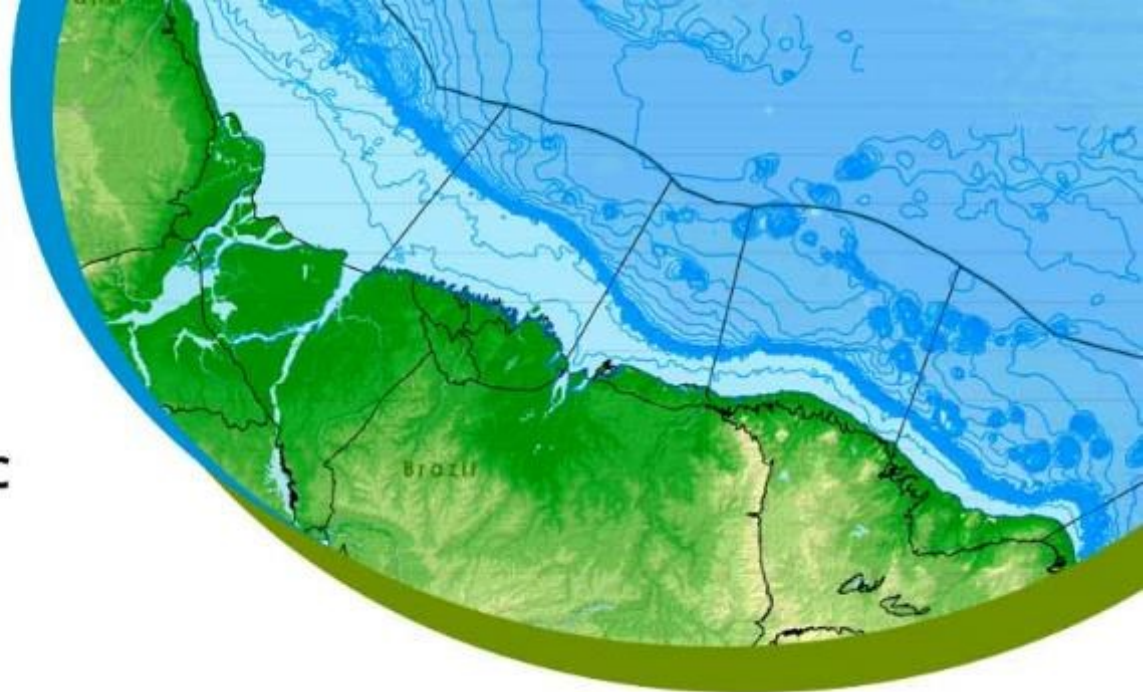




WORKSHOP THE DEEP AND ULTRA-DEEP WATERS OF THE EQUATORIAL MARGIN OF BRAZIL

THE LAST UNTAPPED FRONTIER IN THE EQUATORIAL ATLANTIC

JULY 19, 2022



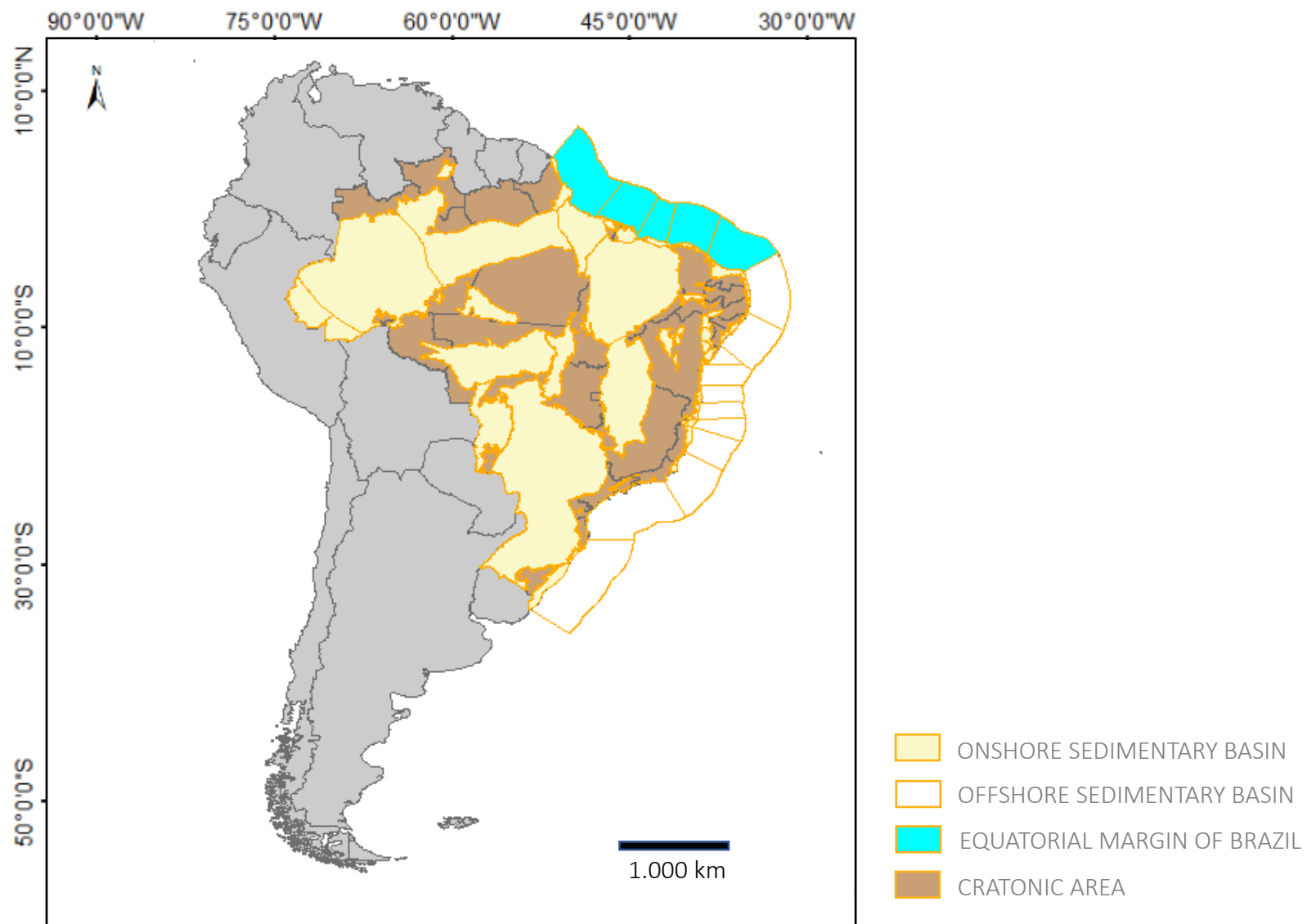
Main Exploratory Geological Models for Deep and Ultra-Deep Waters in the Equatorial Margin of Brazil

Blocks Available in Open Acreage

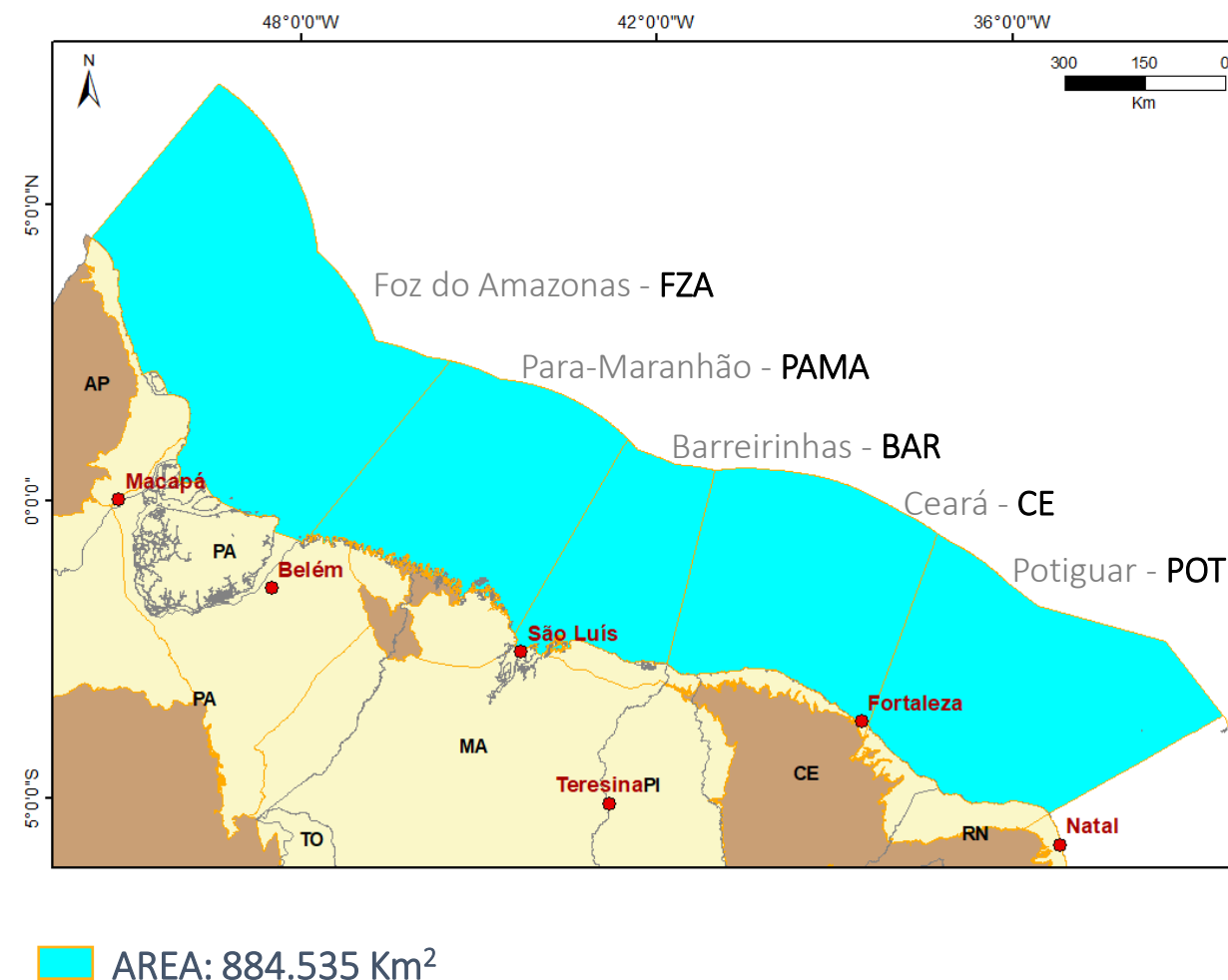
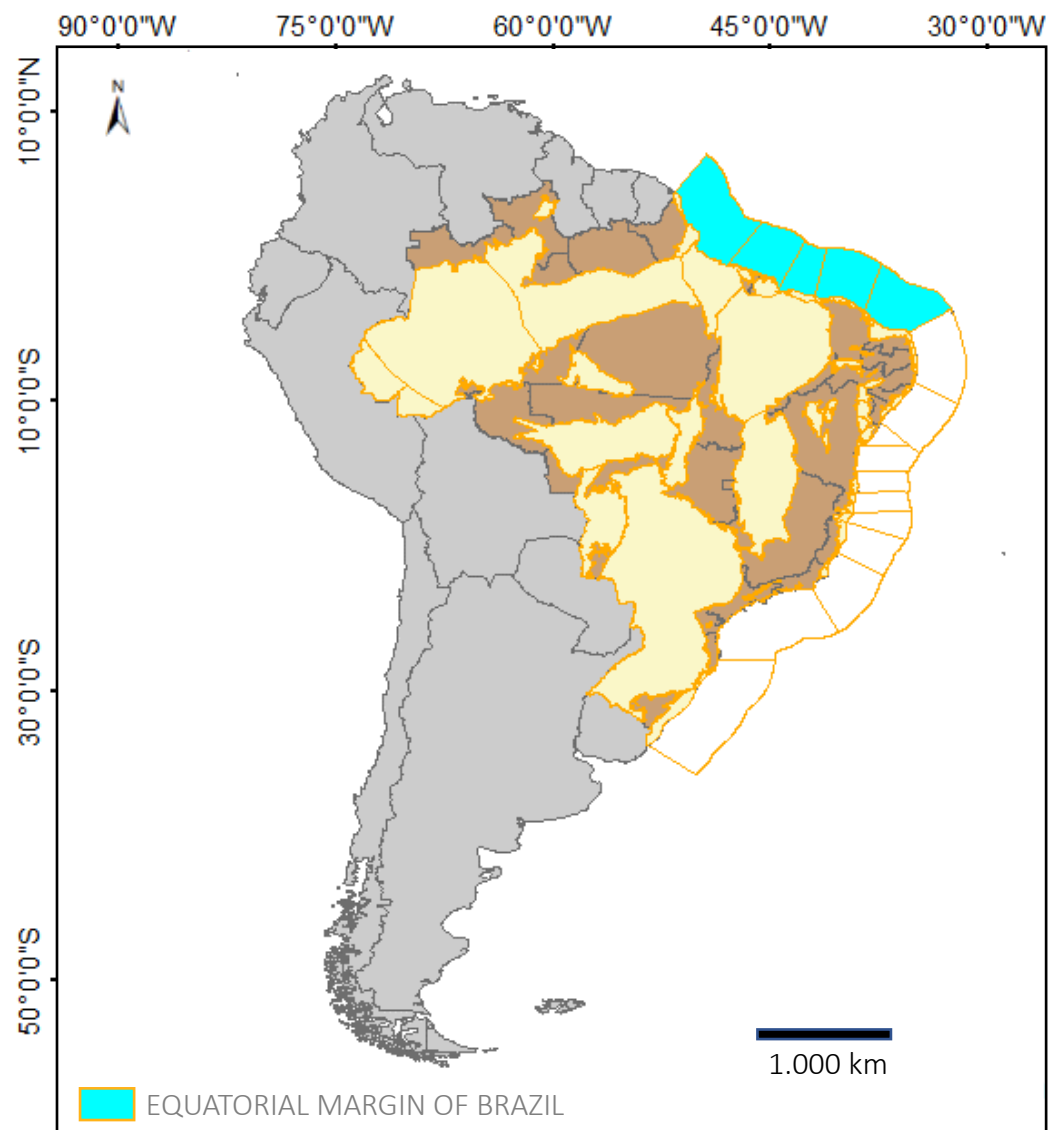
Ronan Ávila



