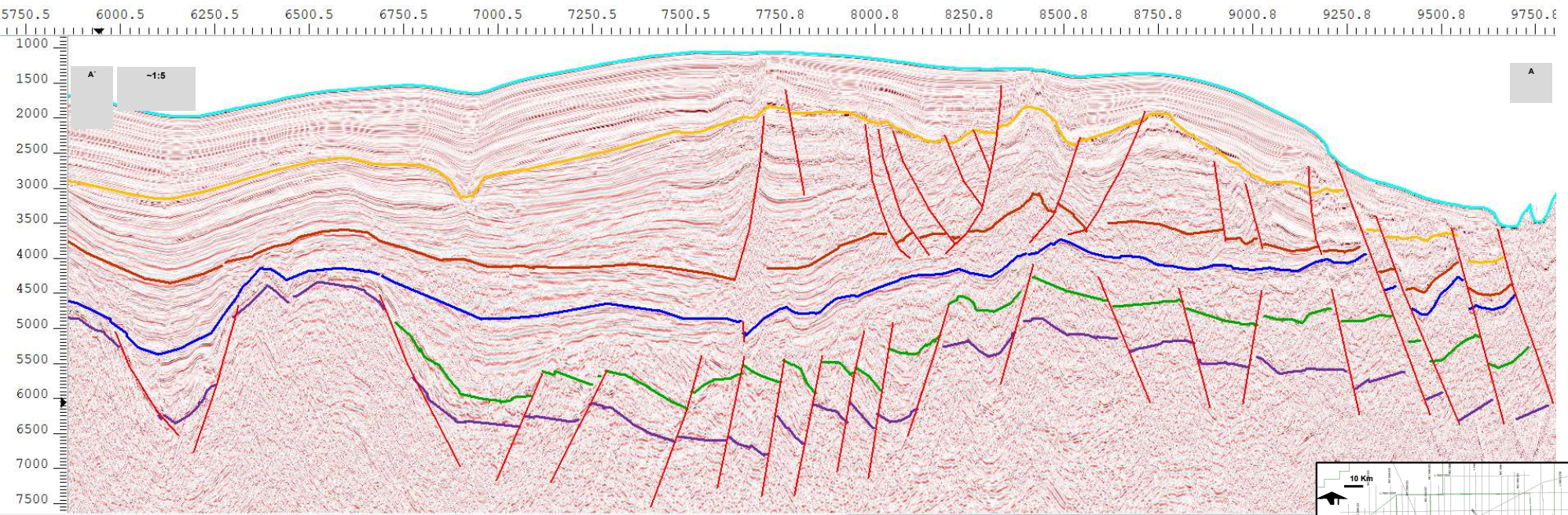
CHIMARE PROVINCE



Chimare Province

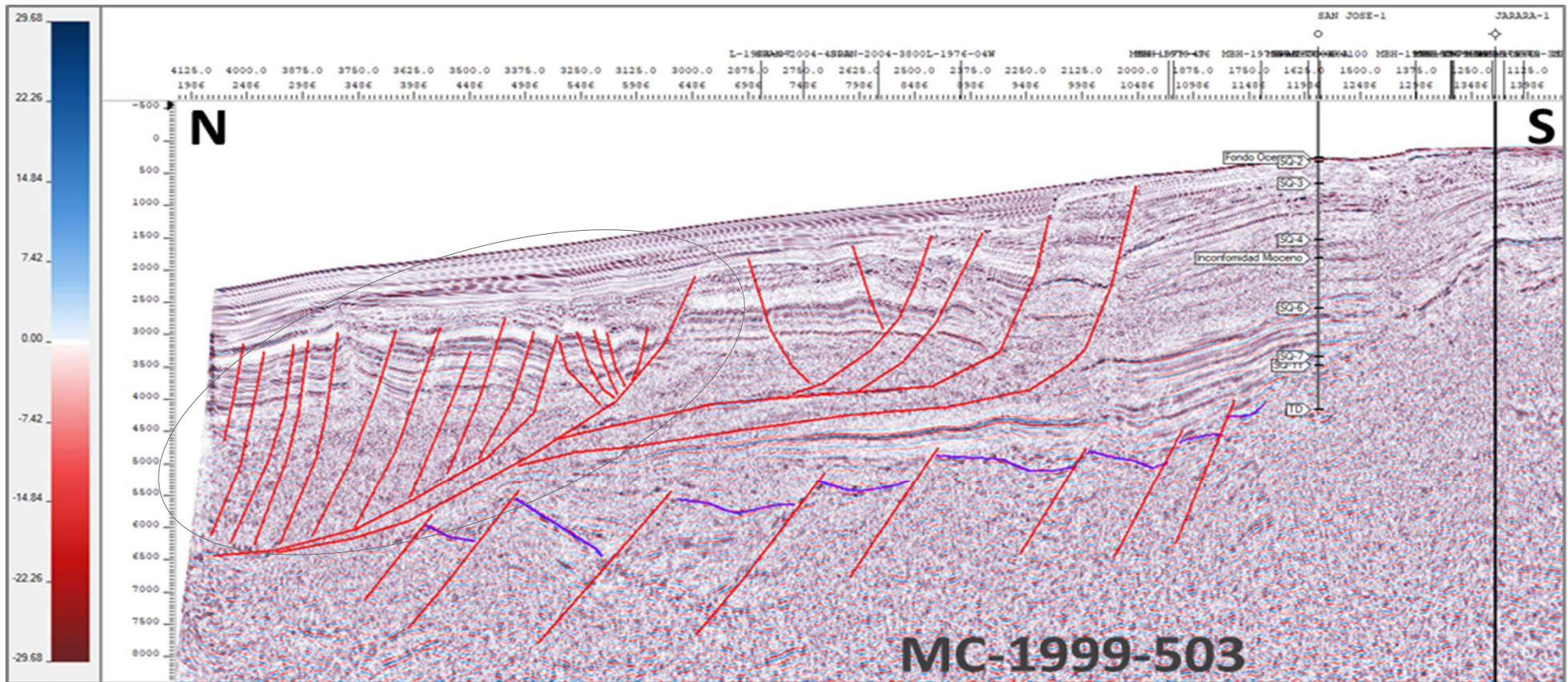


Chimare Province

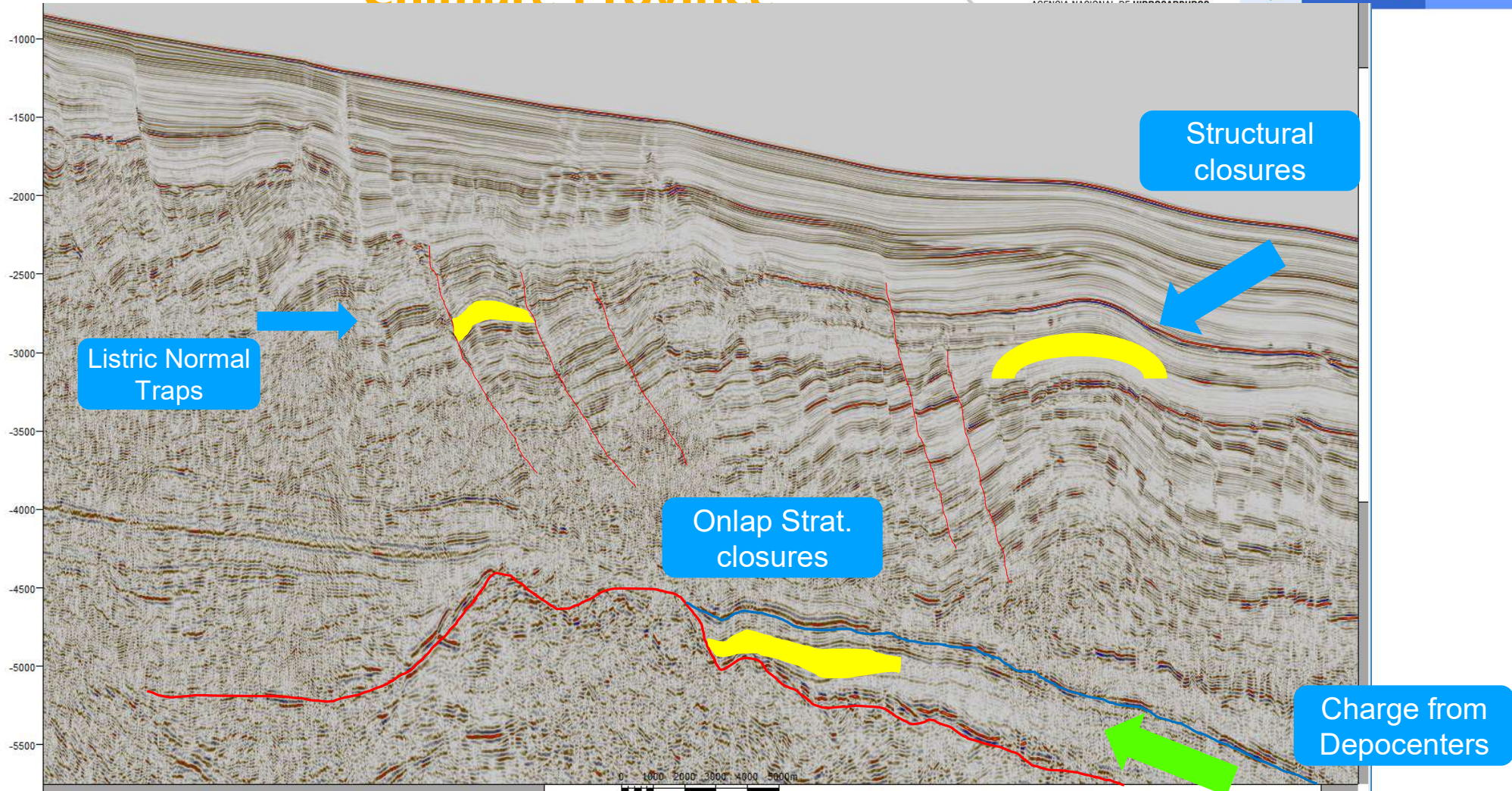


