Is the Pelotas Basin the New Orange Basin? Analogs with Namibia

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Houston, February 8th, 2024

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Massive discoveries in Orange Basin since 2022

UPDATED: Shell finds oil with closely watched Namibian wildcat

Supermajor's ongoing Graff-1 probe has found liquids in Cretaceous reservoir

"It's massive": TotalEnergies makes huge oil discovery off Namibia with "exceptional" Venus-1 wildcat

Sources describe French supermajor's ultra-deepwater discovery — where pre-drill resources stood at about 1.5 billion barrels — as "an elephant" find

Galp stock price hits four-year high after major oil discovery in Namibia's white-hot Orange basin

Portuguese operator will carry out a production test on Mopane-1X and drill an appraisal well.

TotalEnergies makes fresh oil discovery in Namibia's 'golden' block

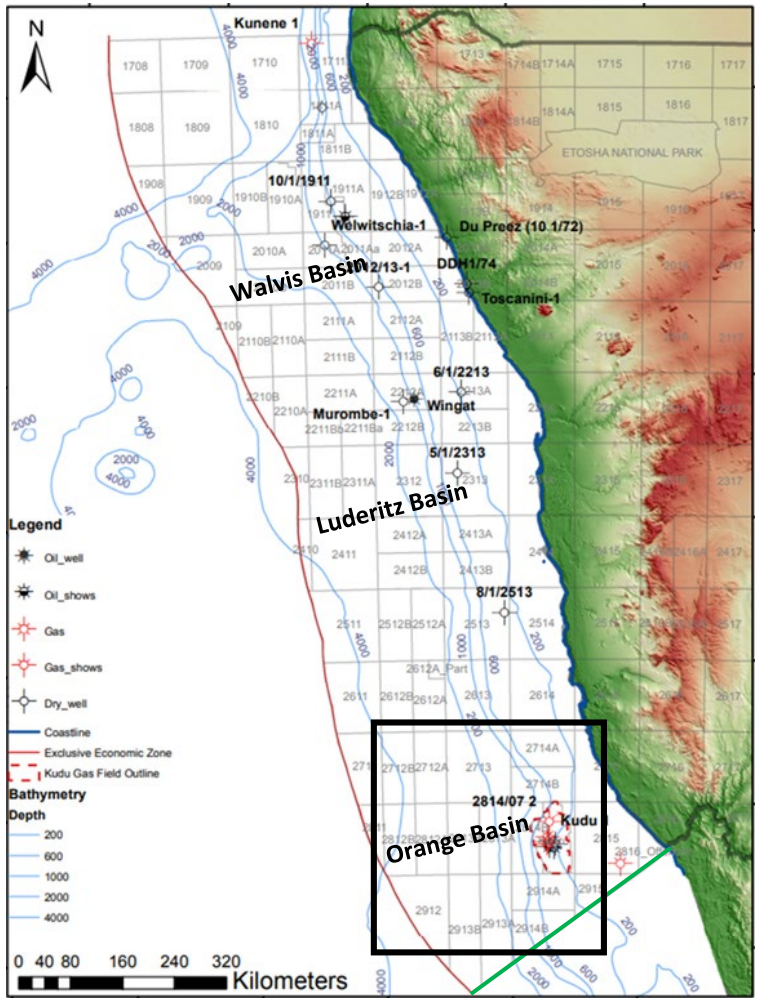
French supermajor's latest probe in Orange basin finds hydrocarbons and offers bonus at deeper level

Discoveries: Graff, Venus, La Rona, Jonker, Lesedi, Mopane

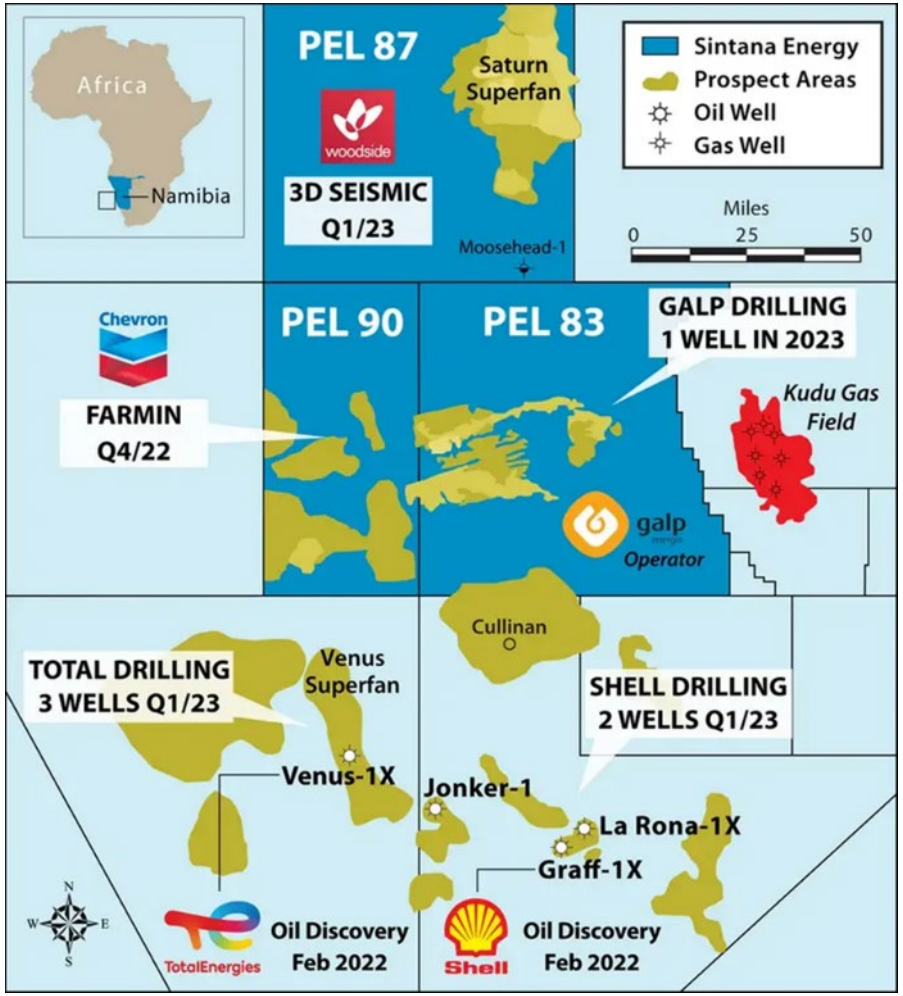
They are all asociated with **siliciclastics reservoirs**, with mostly stratigraphic traps, from the **Cretaceous**

WD: 1500-3000 m.

The hotspot area in Namibia nowadays



Source: NAMCOR, 2023



Source: Sintana Energy, 2023

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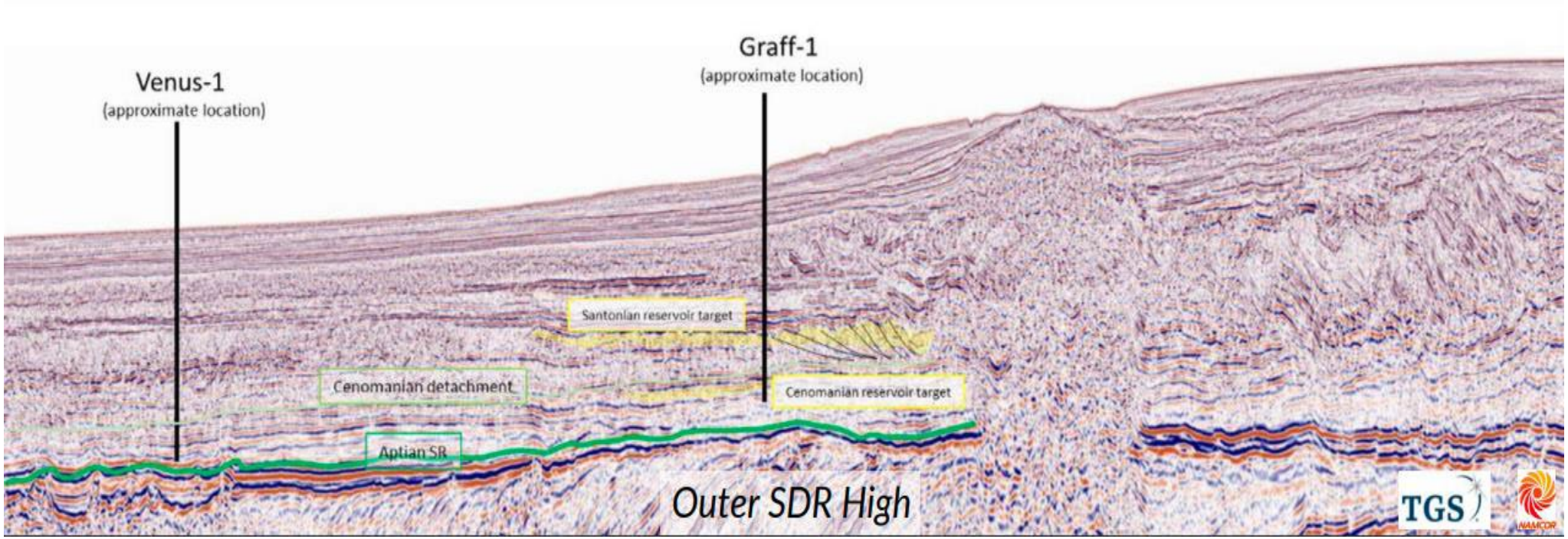
These discoveries had proven 2 petroleum systems