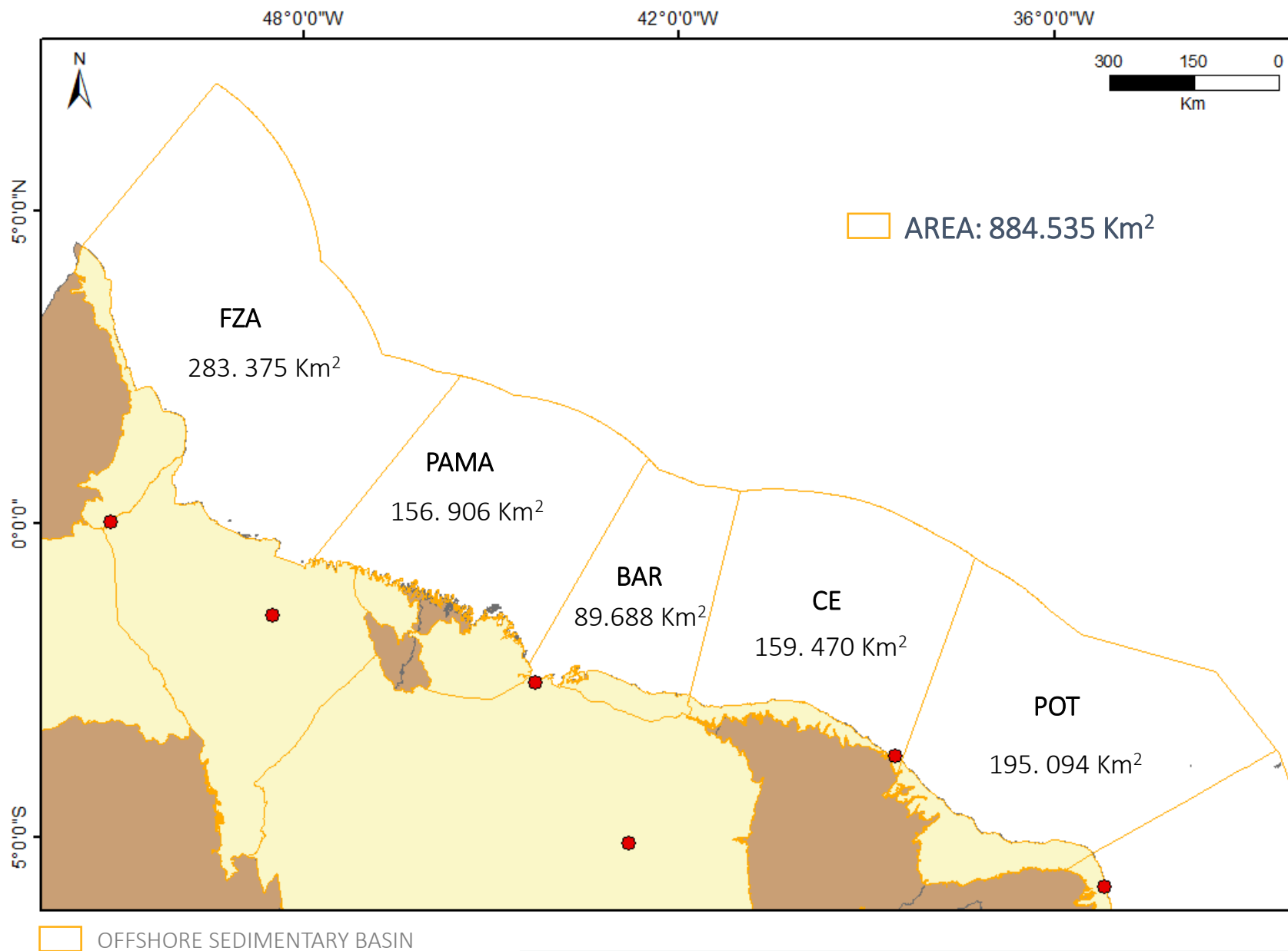
EQUATORIAL MARGIN OF BRAZIL



EQUATORIAL MARGIN OF BRAZIL

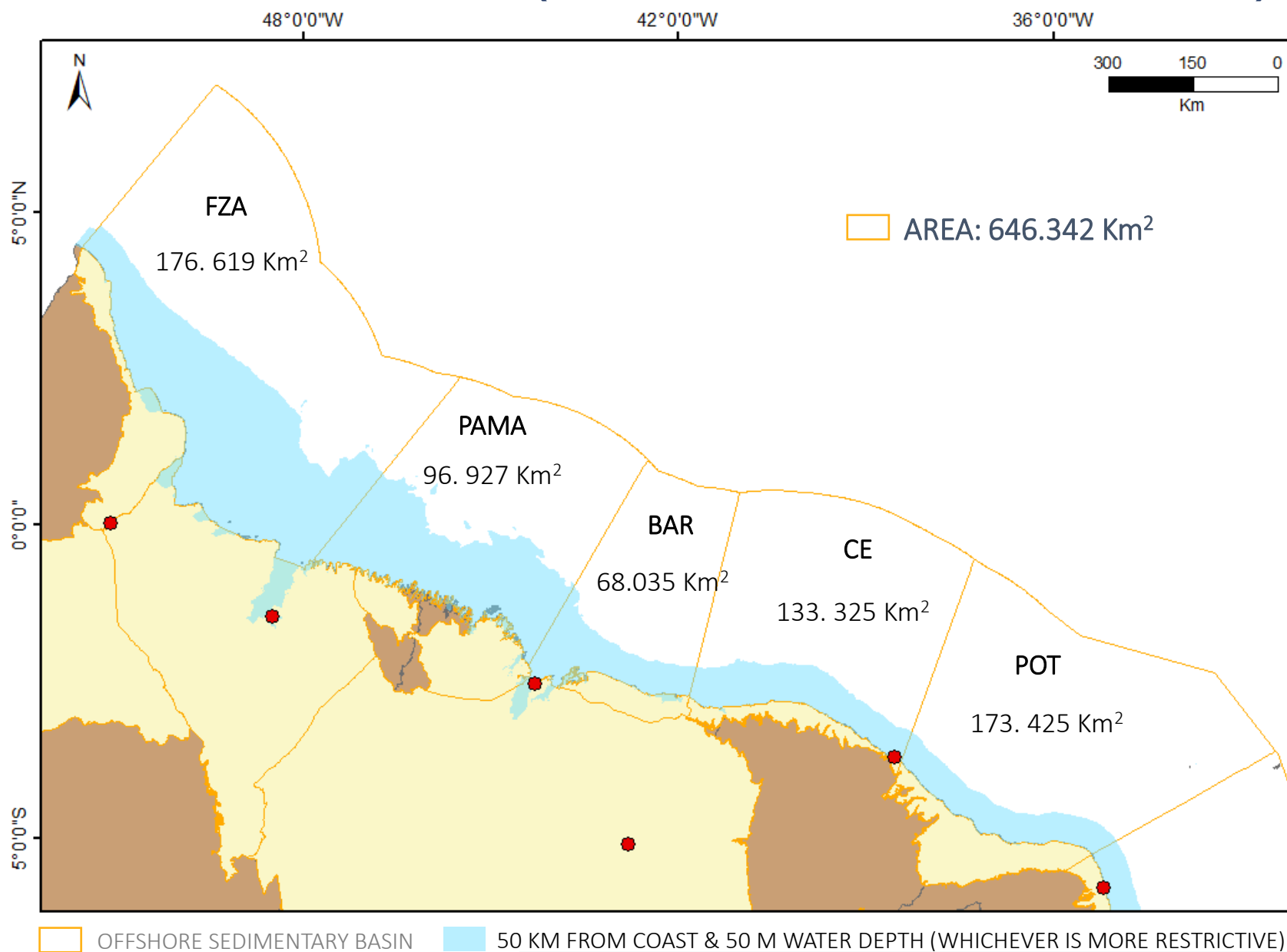


EQUATORIAL MARGIN OF BRAZIL - AREA



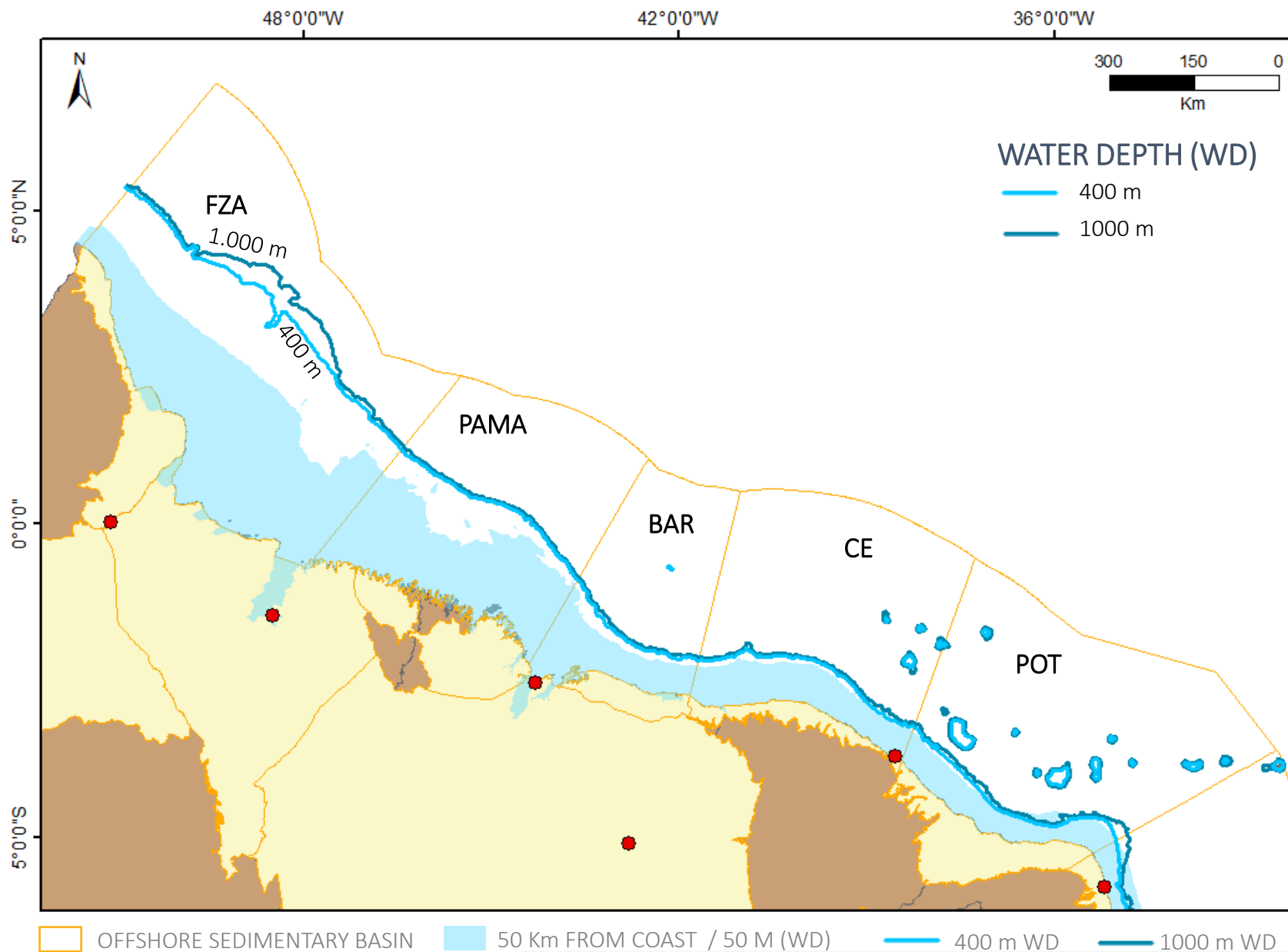
OFFSHORE SEDIMENTARY BASIN

EQUATORIAL MARGIN OF BRAZIL - AREA (> 50 m WD and >>50 Km from the coast)

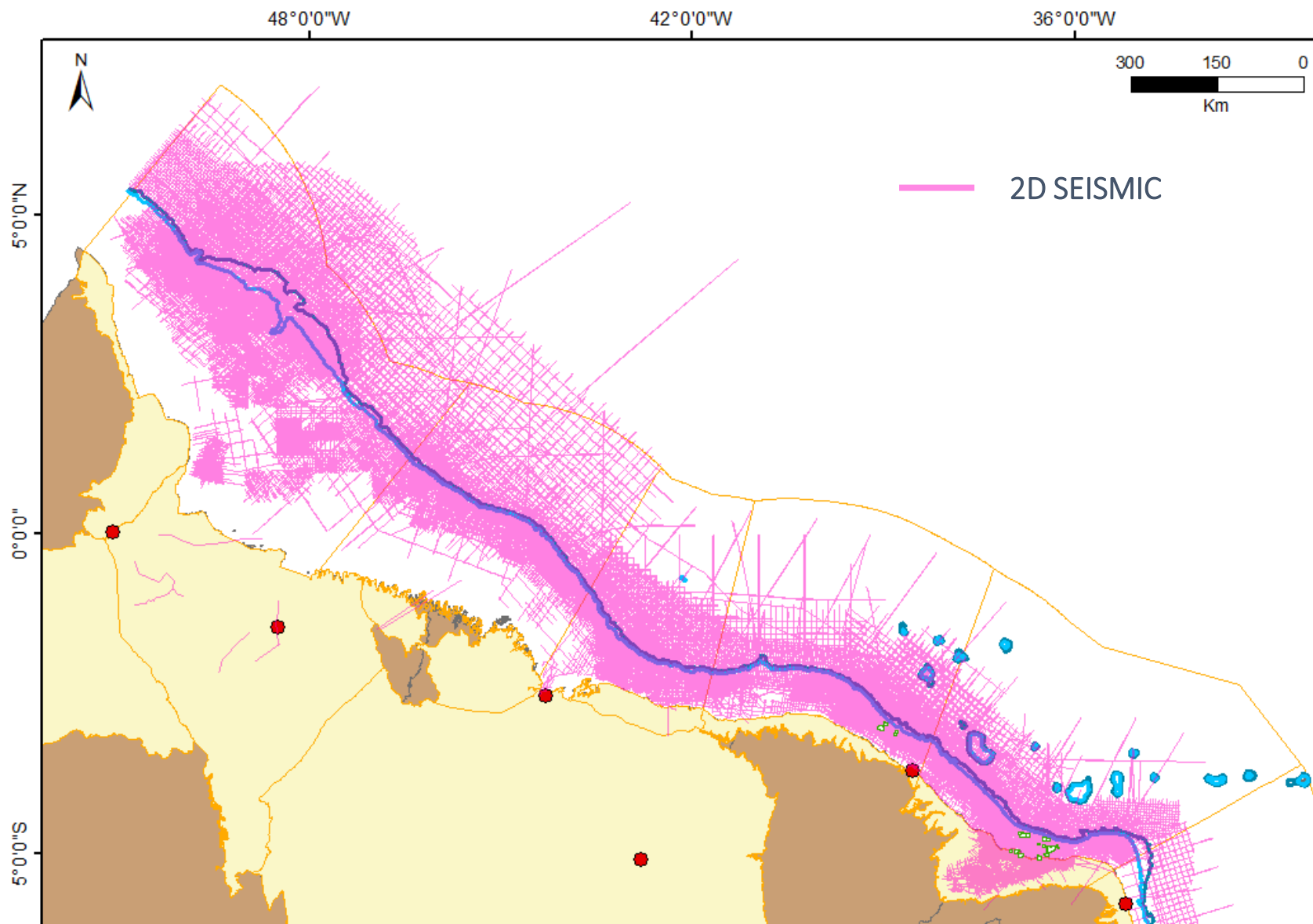


OFFSHORE SEDIMENTARY BASIN 50 KM FROM COAST & 50 M WATER DEPTH (WHICHEVER IS MORE RESTRICTIVE)