STRUCTURAL TRAPS

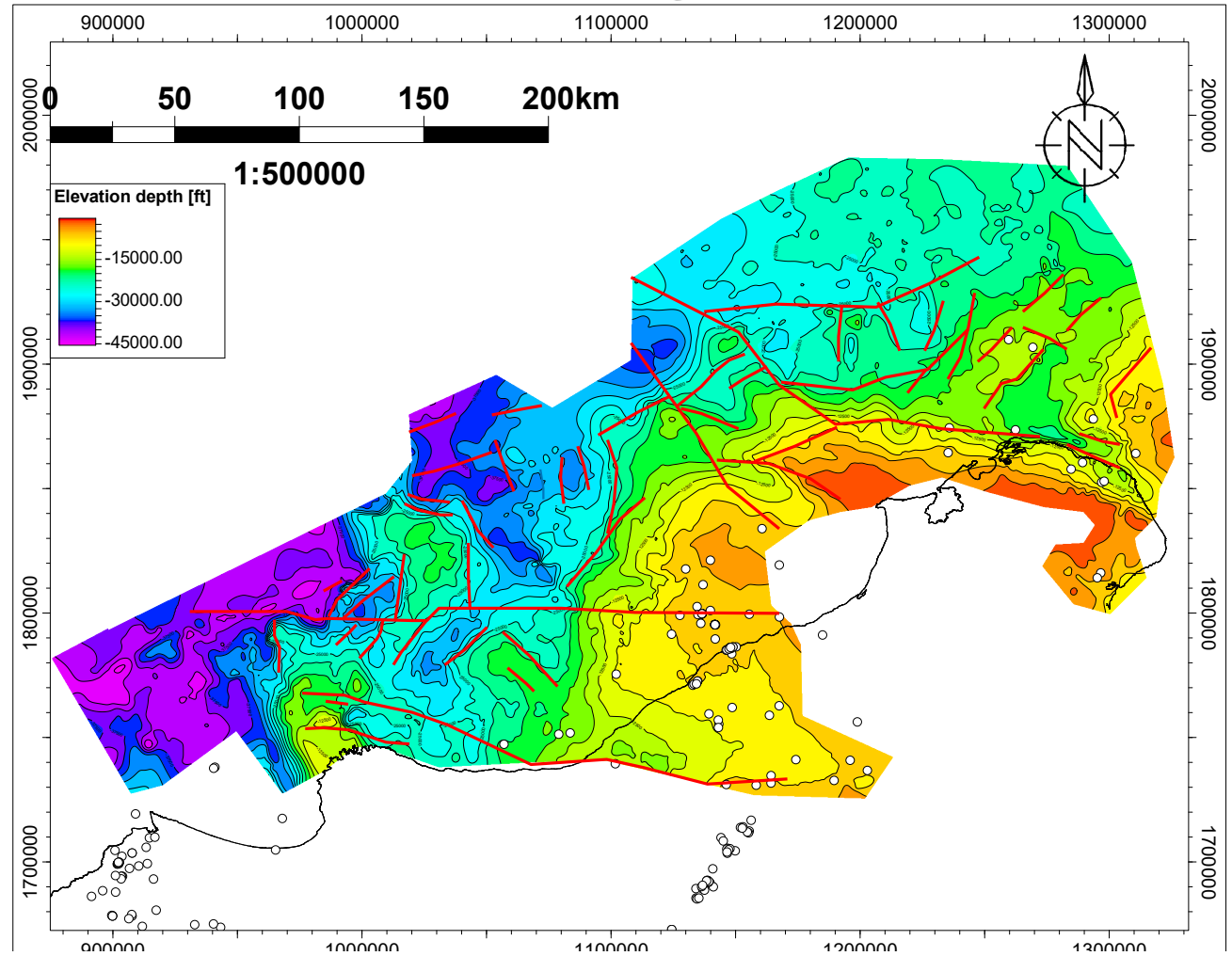
5. Normal Lystric Faults in echelon



Chimare Province

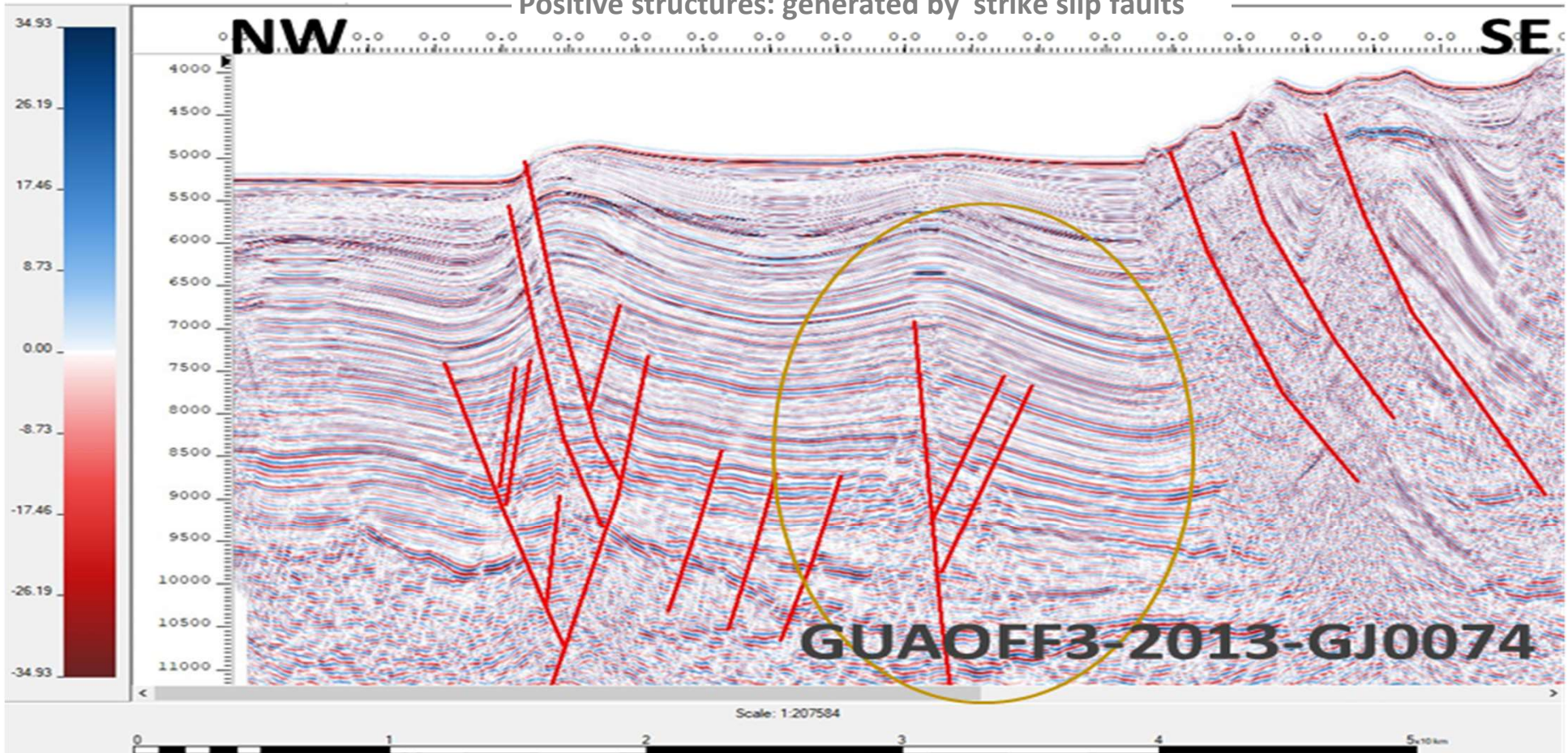


BASAMENT MAP



STRUCTURAL TRAPS