- A Lower Cretaceous (Aptian-Albian): Venus
- An Upper Cretaceous: Graff, Mopane



Source: Bellingham, 2023

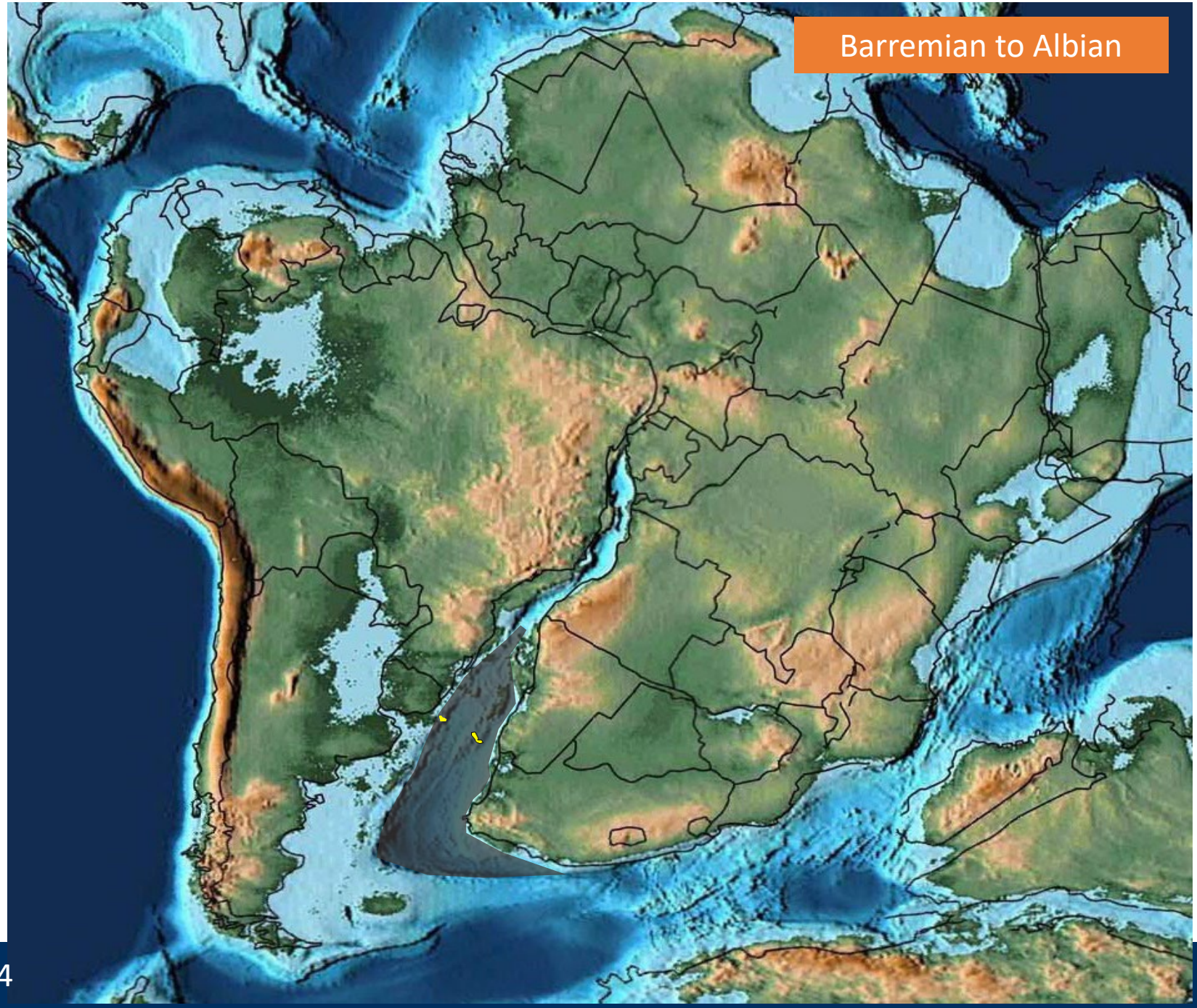
What are the implications to our region?

- Paleogeographic restoration for the Upper Jurassic (150 Ma).
- Breakup of Gondwana supercontinent previous to the opening of the Atlantic Ocean.

Uruguay and Namibia were “attached”.

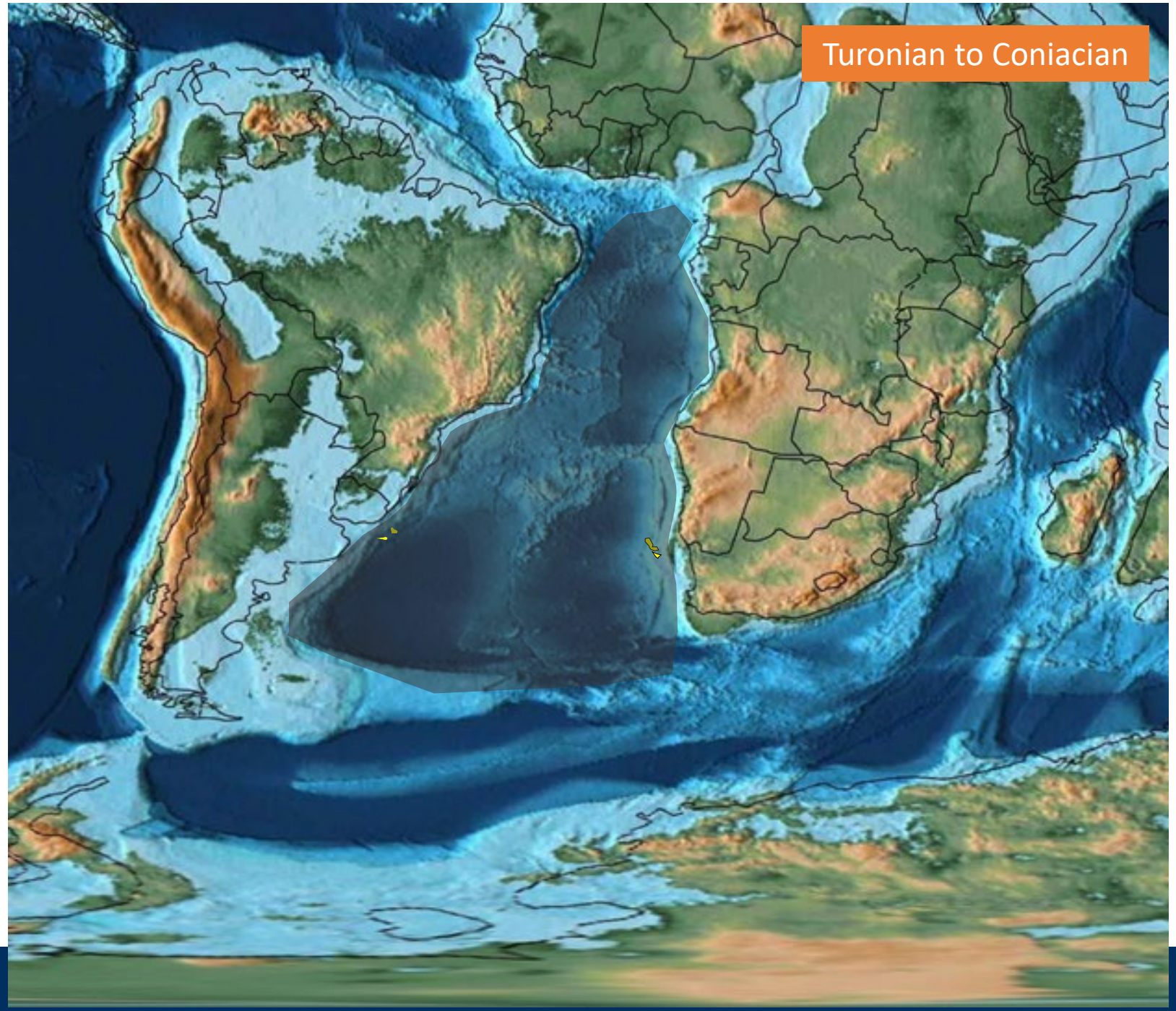
Source: Scotese, 2014

- Paleogeographic restoration for Lower Cretaceous (130-110 Ma).
- Aptian source rock deposition, responsible for the Venus accumulation
- Deposition of Venus reservoir (Namibia) and similar prospects in offshore Uruguay.