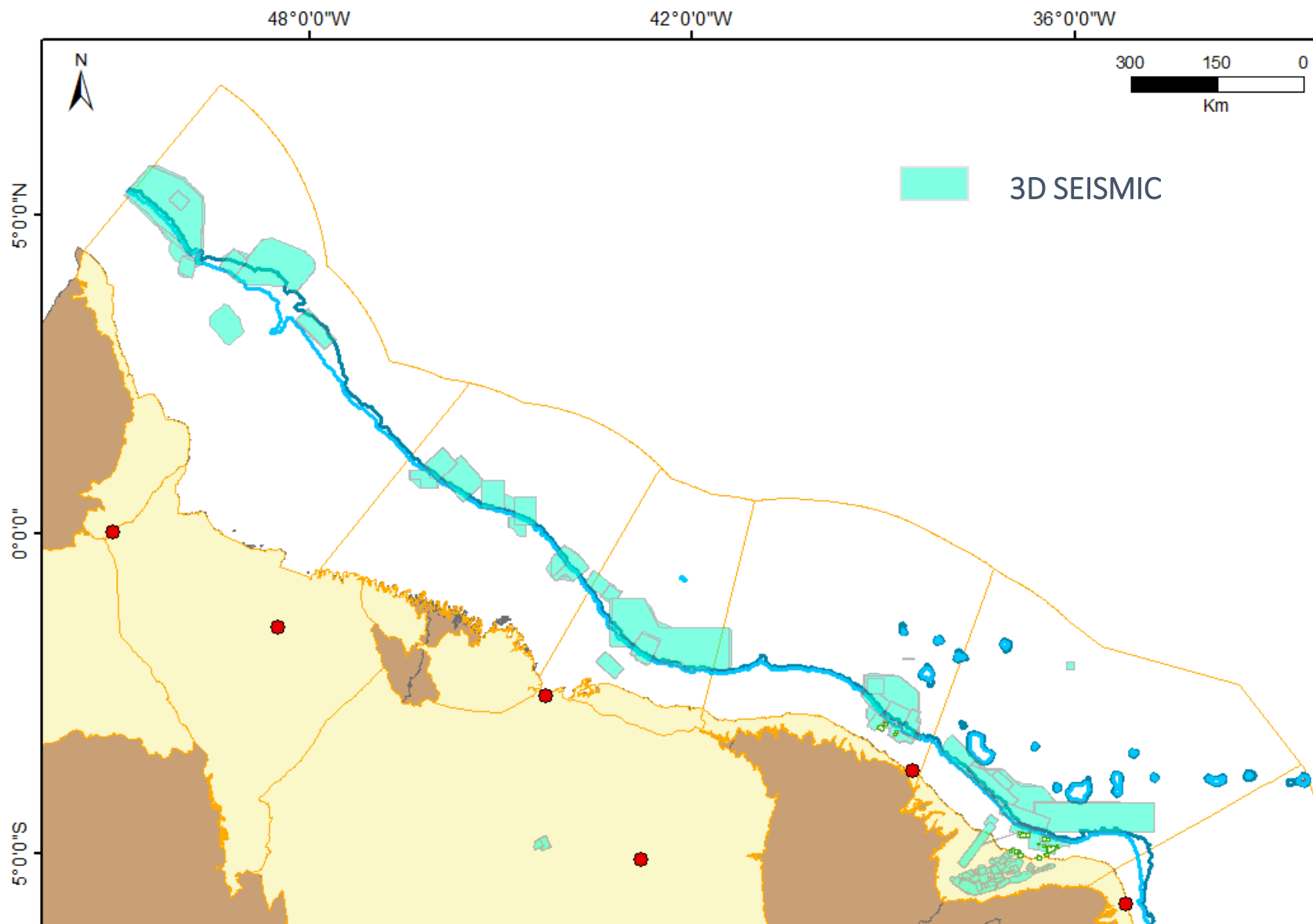
EQUATORIAL MARGIN OF BRAZIL - DEEP WATER



EQUATORIAL MARGIN OF BRAZIL - 2D SEISMIC DATA



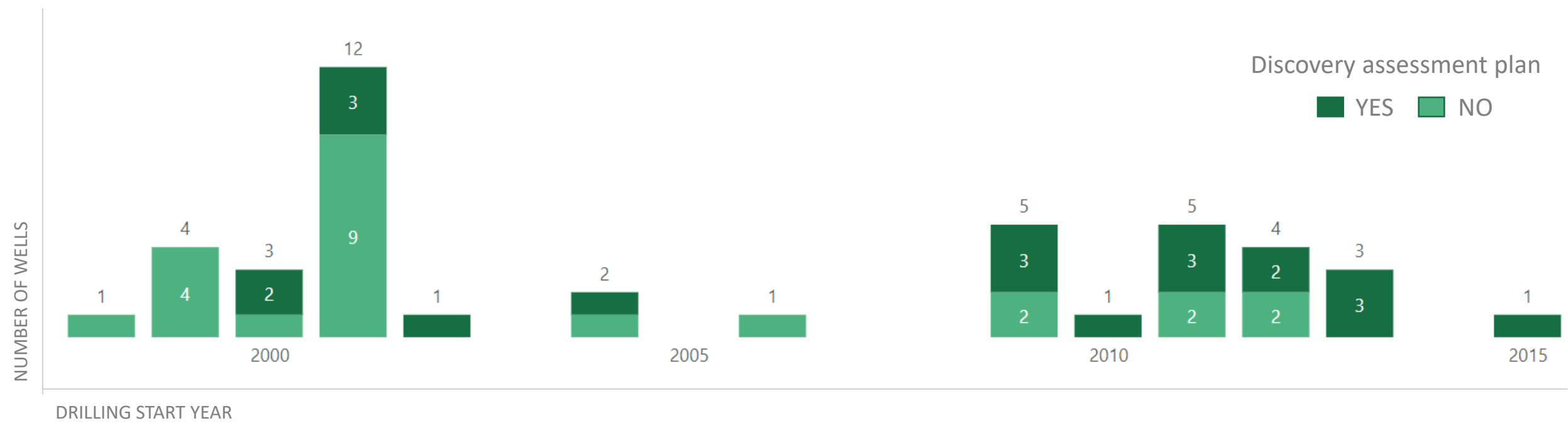
EQUATORIAL MARGIN OF BRAZIL - 3D SEISMIC DATA