Positive structures: generated by strike slip faults

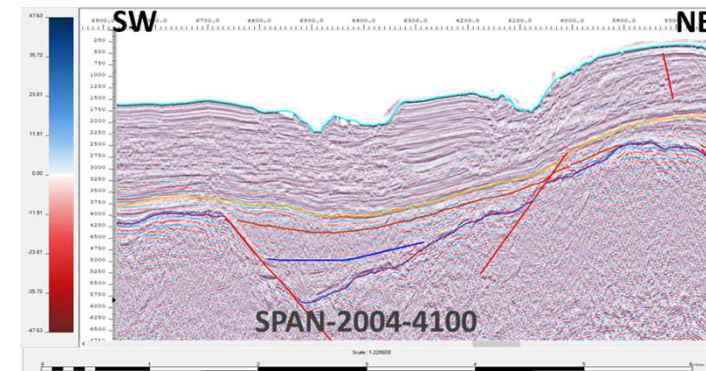
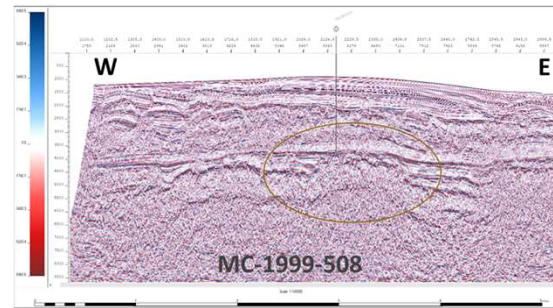
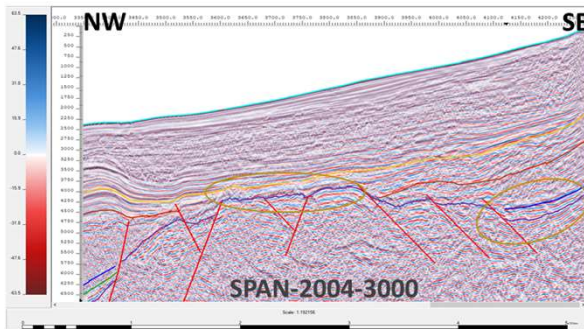


MIXED TRAPS