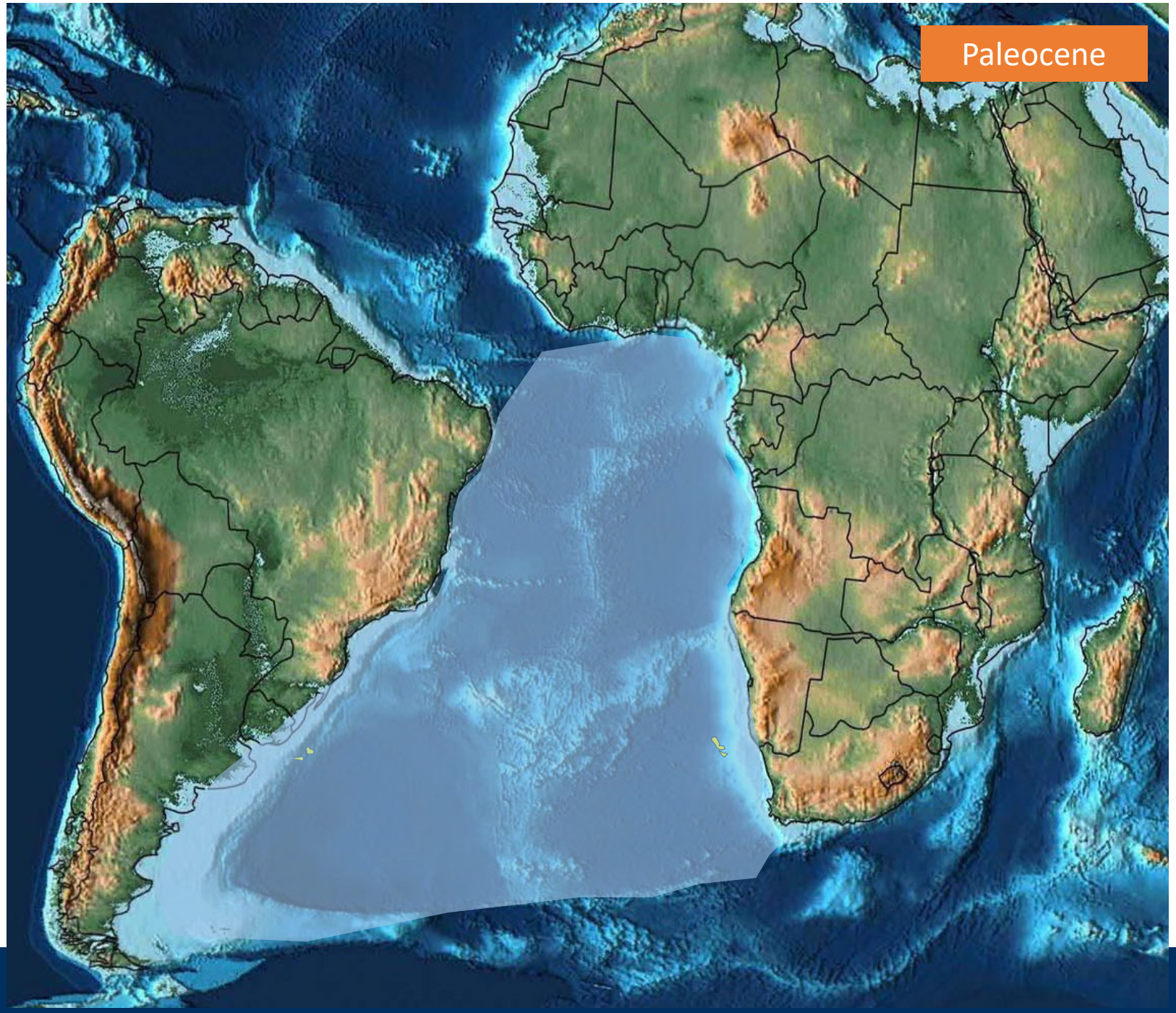
Modified from: Scotese, 2014

- Paleogeographic restoration for the Upper Cretaceous (90-85 Ma).
- Cenomanian-Turonian source rock deposition in the South Atlantic.
- Deposition of Graff reservoir (Namibia) and similar prospects offshore Uruguay (Coniacian-Santonian).



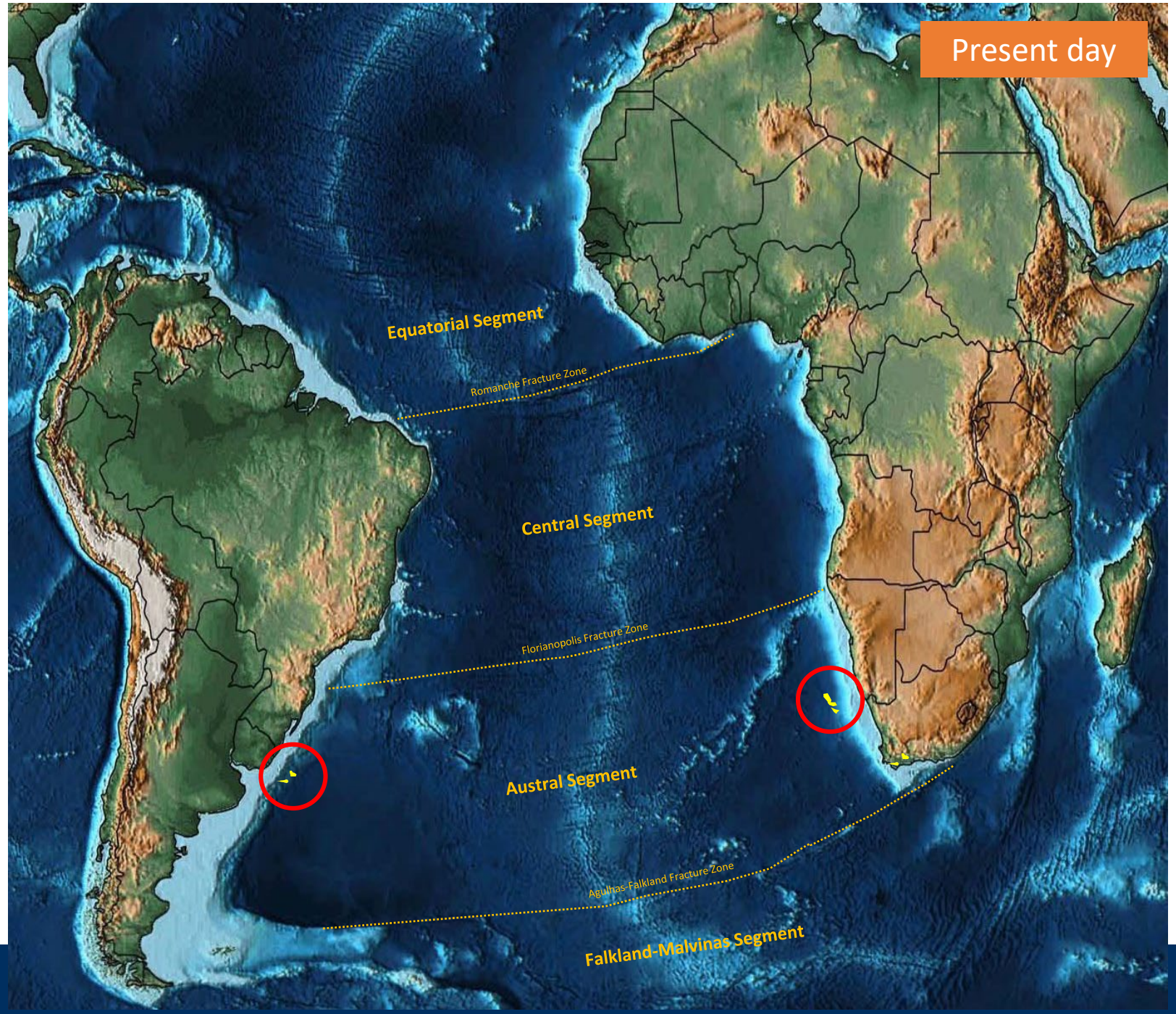
Modified from: Scotese, 2014

- Paleogeographic restoration for the Paleocene (60 Ma).
- Deposition of a regional seal for the South Atlantic related to the Paleocene transgression.



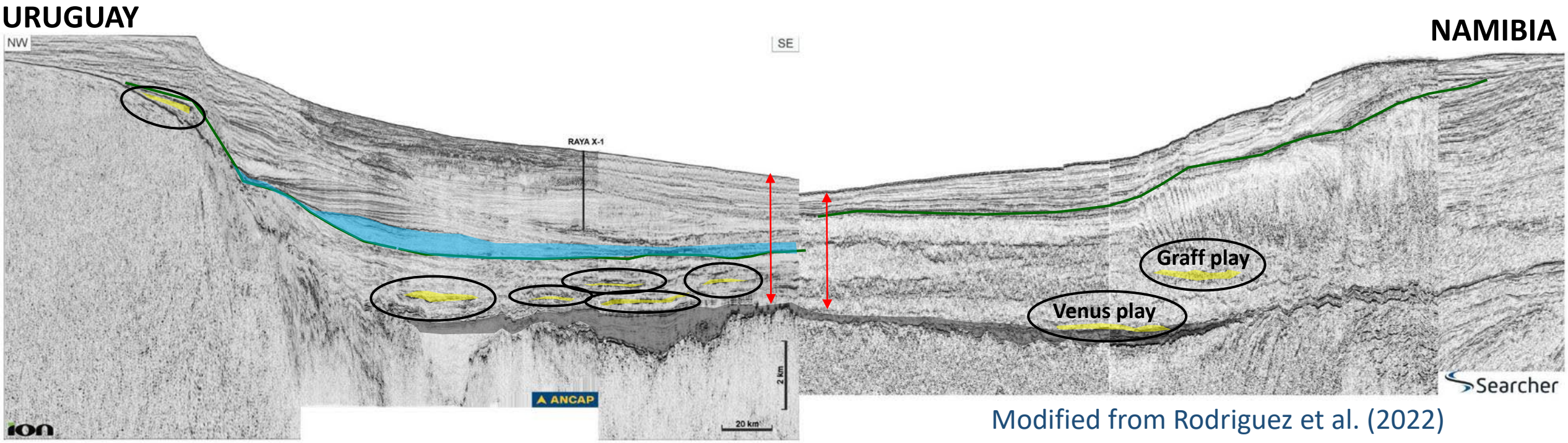
Modified from: Scotese, 2014

- Present-day location of Venus and Graff and analogous prospects offshore Uruguay.