EQUATORIAL MARGIN OF BRAZIL - ≥ 1998 WELLS



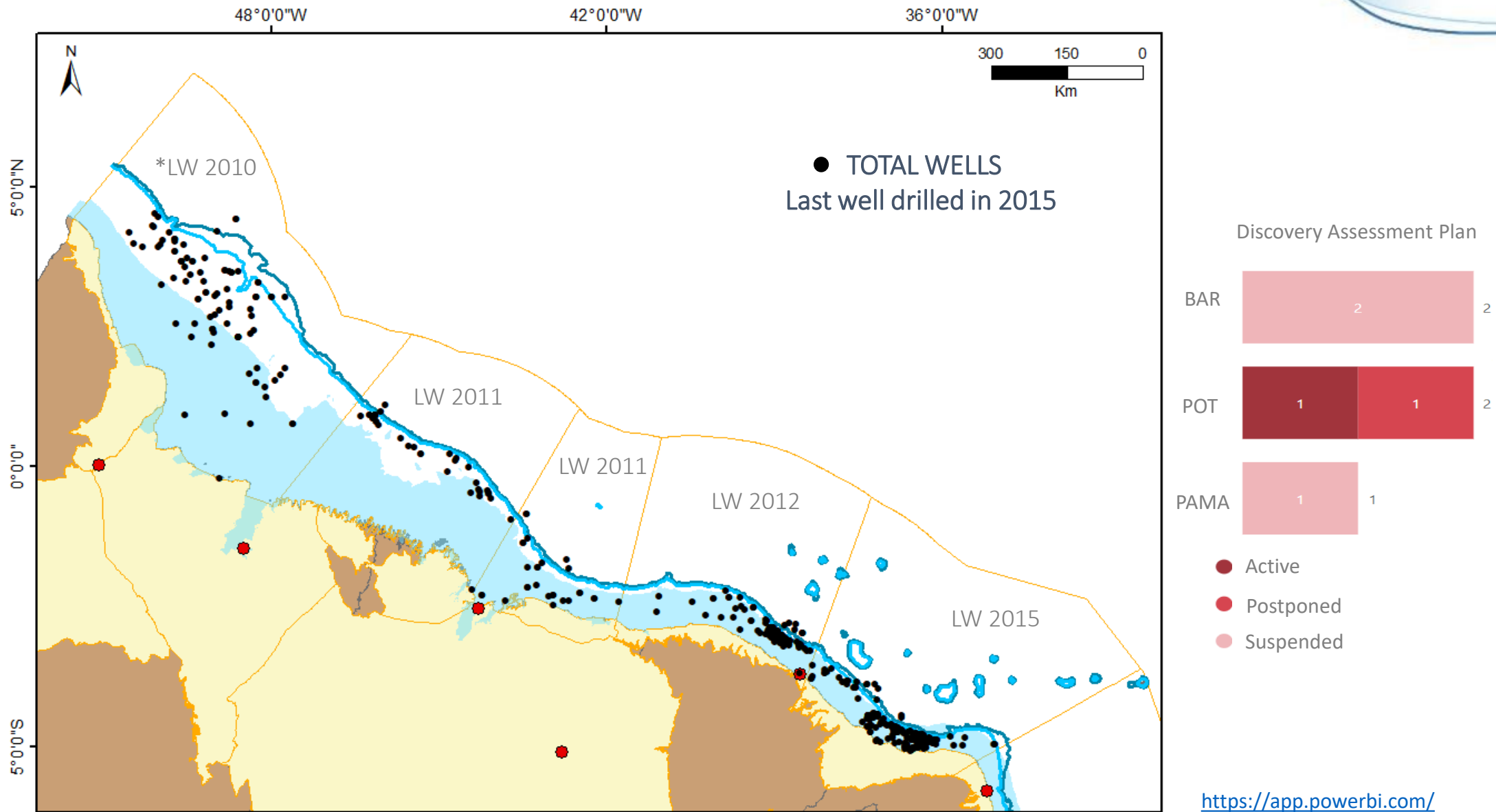
WELLS DRILLED SINCE 1998



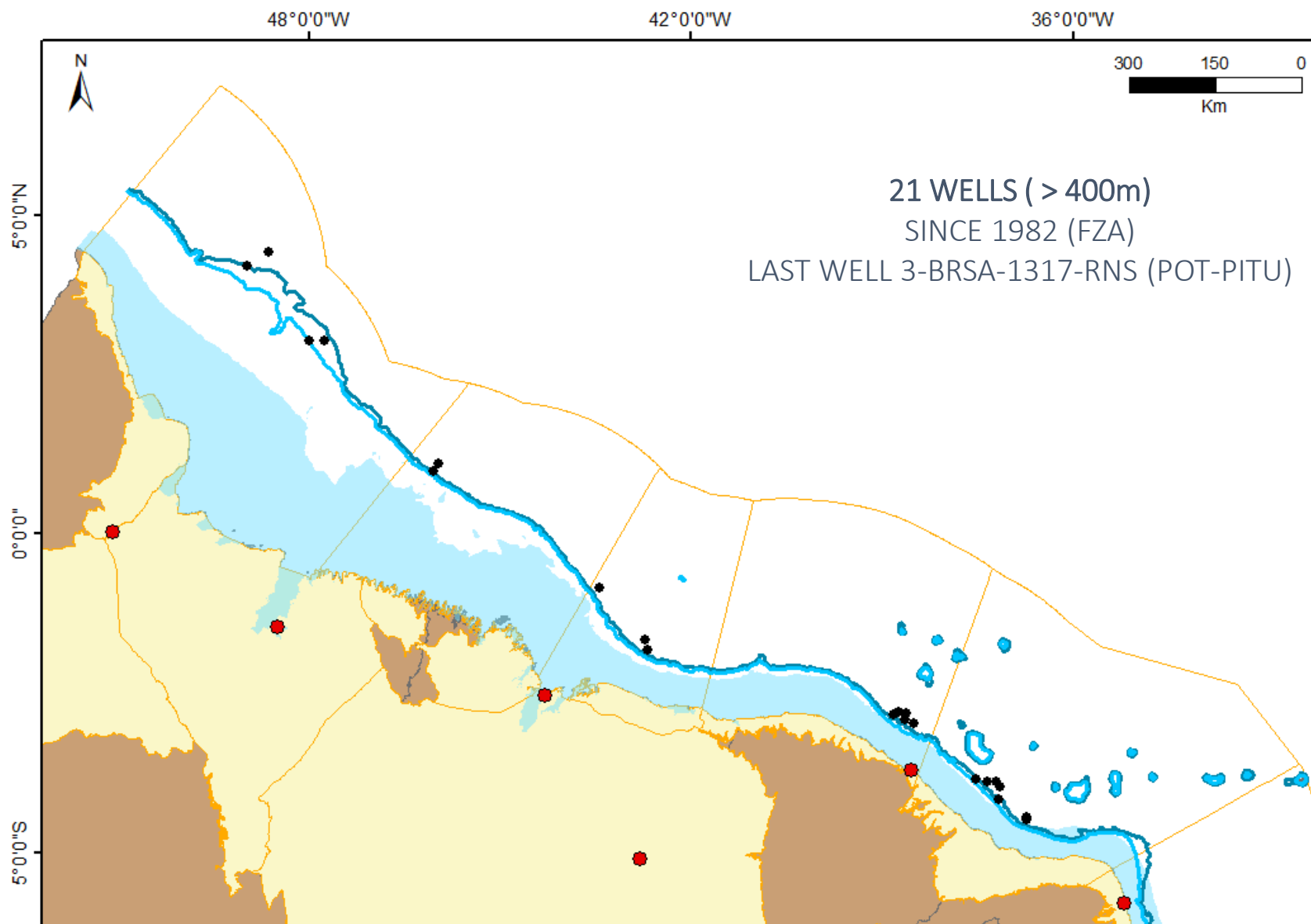
<https://app.powerbi.com/>



EQUATORIAL MARGIN OF BRAZIL - TOTAL WELLS

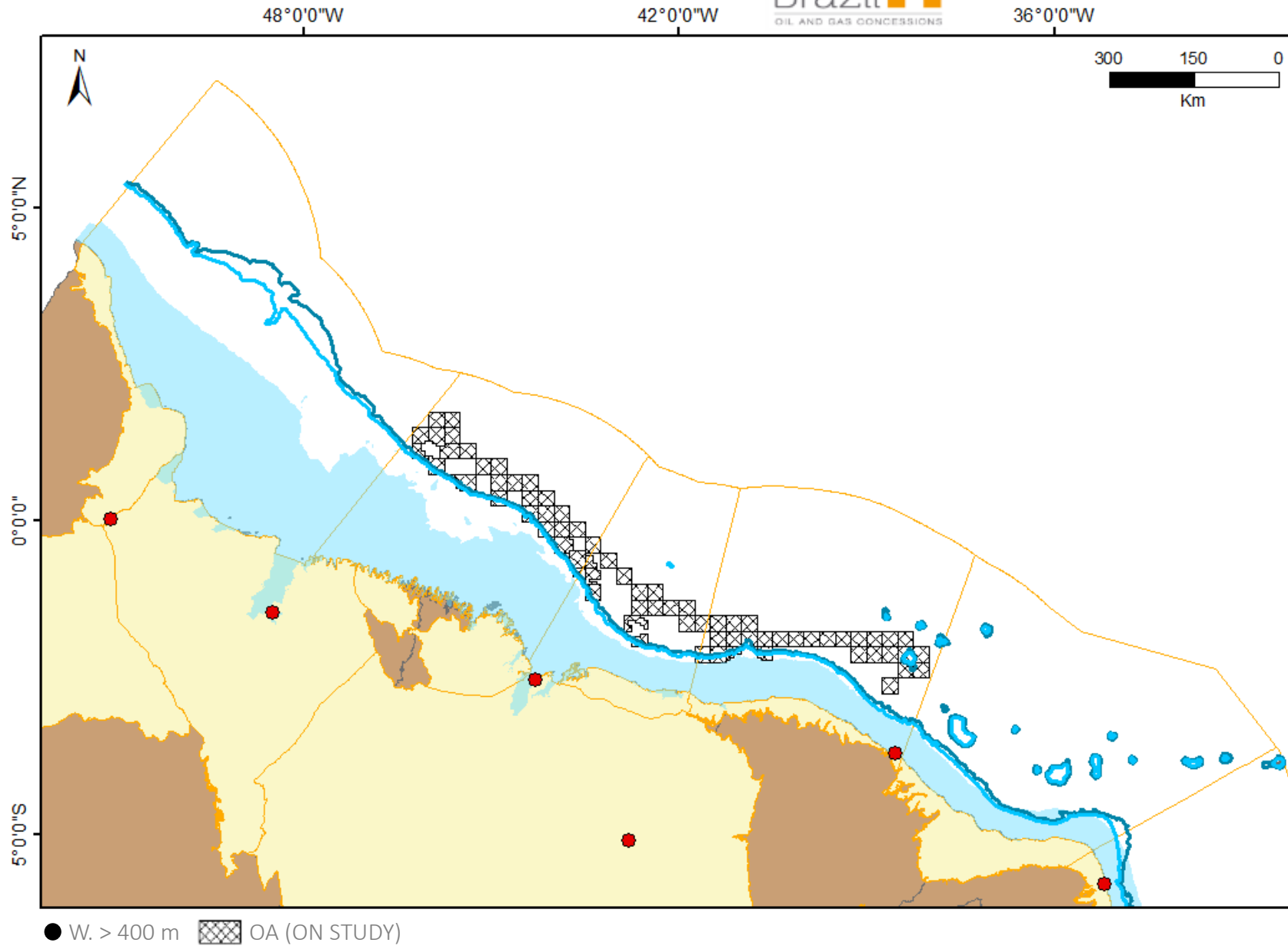


EQUATORIAL MARGIN OF BRAZIL - DEEP WATER DRILLED WELLS



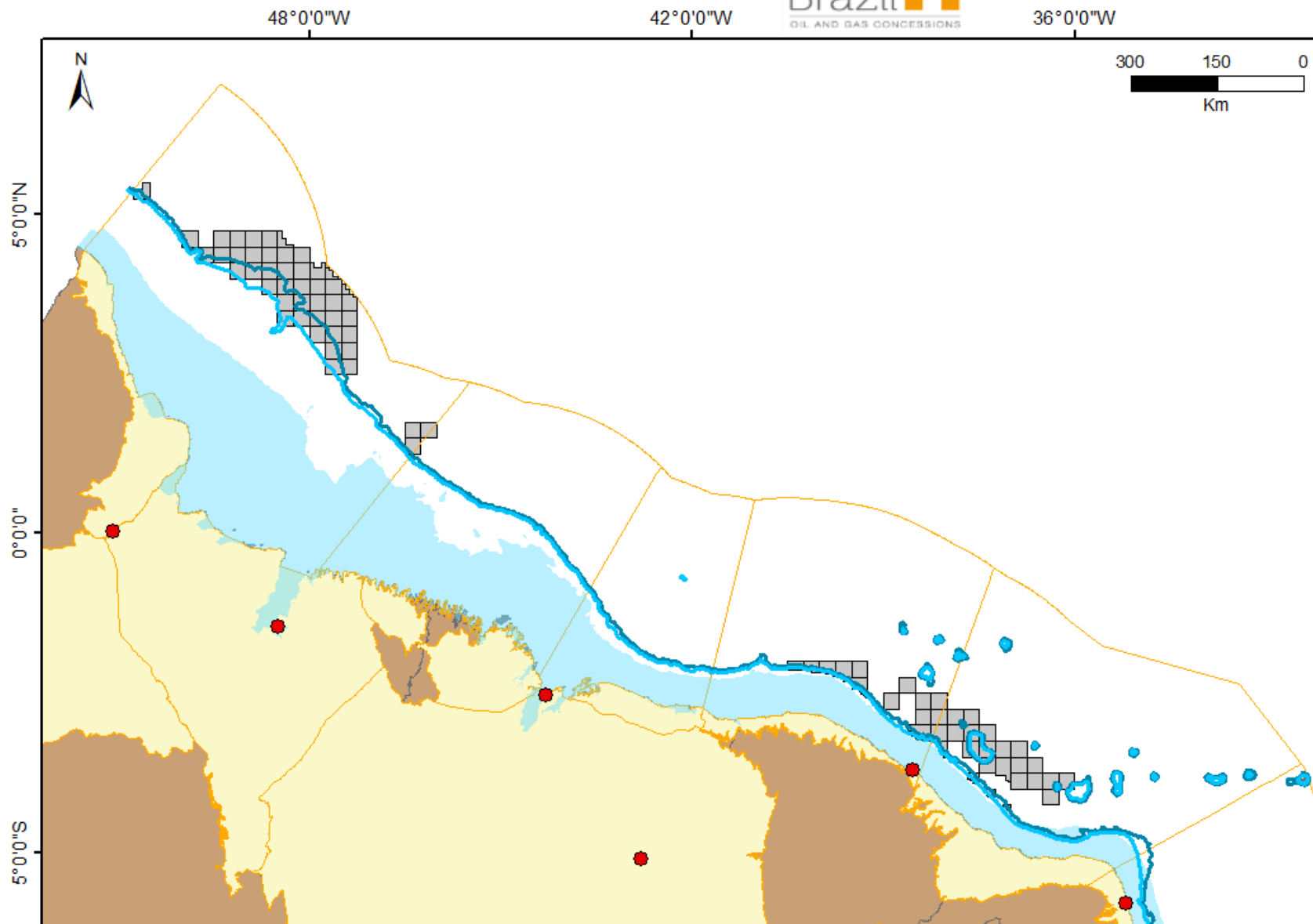
EQUATORIAL MARGIN OF BRAZIL - BLOCK ON STUDY

OPEN
ACREAGE
Brazil
OIL AND GAS CONCESSIONS



EQUATORIAL MARGIN OF BRAZIL - BLOCK ON OFFER

OPEN
ACREAGE
Brazil
OIL AND GAS CONCESSIONS

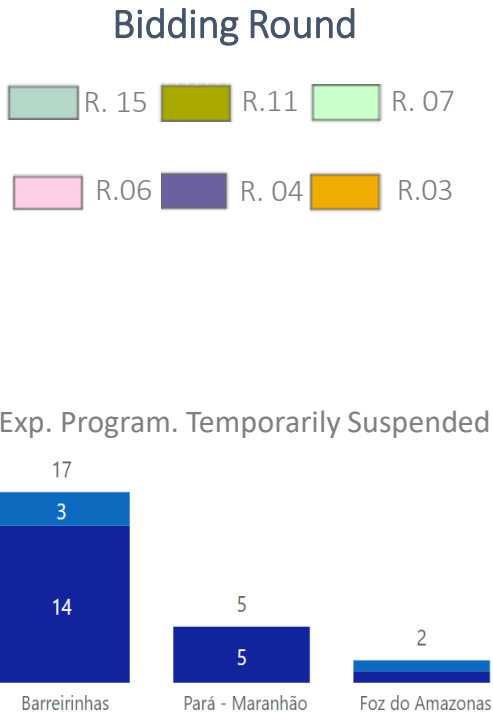
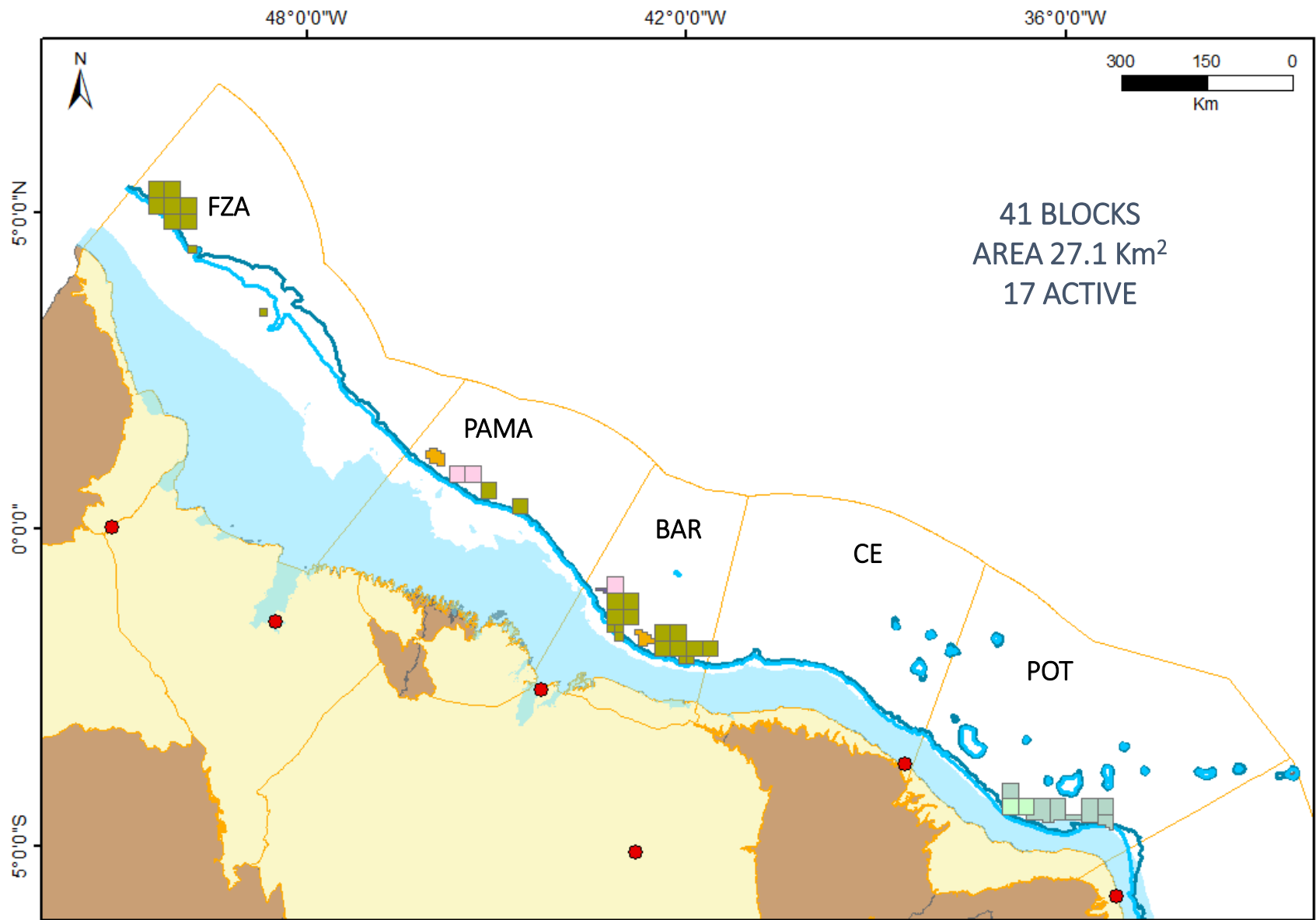