1. Basement Paleo-height with carbonates

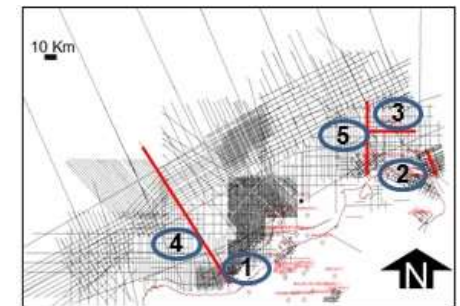
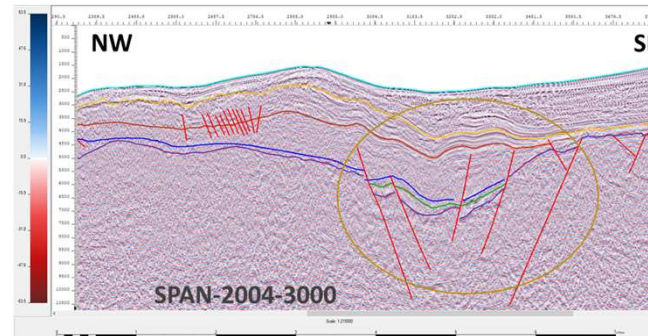
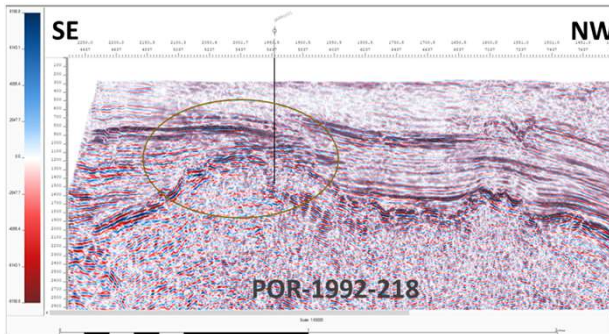
3. Oligocene sandstone over the high

3. Sandy fillings in Grabens



2. Early miocene sandstones over the high

4. Pull apart basin with sandstone facies



Thanks

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