Modifed from Scotese, (2014) with data from Chauvet et al., (2021)

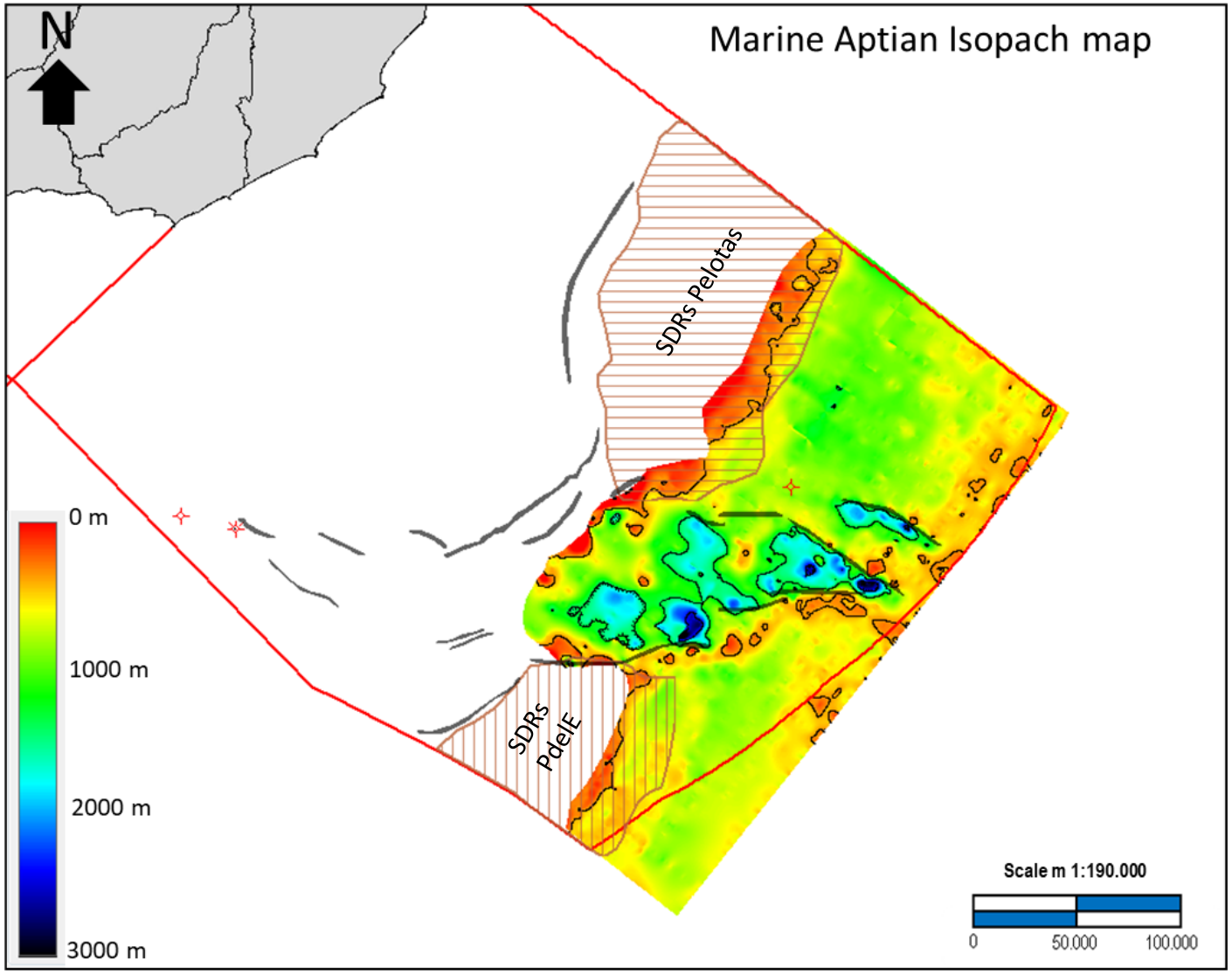
Analogies between offshore Uruguay and Namibia

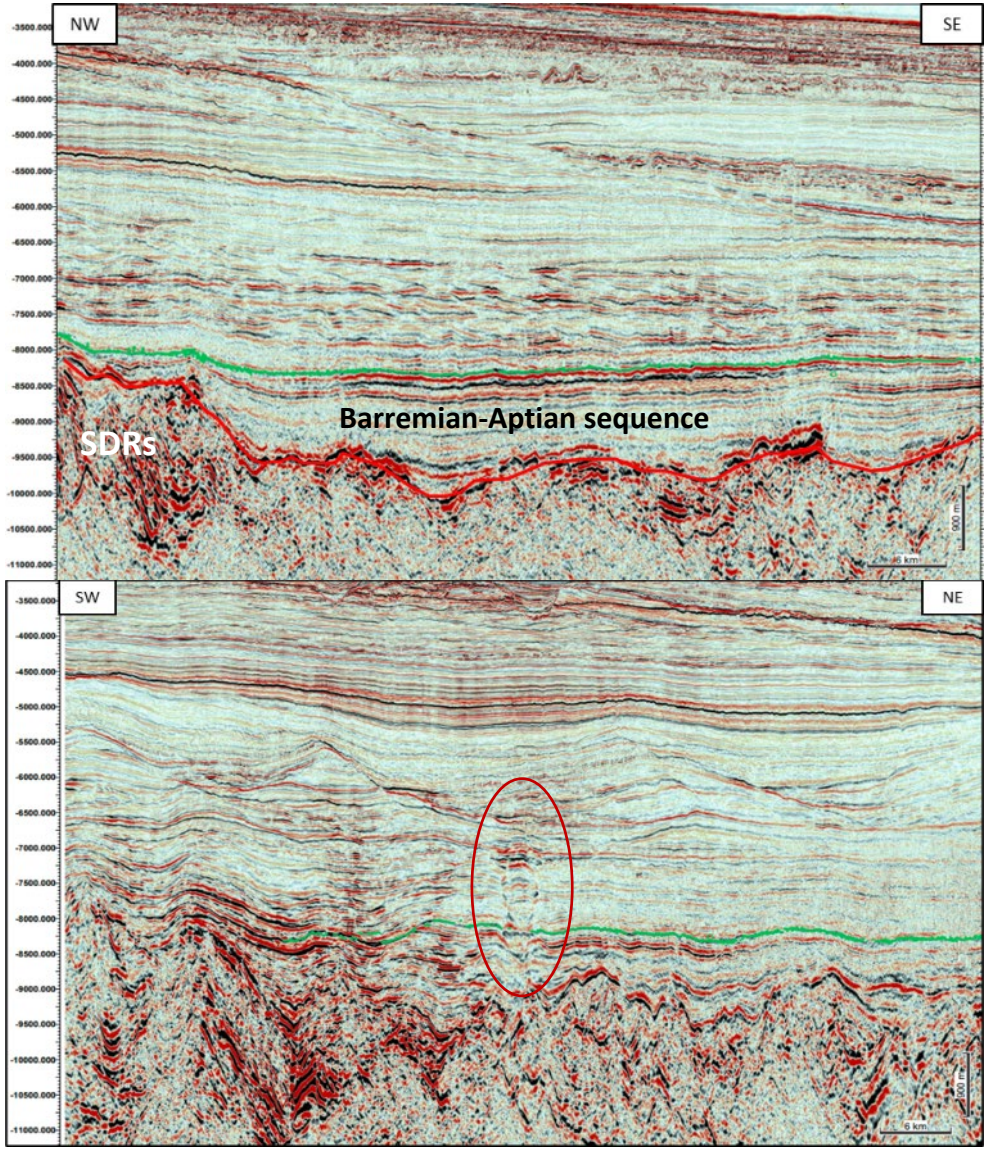


Modified from Rodriguez et al. (2022)