W. > 400 m  OA (ON OFFER)



Workshop The Deep and Ultra-Deep Waters of the Equatorial Margin Of Brazil

EQUATORIAL MARGIN OF BRAZIL - EXPLORATORY CONTRACT ONGOING

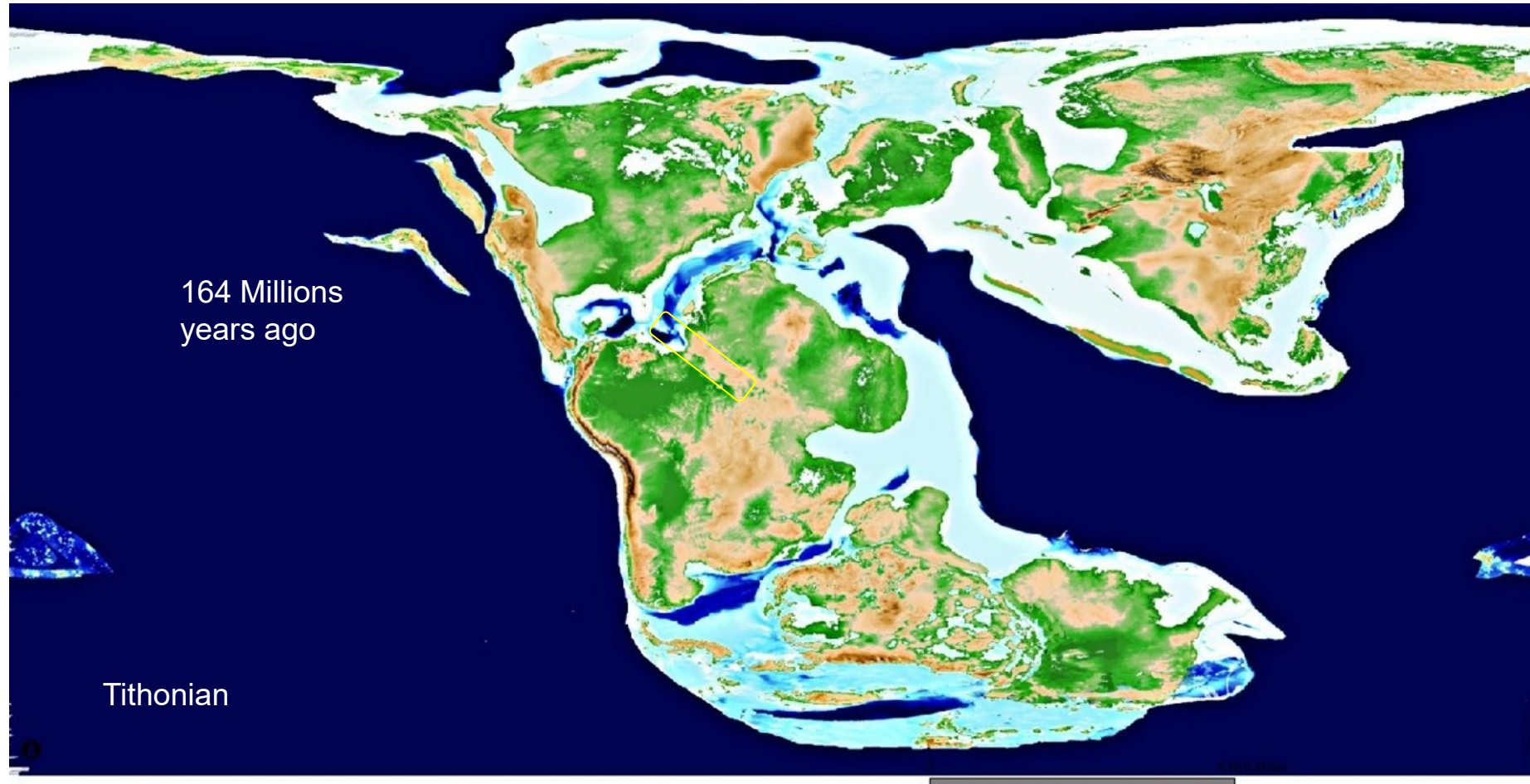


- Environmental license
- Other

<https://app.powerbi.com/>

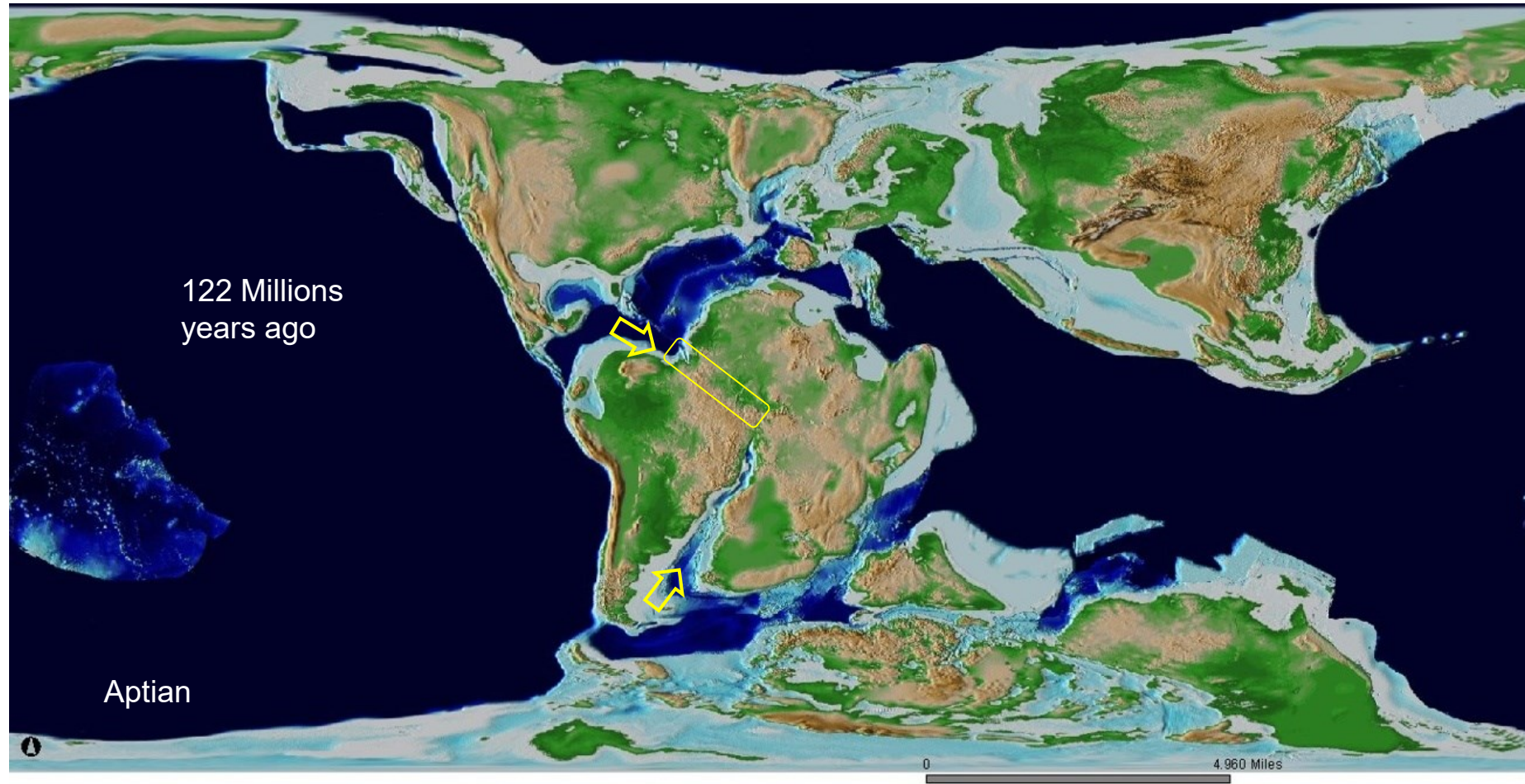


EQUATORIAL MARGIN OF BRAZIL