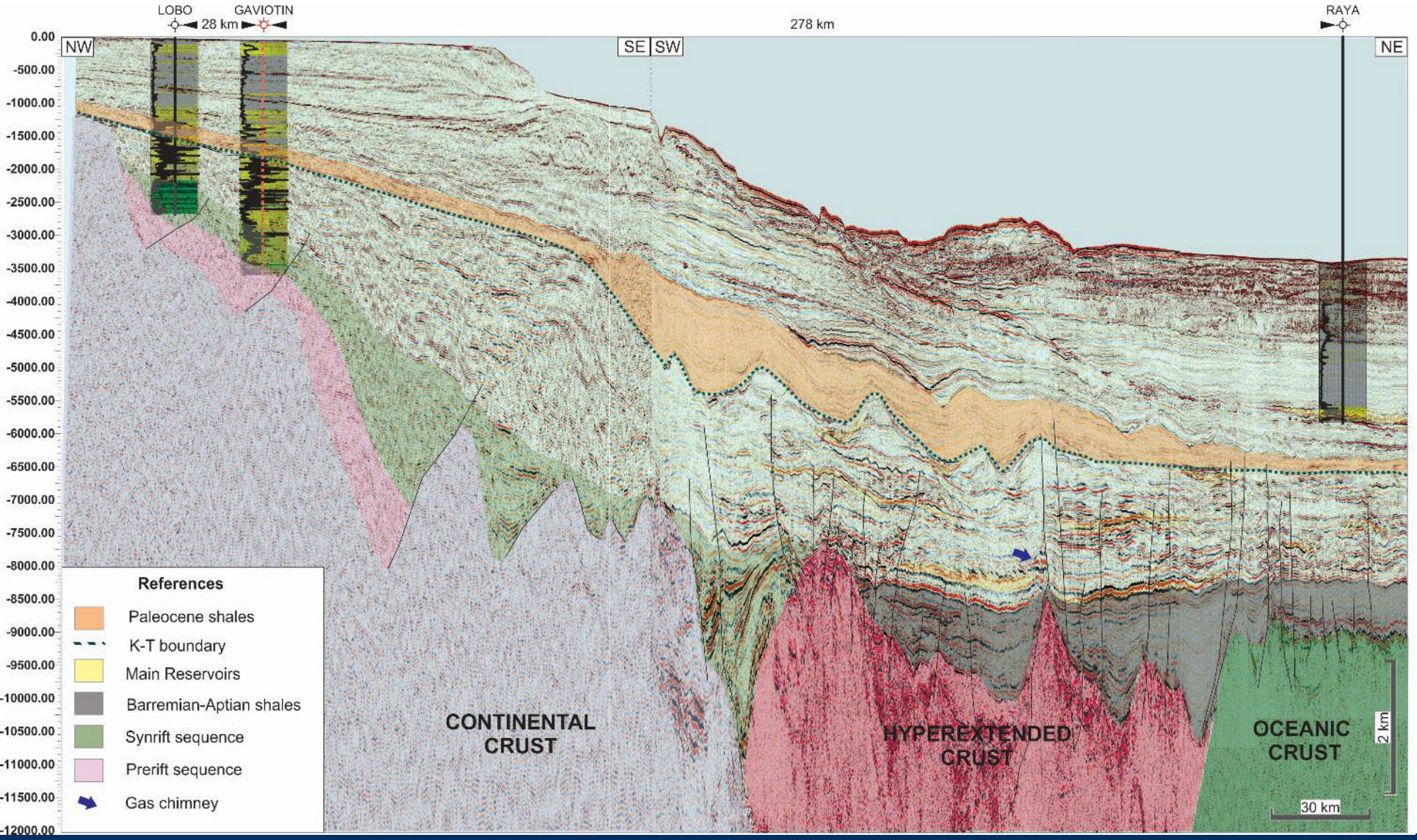
- Thicker Aptian sequence offshore Uruguay.
- More overburden for the Aptian source rock offshore Uruguay.
- Several cretaceous reservoirs identified analogous to Venus and Graff
- Regional and thick Paleocene seal

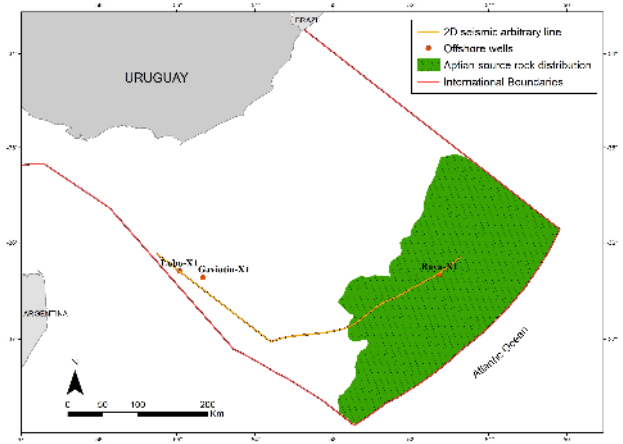
Distribution of Barremian-Aptian sequence





Arbitrary seismic line across the 3 wells offshore Uruguay

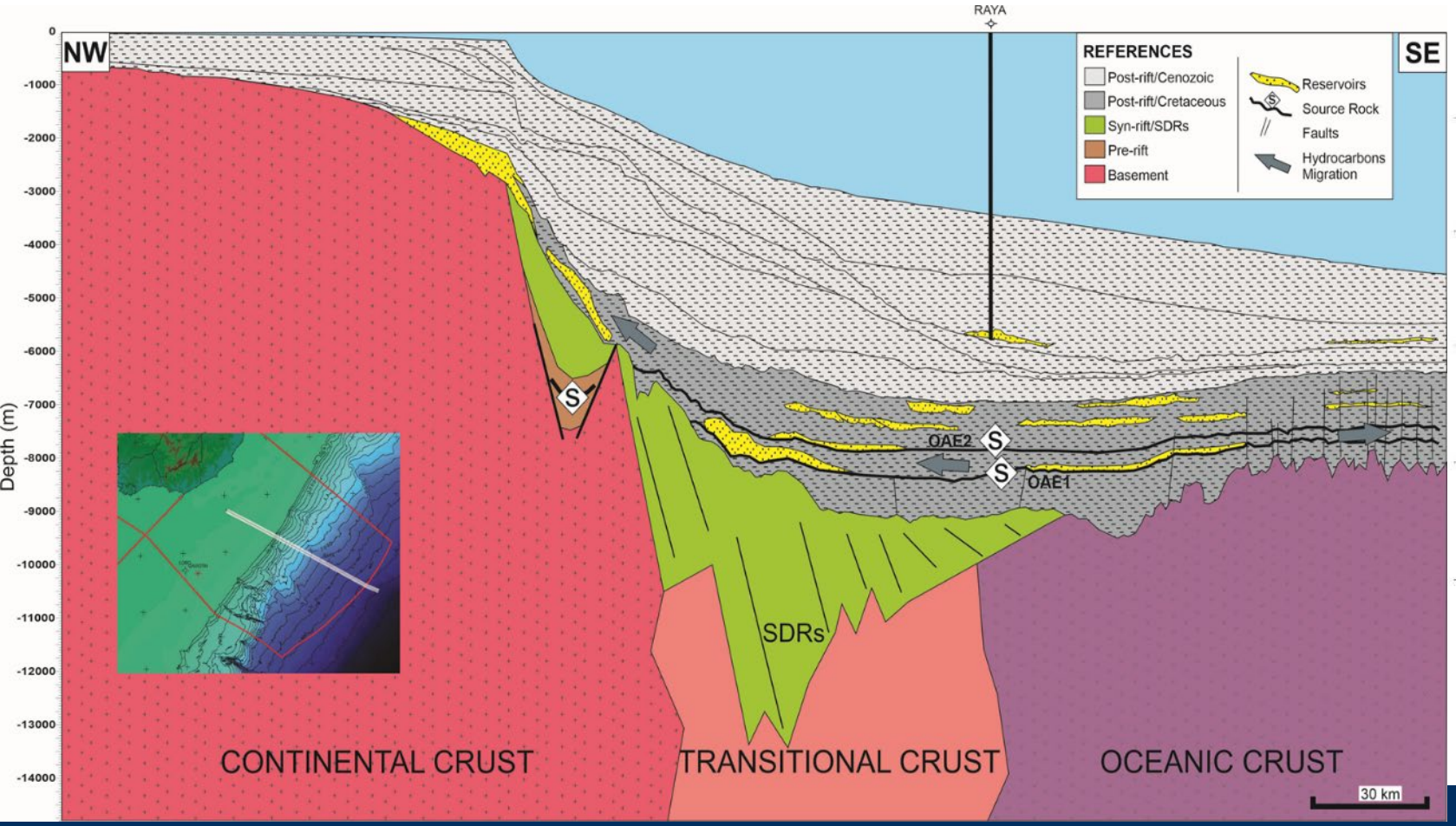


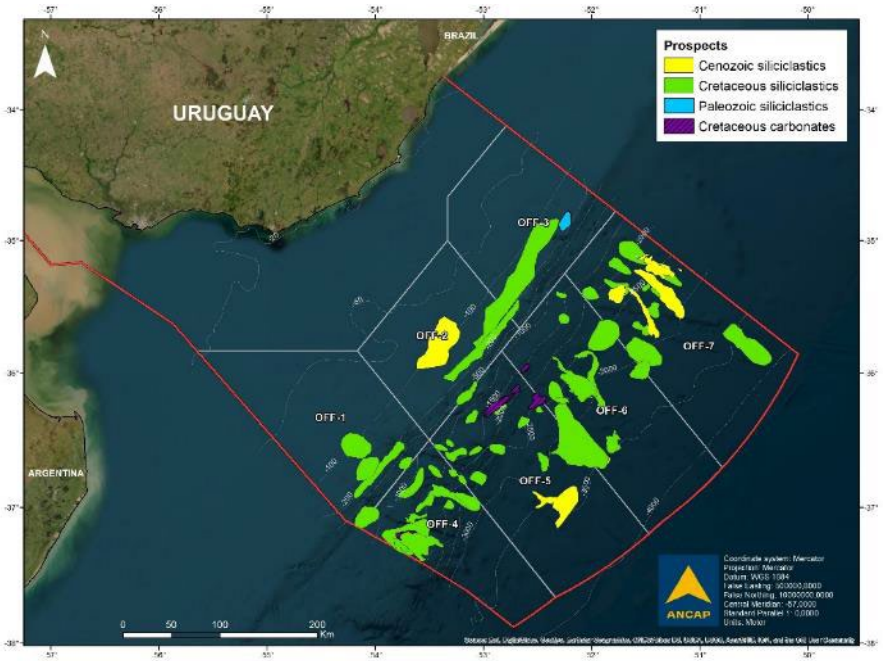


DHIs, fluid inclusions data from wells and migration pathways points towards the Cretaceous sequence.