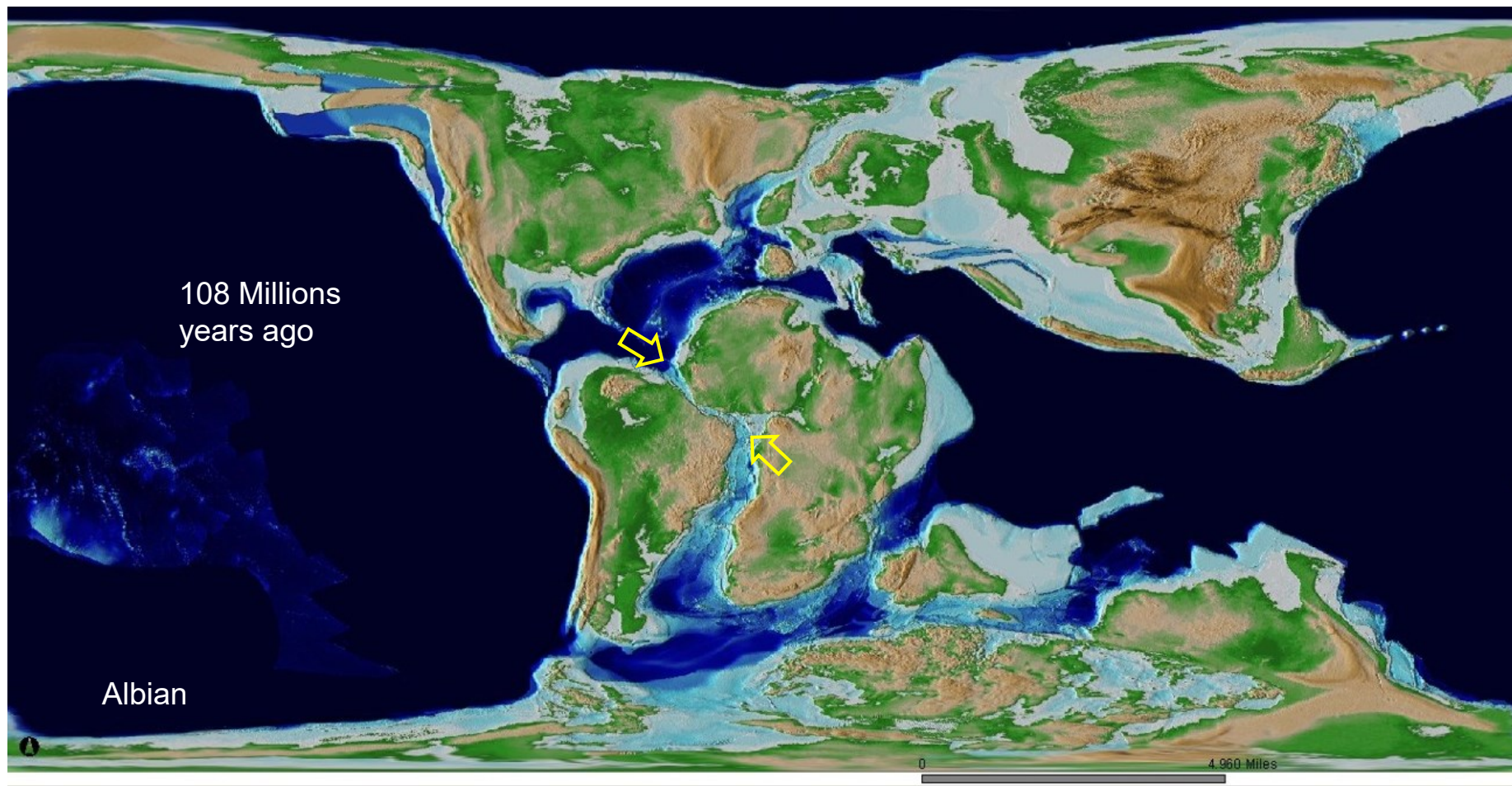


SINBPA/Petrobras
Scotese

EQUATORIAL MARGIN OF BRAZIL

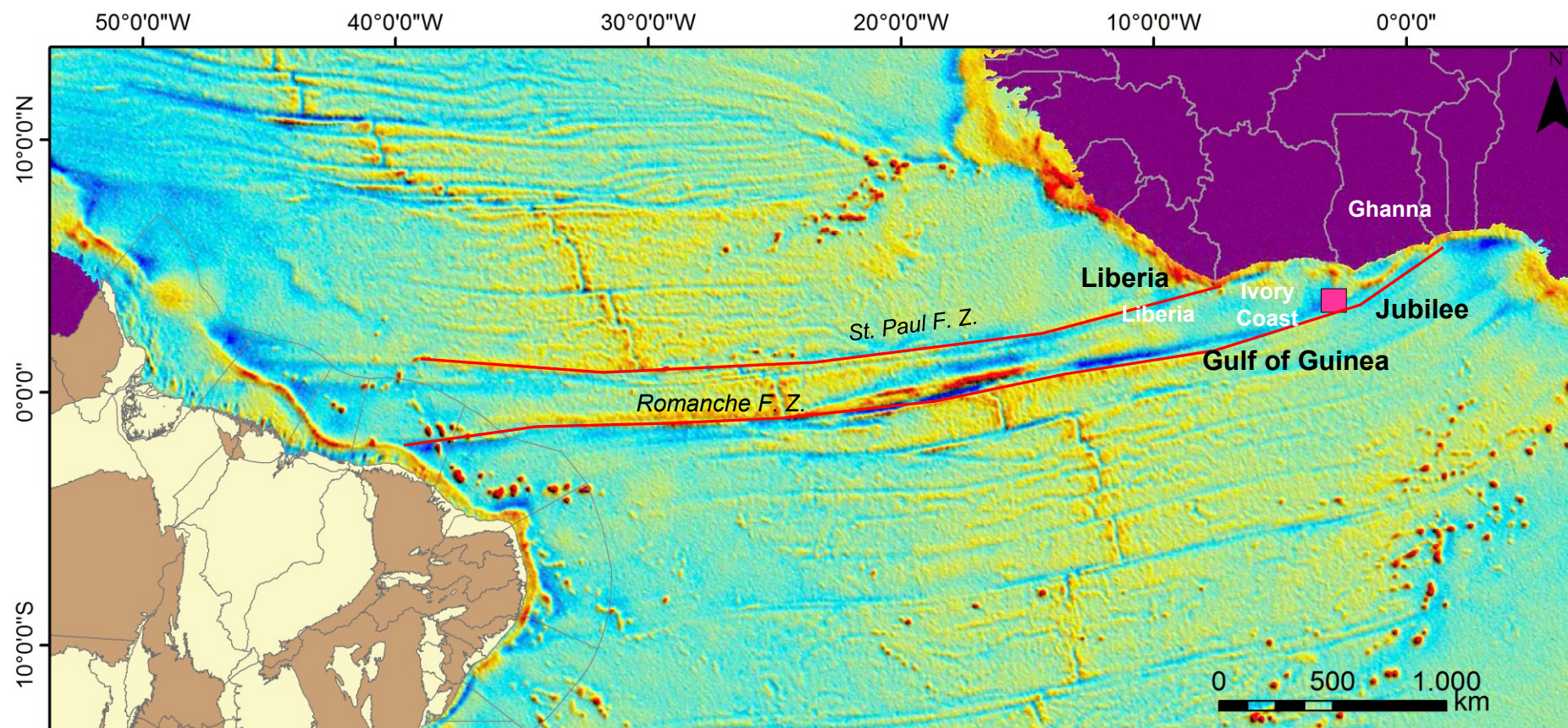


SINBPA/Petrobras
Scotese

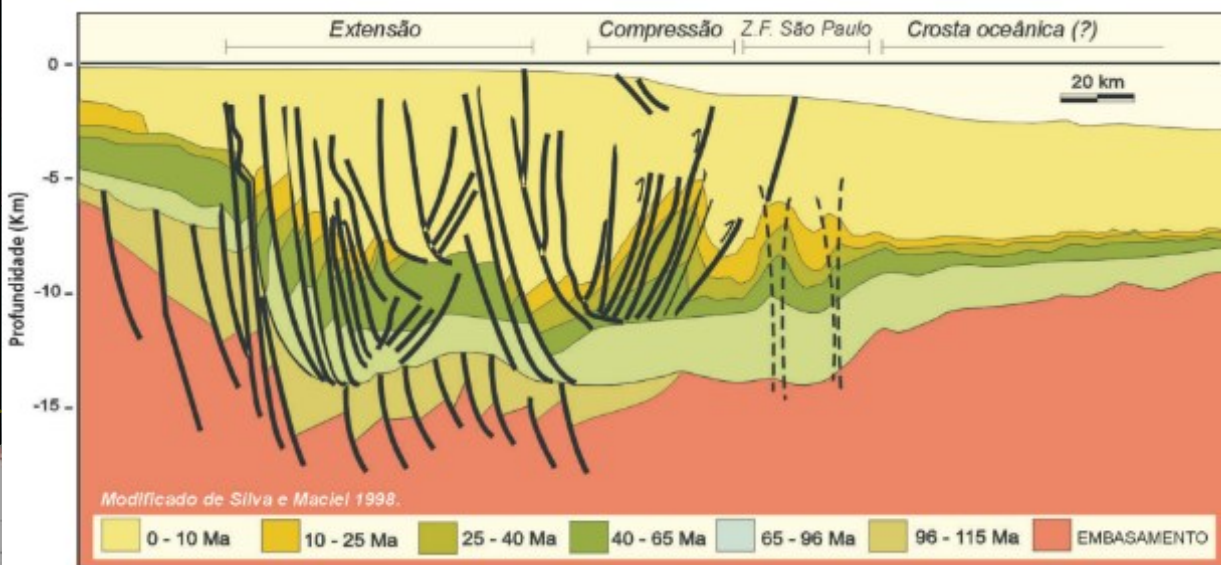
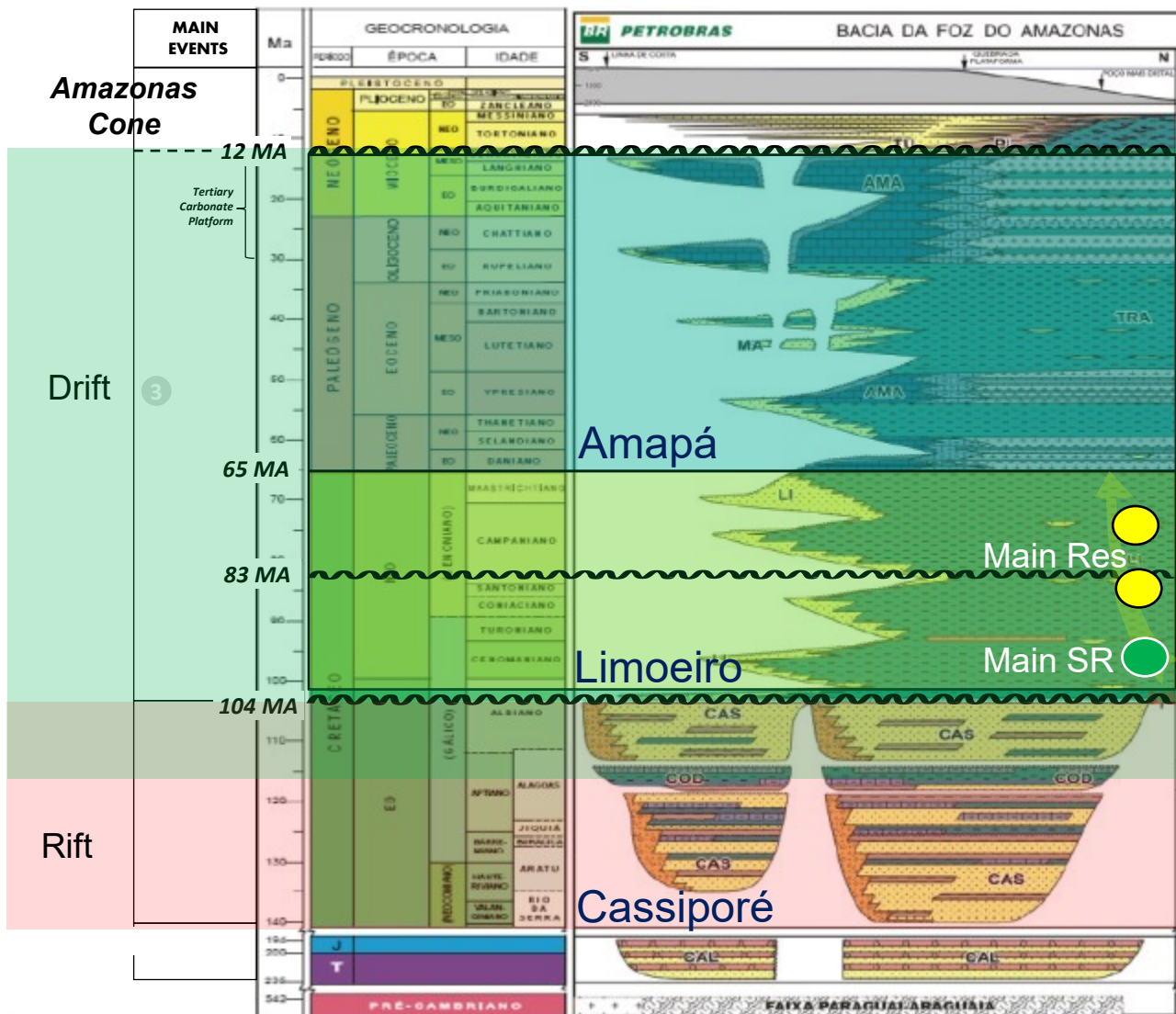


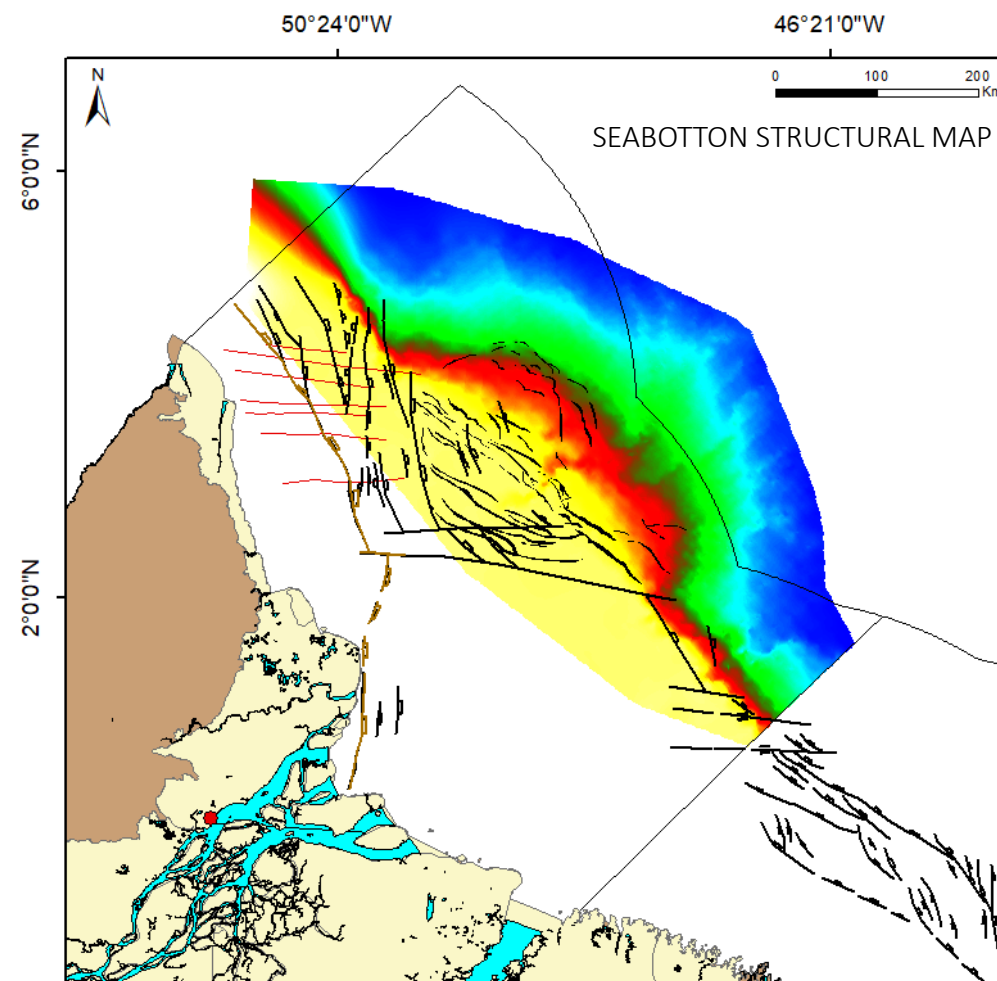
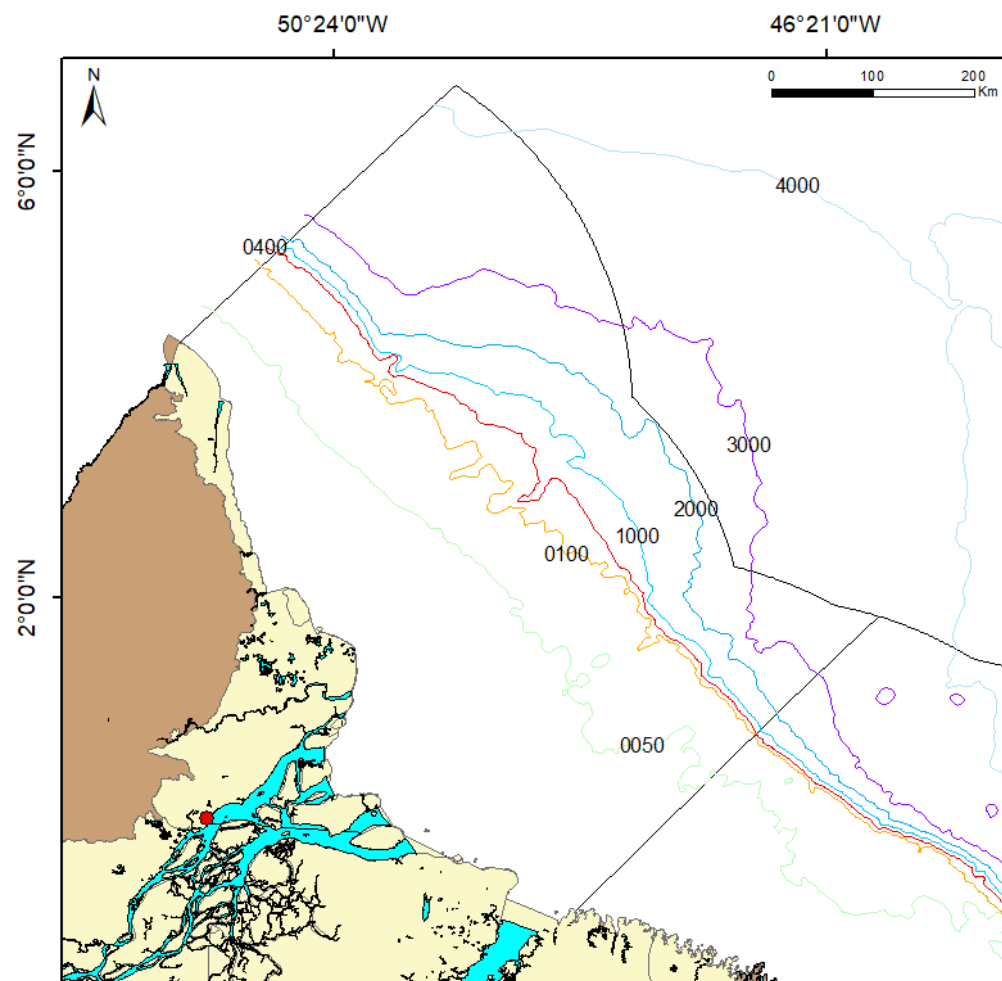
SINBPA/Petrobras
Scotese

EQUATORIAL MARGIN OF BRAZIL

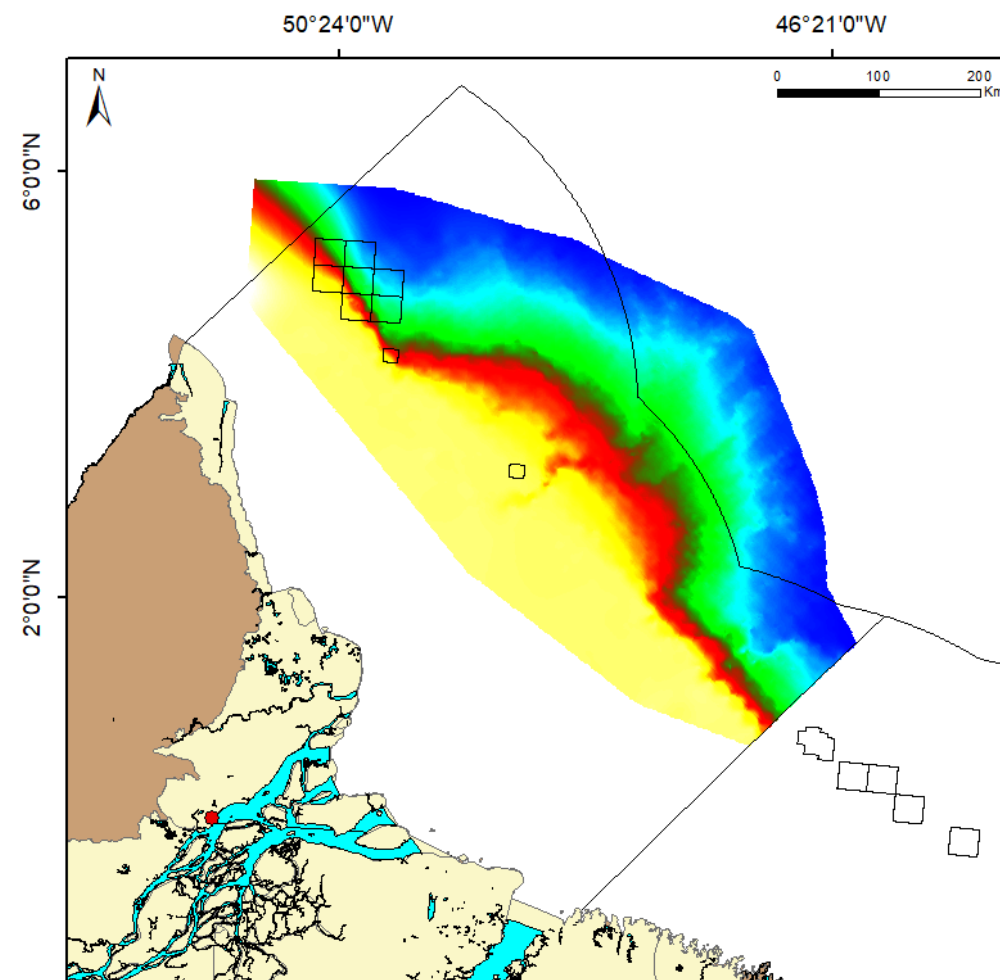
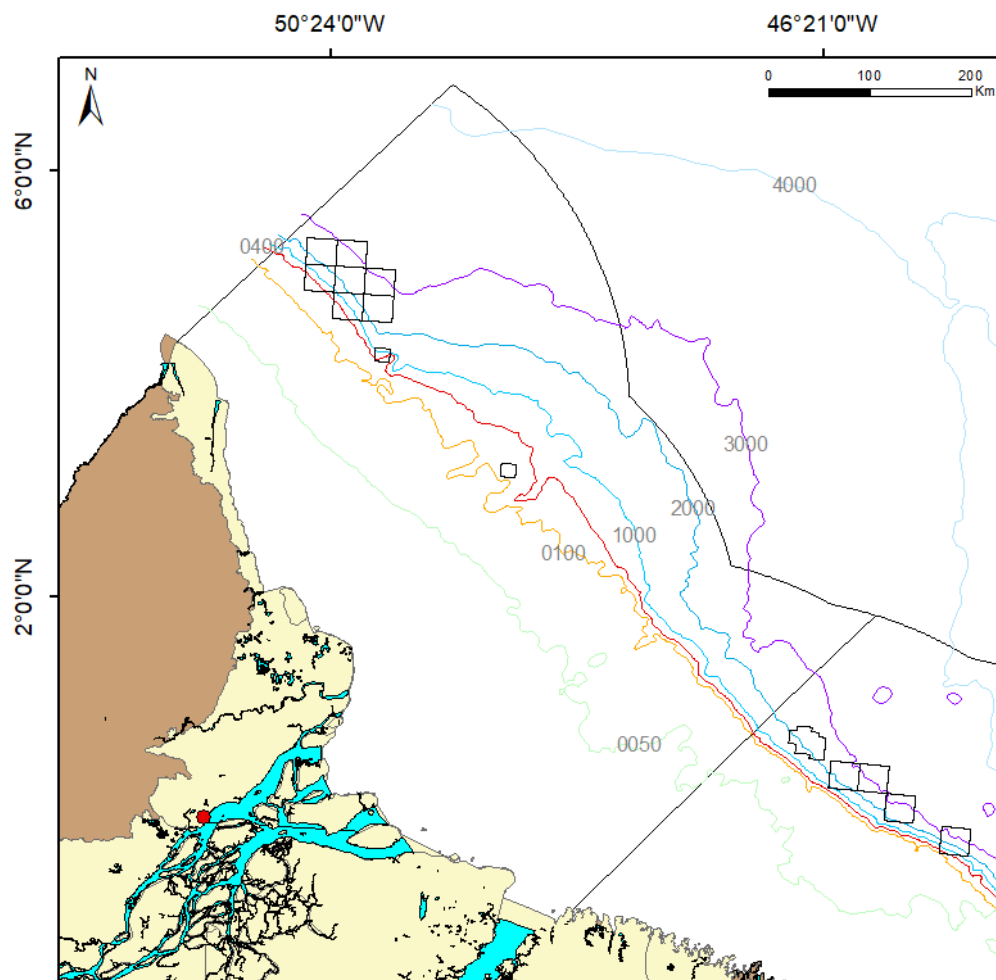


FOZ DO AMAZONAS (FZA)