Effectiveness of the Paleocene marine shales as a regional seal.

More than 40 prospects and leads identified with 2D and 3D seismic in shallow to ultra deep waters





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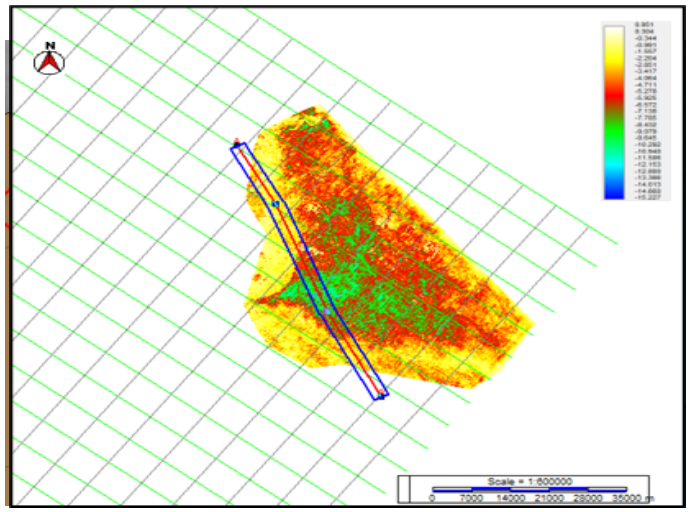
Plays Analogies (Lower Cretaceous)

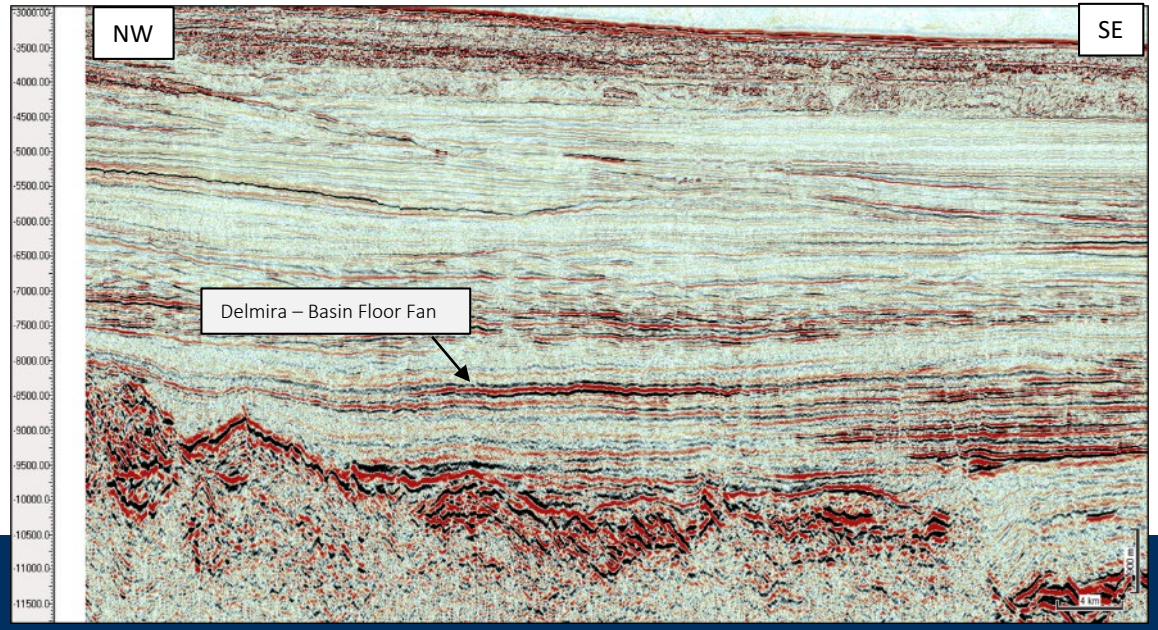
Play type: Lower Cretaceous submarine fan



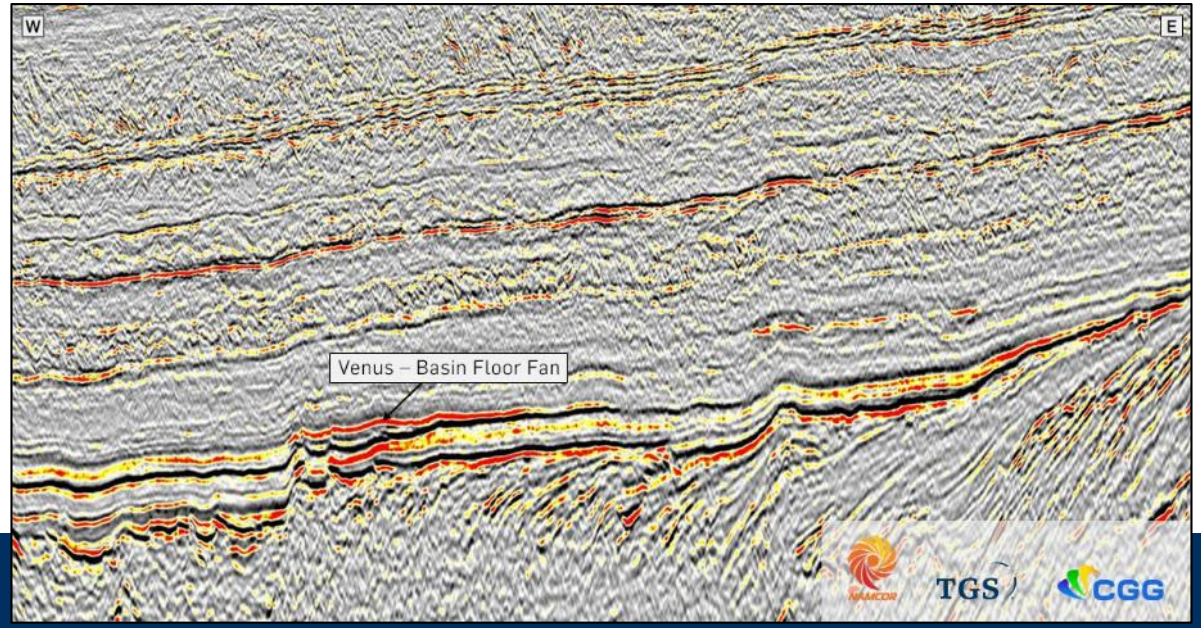
Delmira (Uruguay)
PoS: 18,7%
Reservoir age: Aptian-Albian
Thickness: 44 m (net pay)
Area: 473 km^2
Bathymetry: 4800 m
Distance to shore: 242 km
EUR.: 1.47 B boe (P50)

Venus (Namibia)
Reservoir age: Aptian-Albian
Thickness: 84 m (net pay)
Area: 600 km^2
Bathymetry: 3000 m
Distance to shore: 290 km
Estimated vol.: 5.1 B boe (in situ)

Delmira prospect (Uruguay)

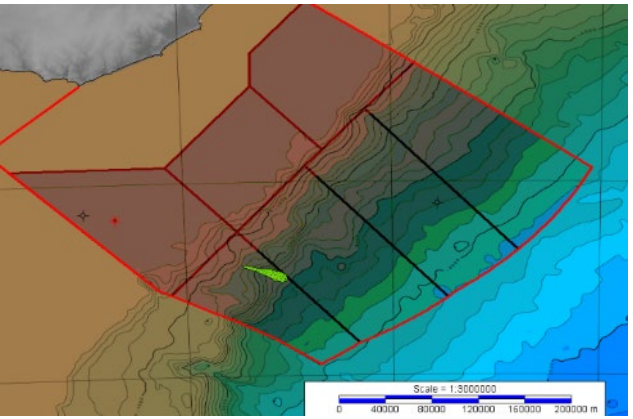


Venus prospect



Plays Analogies (Upper Cretaceous)

Play type: Upper Cretaceous submarine fan

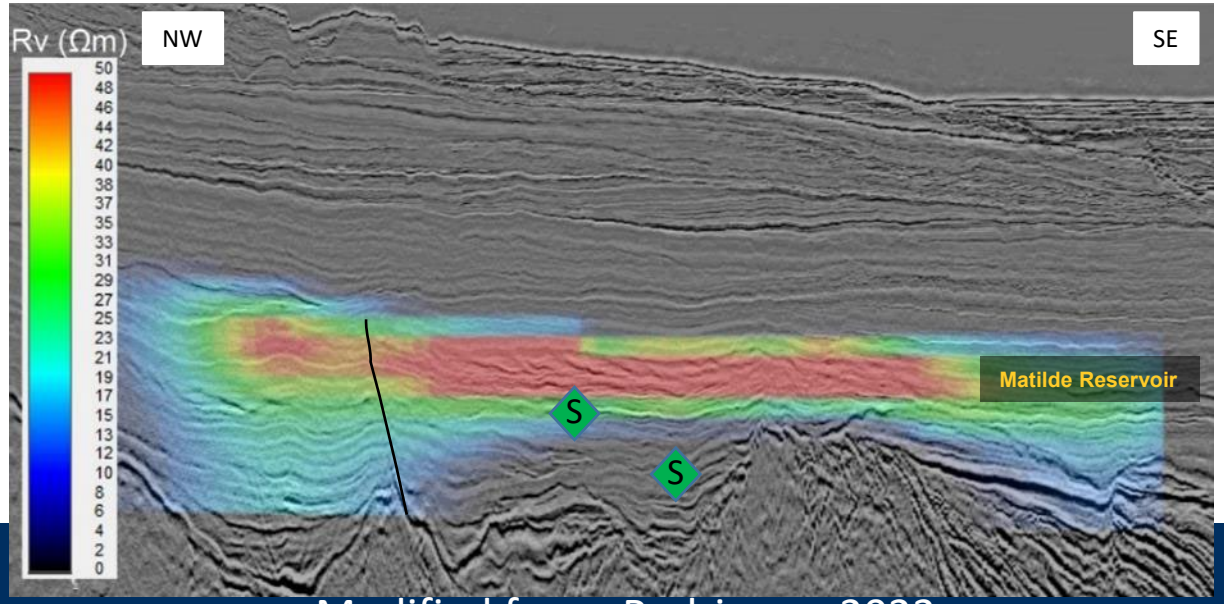


Matilde (Uruguay)
PoS: 23,4%
Reservoir age: Upper Cretaceous
Thickness: 100 m (net pay)
Area: 163 km^2
Bathymetry: 2200 m
Distance to shore: 250 km
EUR: 490 MM boe (P50)

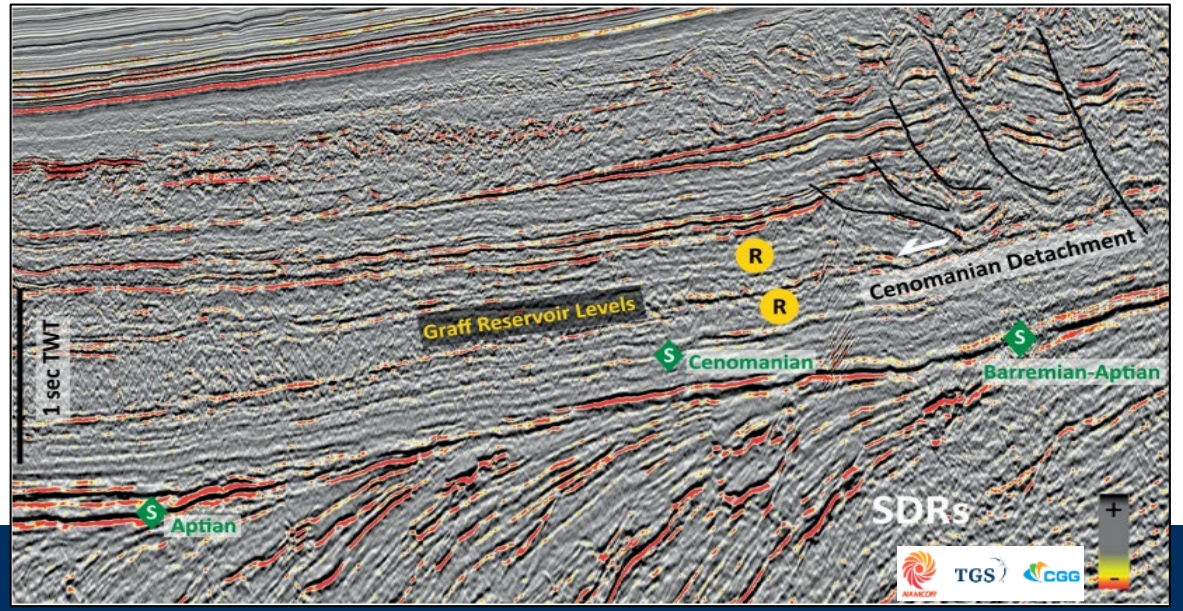
Matilde prospect (Uruguay)

Graff (Namibia)
Reservoir age: Coniacian-Santonian
Thickness: 60 m (net pay)
Area: 150 km^2
Bathymetry: 2000 m
Distance to shore: 270 km
Estimated vol.: 2.7 B boe (in situ)

Graff prospect (Namibia)



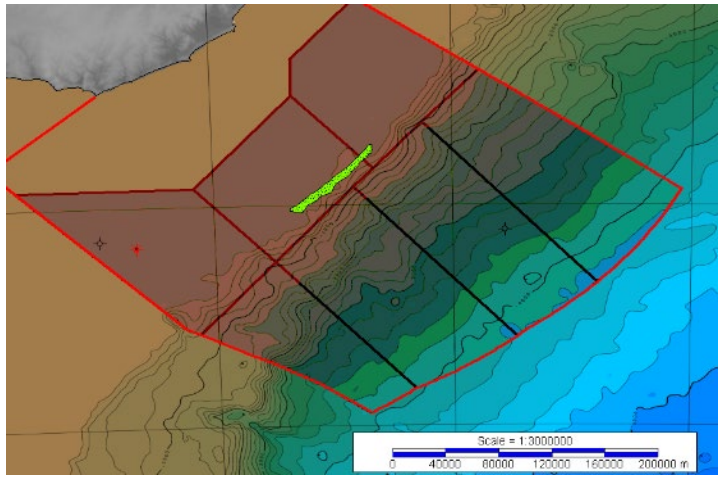
Modified from: Rodriguez, 2023



Winter et al., (2022)

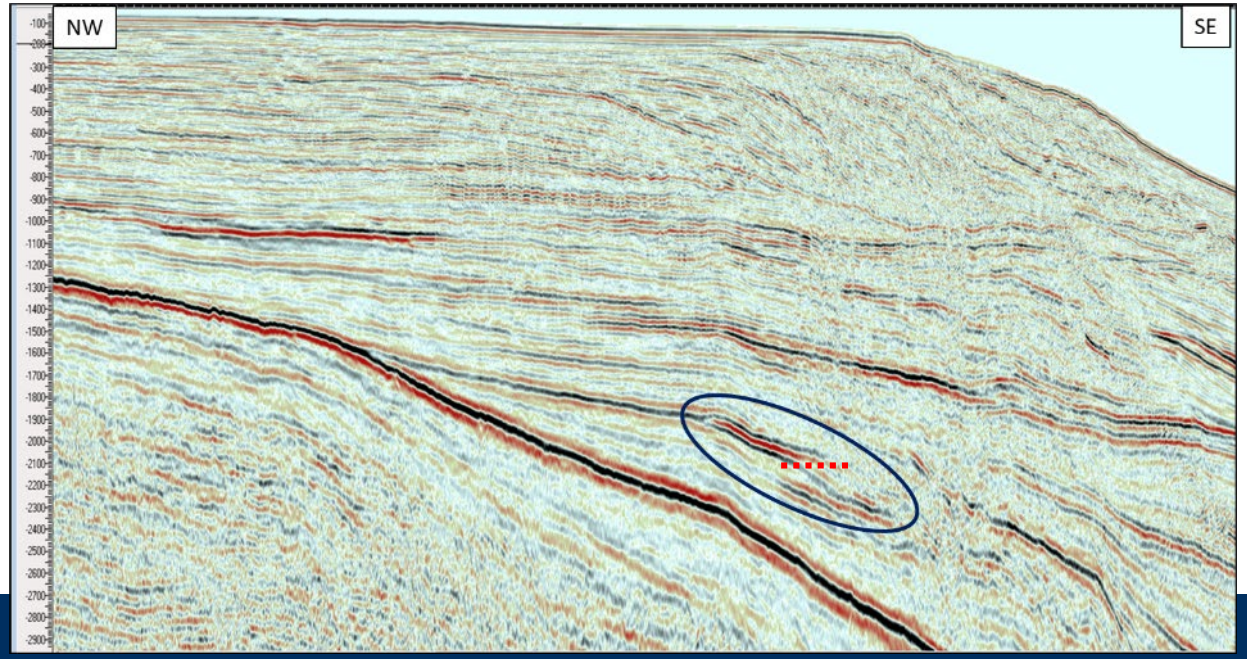
Plays Analogies (Upper Cretaceous)

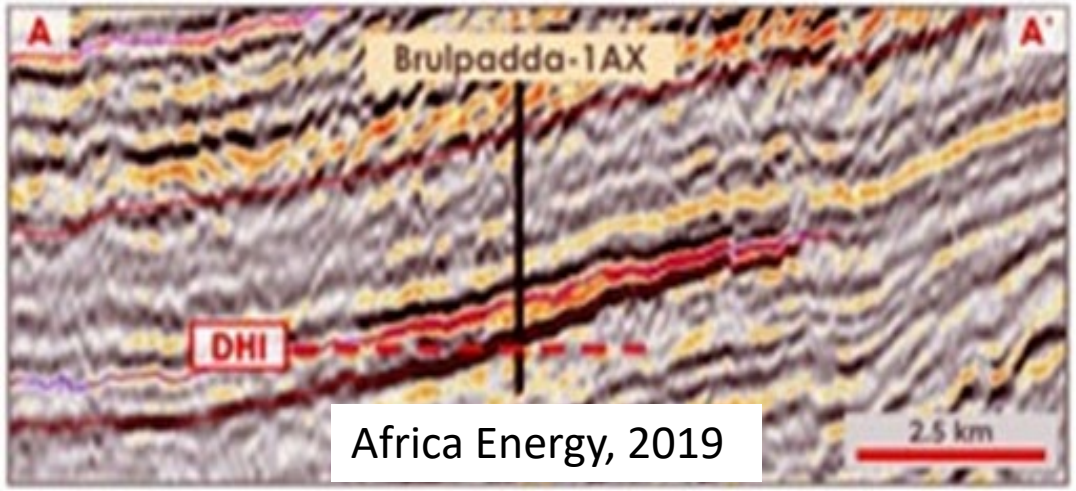
Play type: Upper Cretaceous sequence Pinch-outs



Amalia (Uruguay)
Reservoir age: Upper Cretaceous
Thickness: 66 m (net pay)
Area: 565 km2
Bathymetry: 148 m
Distance to shore: 161 km
EUR.: 980 M boe (P50)

Brulpadda (South Africa - Outeniqua)
Gas condensate and oil discovery
Reservoir age: Middle Cretaceous
Thickness: 34 m (net pay)
Area: N/A
Bathymetry: 1432 m
Distance to shore: 400 km
Estimated vol.: > 1 B boe (in situ)





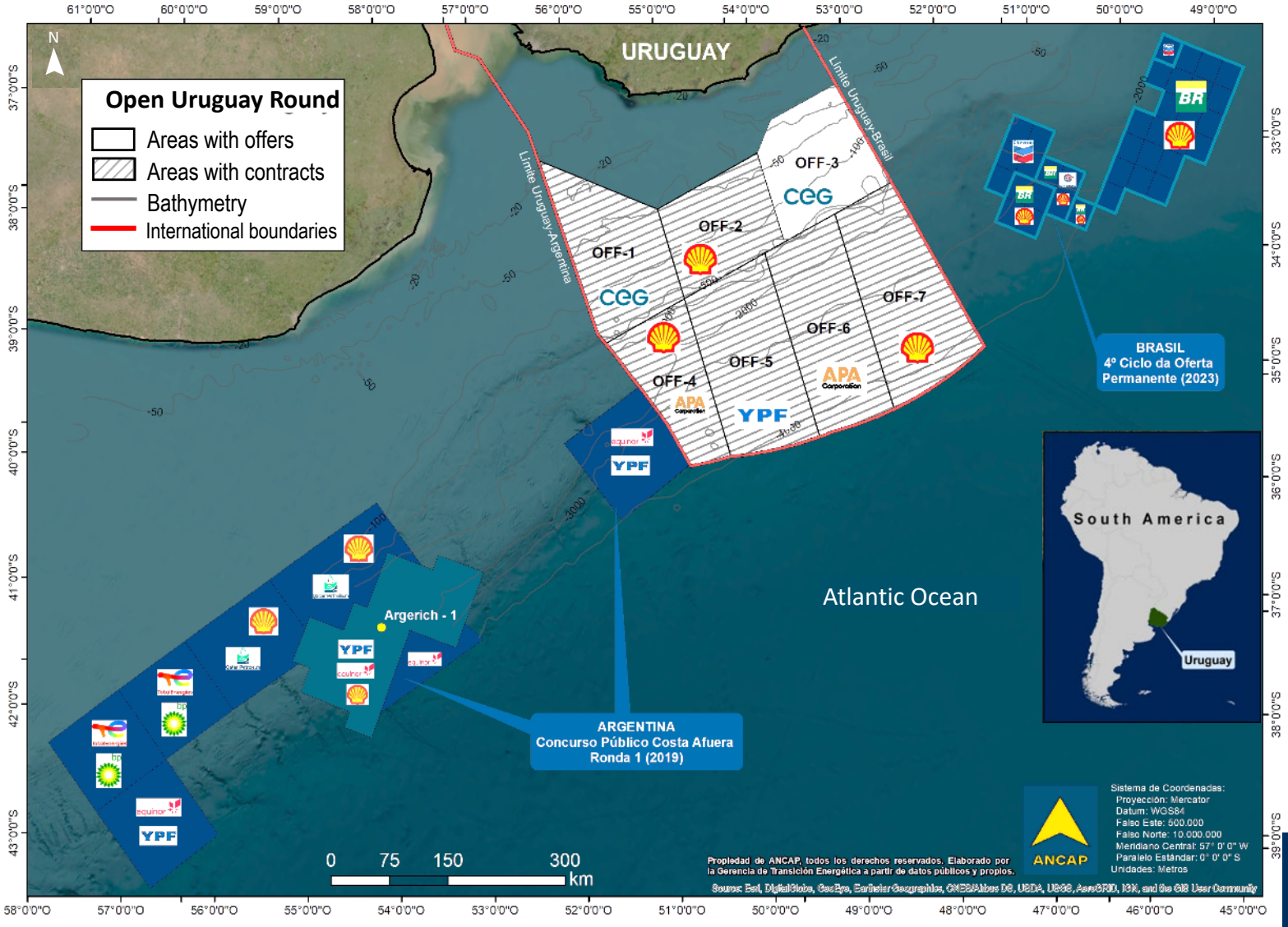
Africa Energy, 2019

- Direct Hydrocarbon Indicators (DHI) on seismic data: Amplitude Variations with Offset (AVO) conformance to structure and flat spots

Final Remarks

- The same petroleum system elements of Orange Basin are recognized offshore Uruguay
- Several DHIs are observed for the Uruguayan Continental Margin
- However, there could be important differences:
  - In source rock characteristics (thickness and maturity)
  - Reservoir quality
  - Trapping mechanisms
- The calibration of amplitude anomalies in the Cretaceous sequence will be key to exploratory success; however, the particular geological context of the area cannot be overlooked

Current exploratory activity S Brazil, Uruguay and N Argentina



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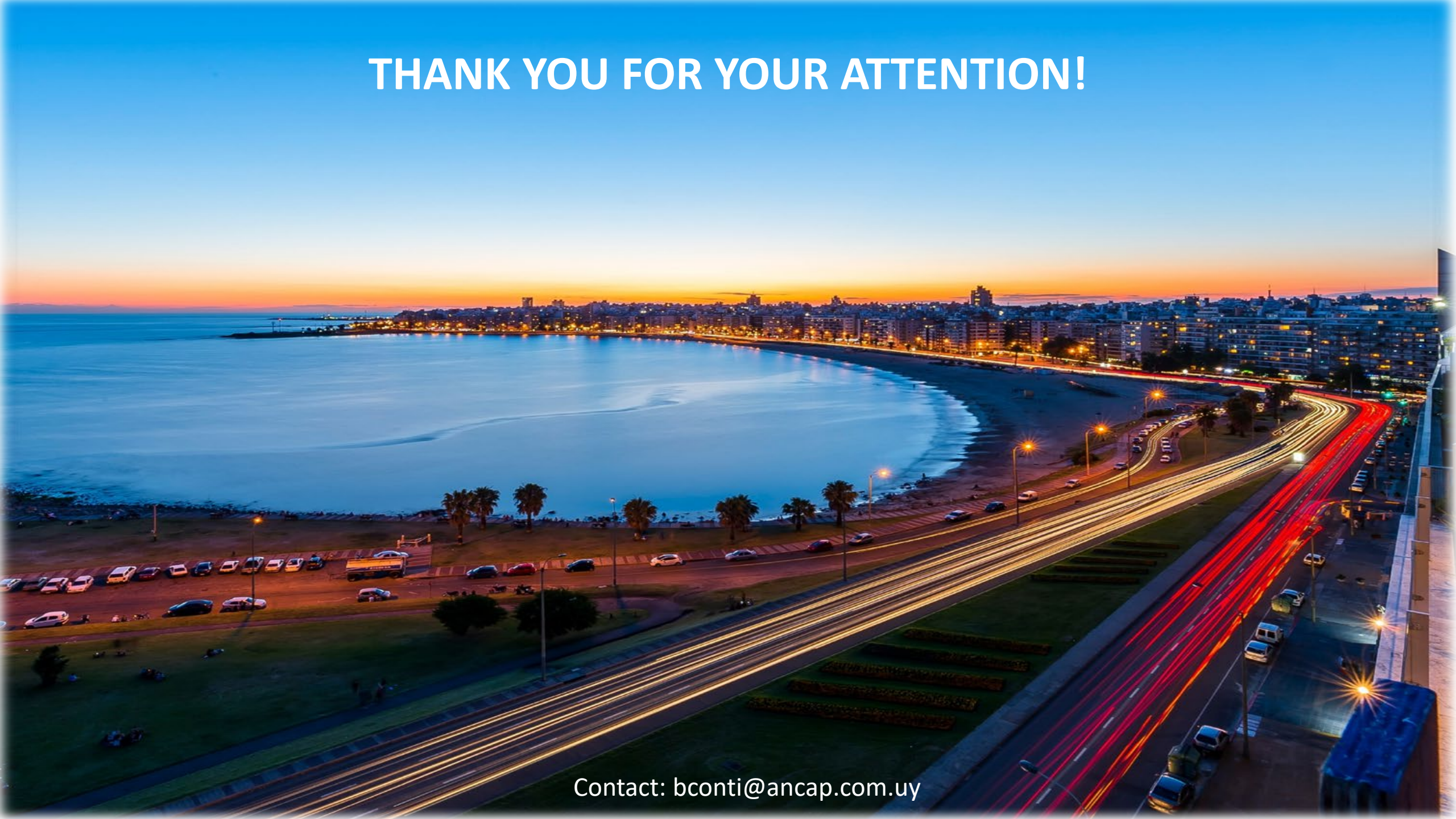
THANK YOU FOR YOUR ATTENTION!



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