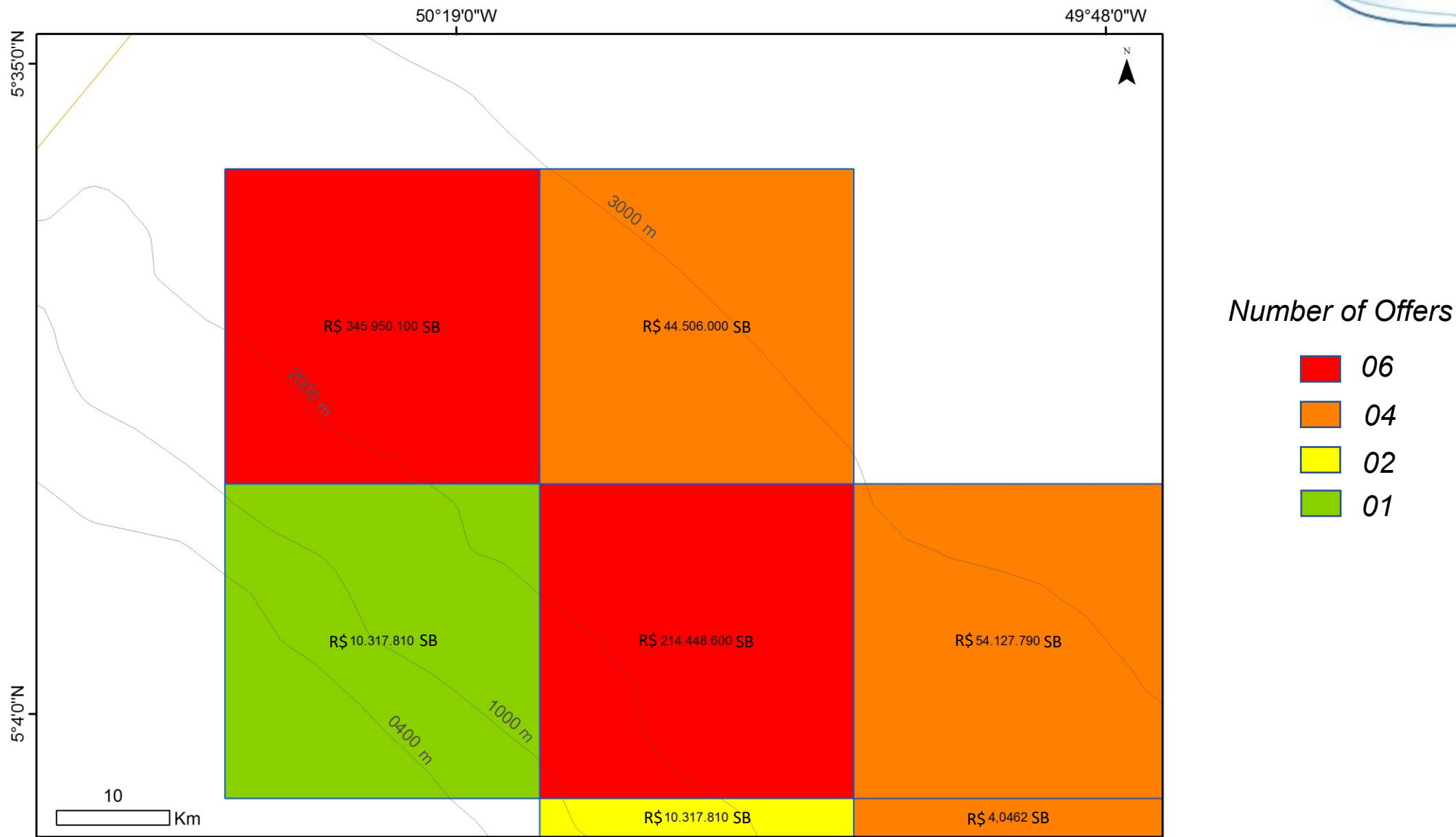




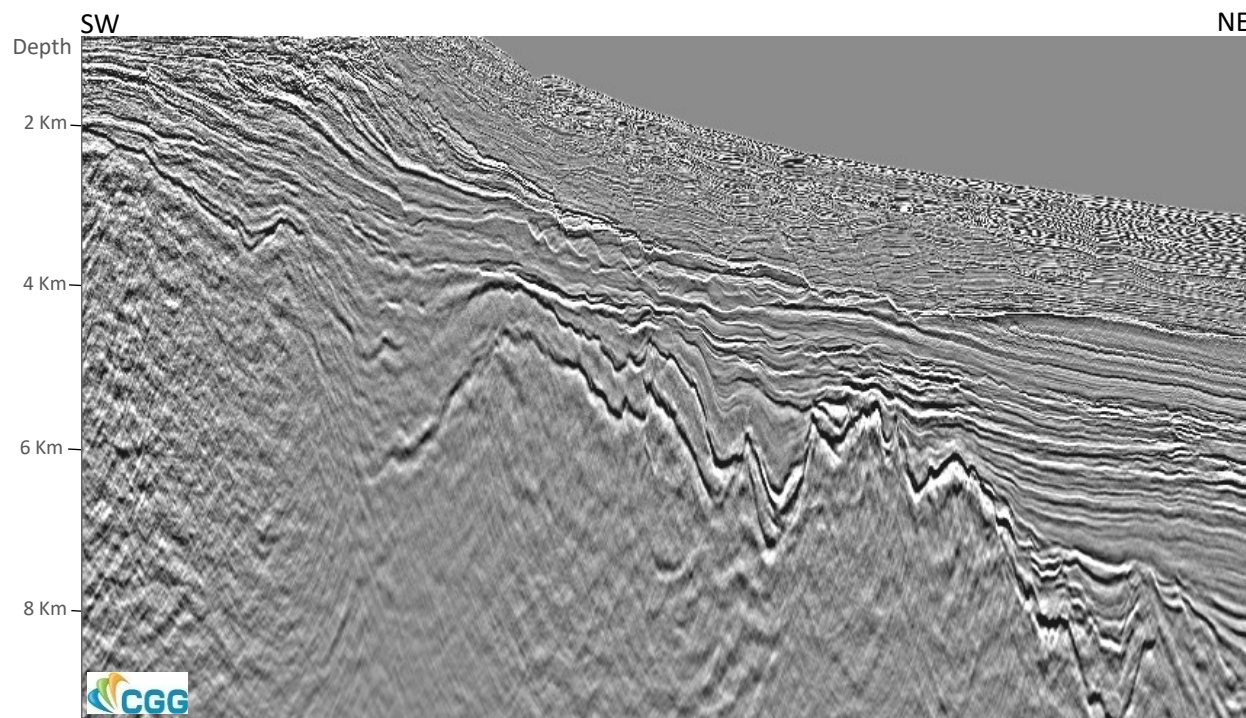
FOZ DO AMAZONAS (FZA) - EXPLORATORY CONTRACT ONGOING



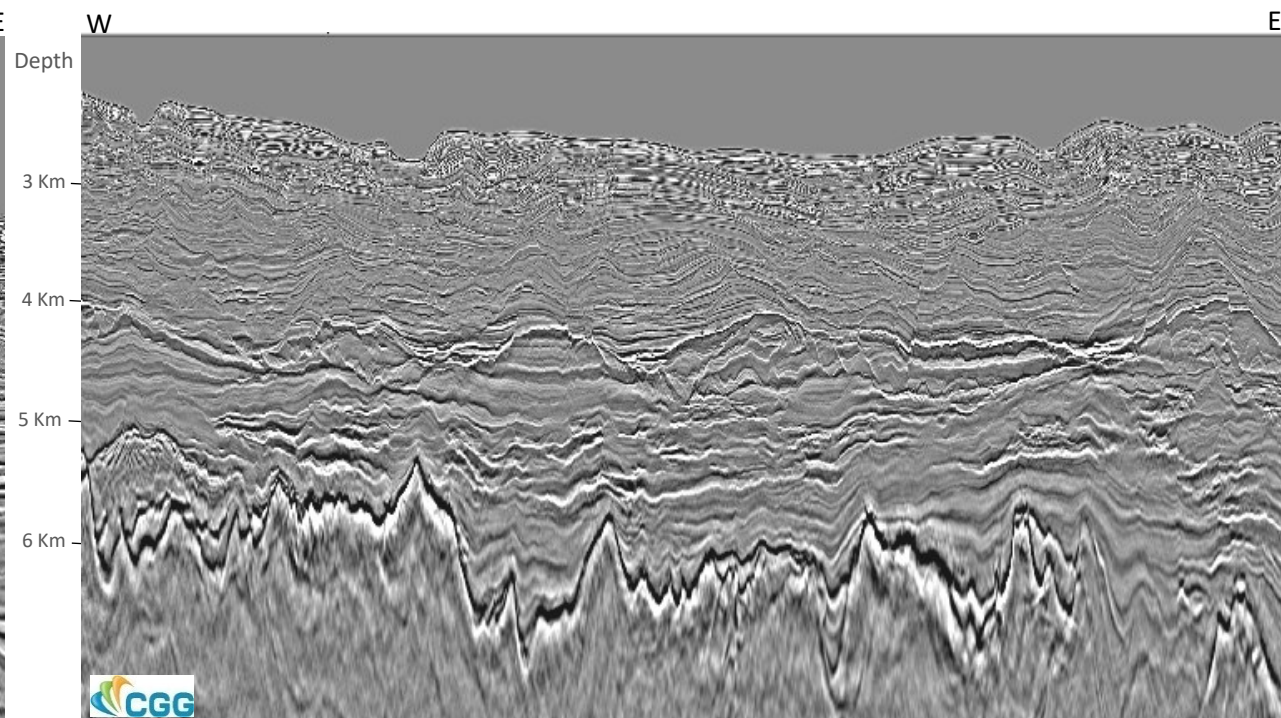
FOZ DO AMAZONAS (FZA) - EXPLORATORY CONTRACT ONGOING – ROUND 11th



FOZ DO AMAZONAS (FZA) - 3D SEISMIC

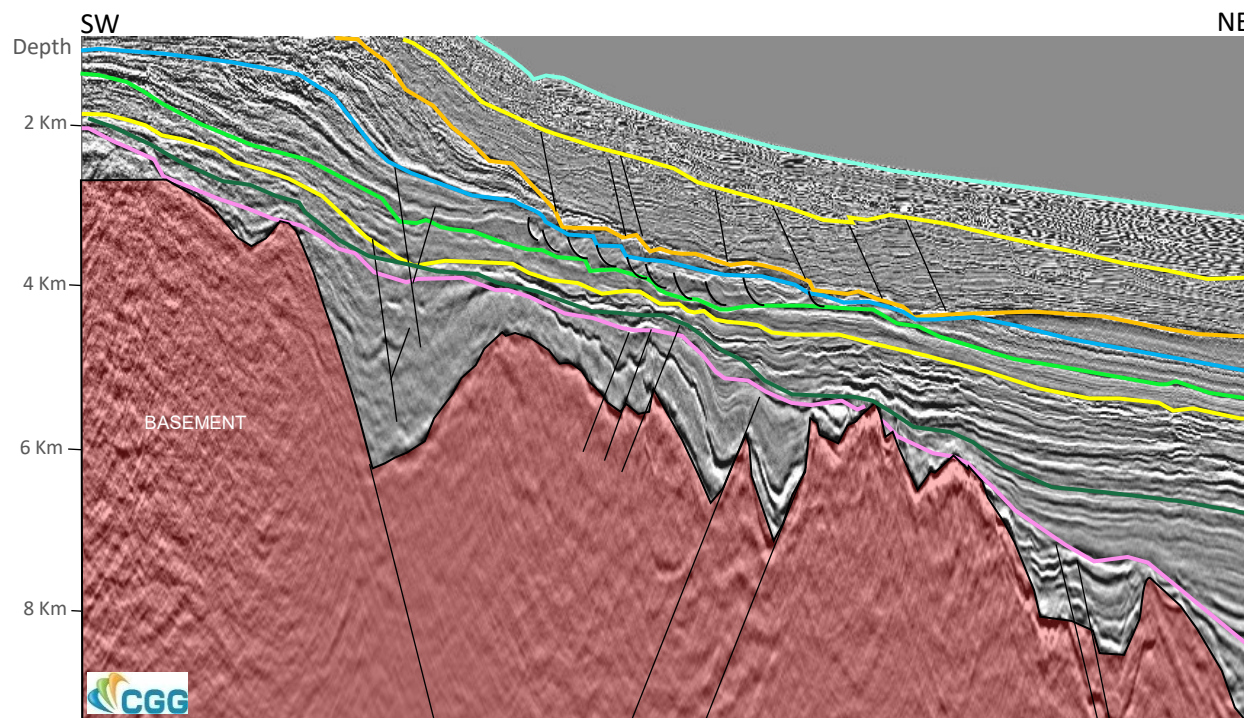


COURTESY CGG - R0257_3D_NAP1_PSDM_FULL (DIP-IL)

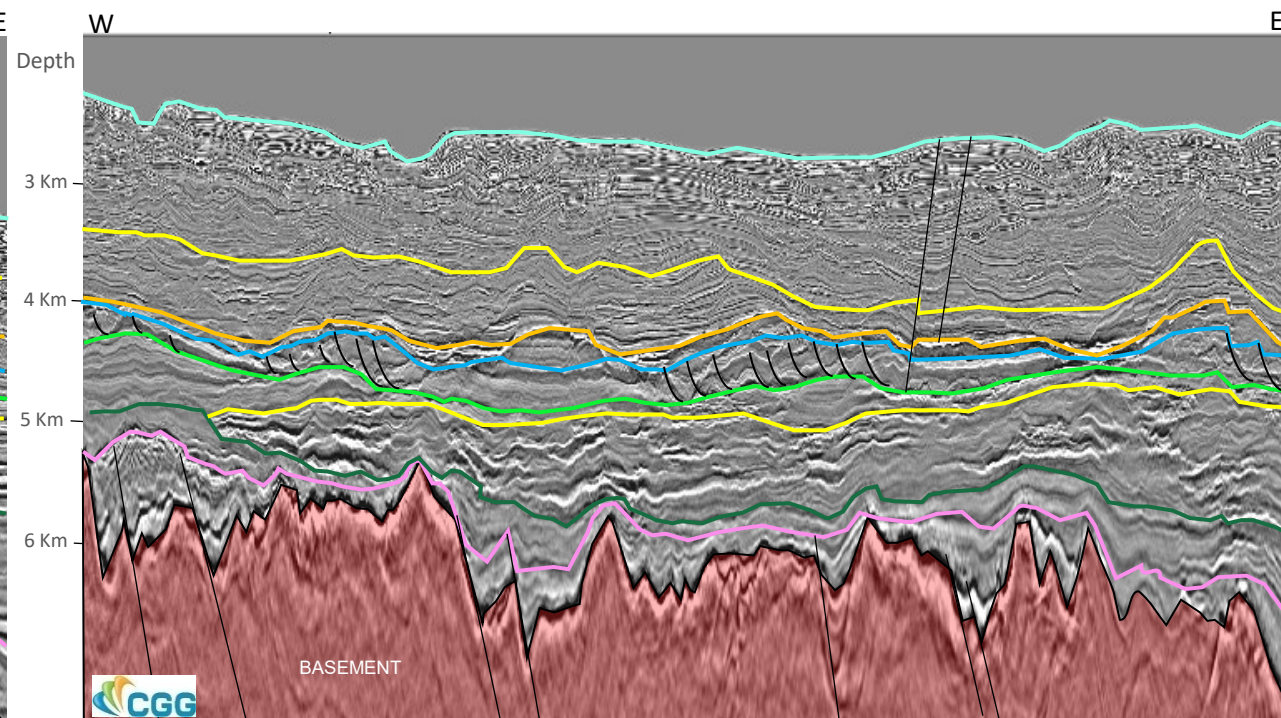


COURTESY CGG - R0257_3D_NAP1_PSDM_FULL (STRIKE-ARBITRARY LINE)

FOZ DO AMAZONAS (FZA) - 3D SEISMIC



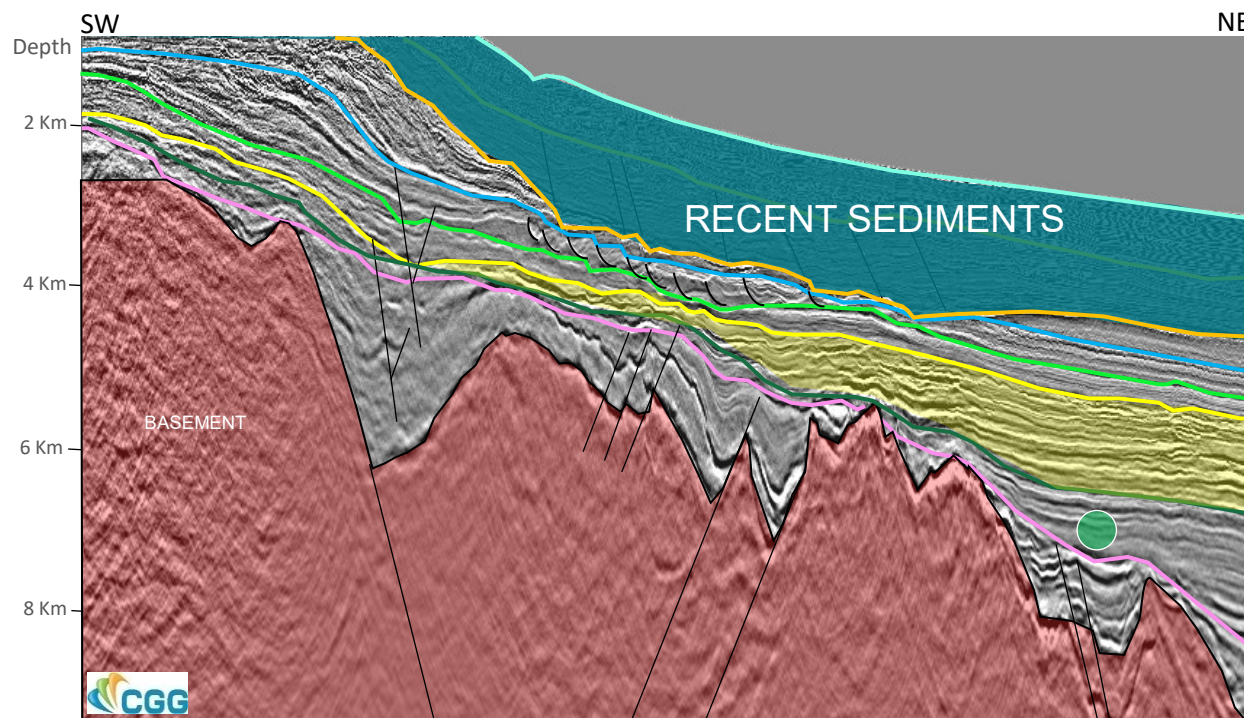
COURTESY CGG - R0257_3D_NAP1_PSDM_FULL (DIP-IL)



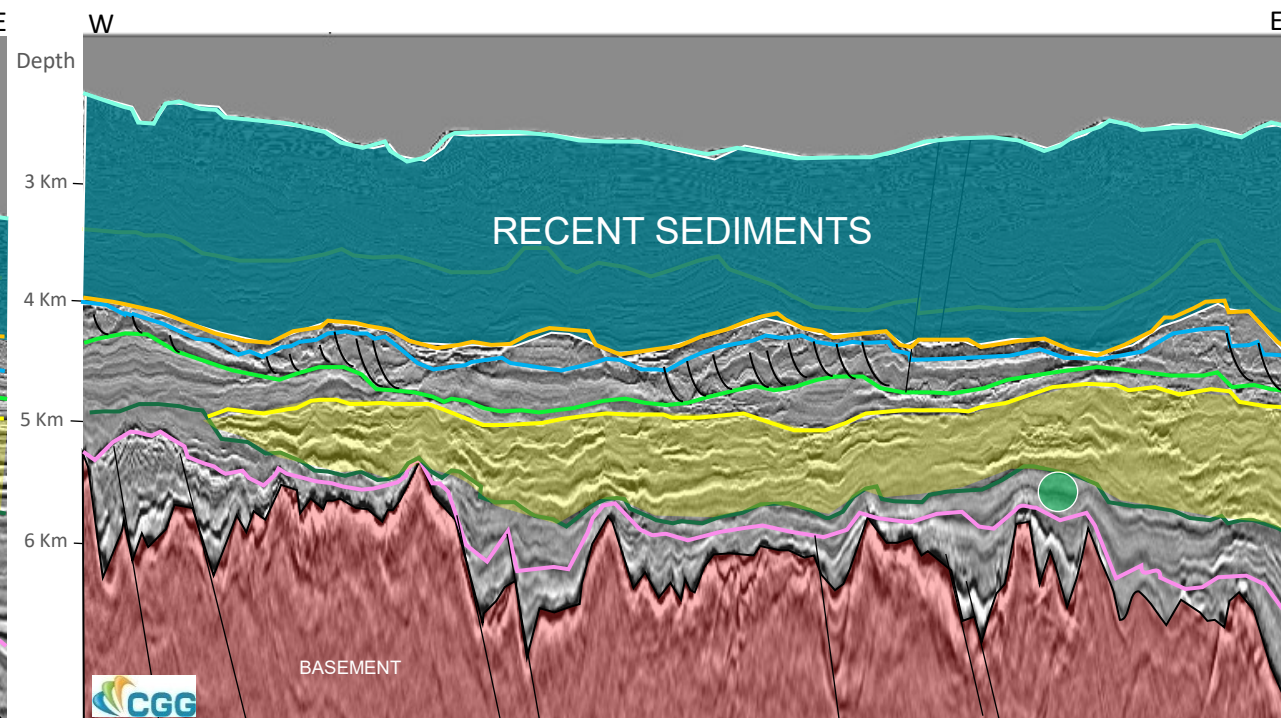
COURTESY CGG - R0257_3D_NAP1_PSDM_FULL (STRIKE-ARBITRARY LINE)

— Sea Bottom — Base of Pleistocene — Base of Pliocene — Base of Oligocene — Top of Maastrichtian — Top of Campanian — Coniacian-Santonian — Albian (BREAK UP)

FOZ DO AMAZONAS (FZA) - 3D SEISMIC



COURTESY CGG - R0257_3D_NAP1_PSDM_FULL (DIP-IL)



COURTESY CGG - R0257_3D_NAP1_PSDM_FULL (STRIKE-ARBITRARY LINE)

— Sea Bottom
 — Base of Pleistocene
 — Base of Pliocene
 — Base of Oligocene
 — Top of Maastrichtian
 — Top of Campanian
 — Coniacian-Santonian
 — Albian (BREAK UP)

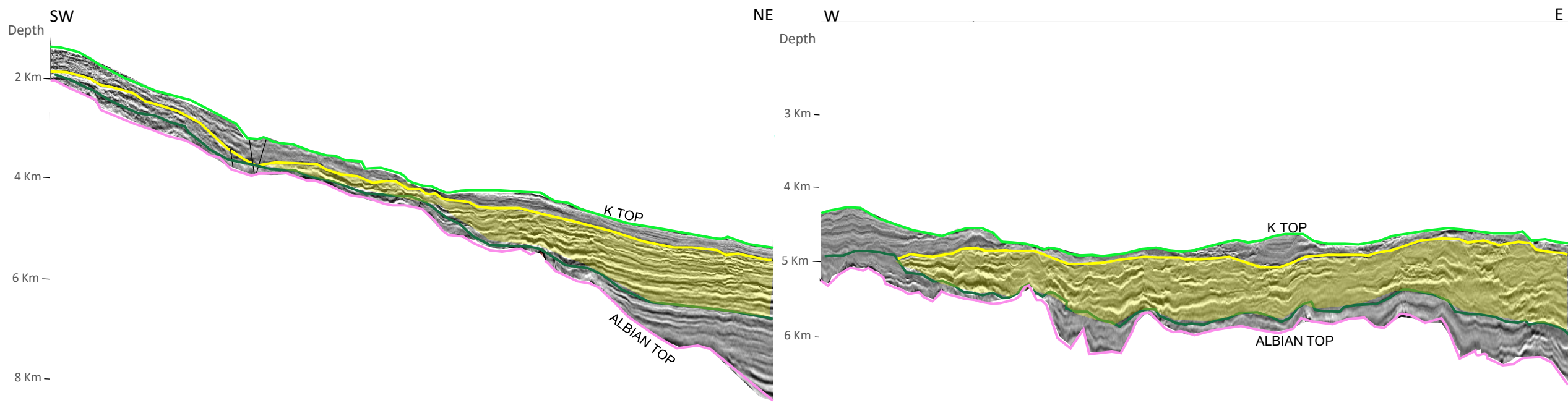


MAIN RESERVOIR INTERVAL



MAIN SOURCE ROCK

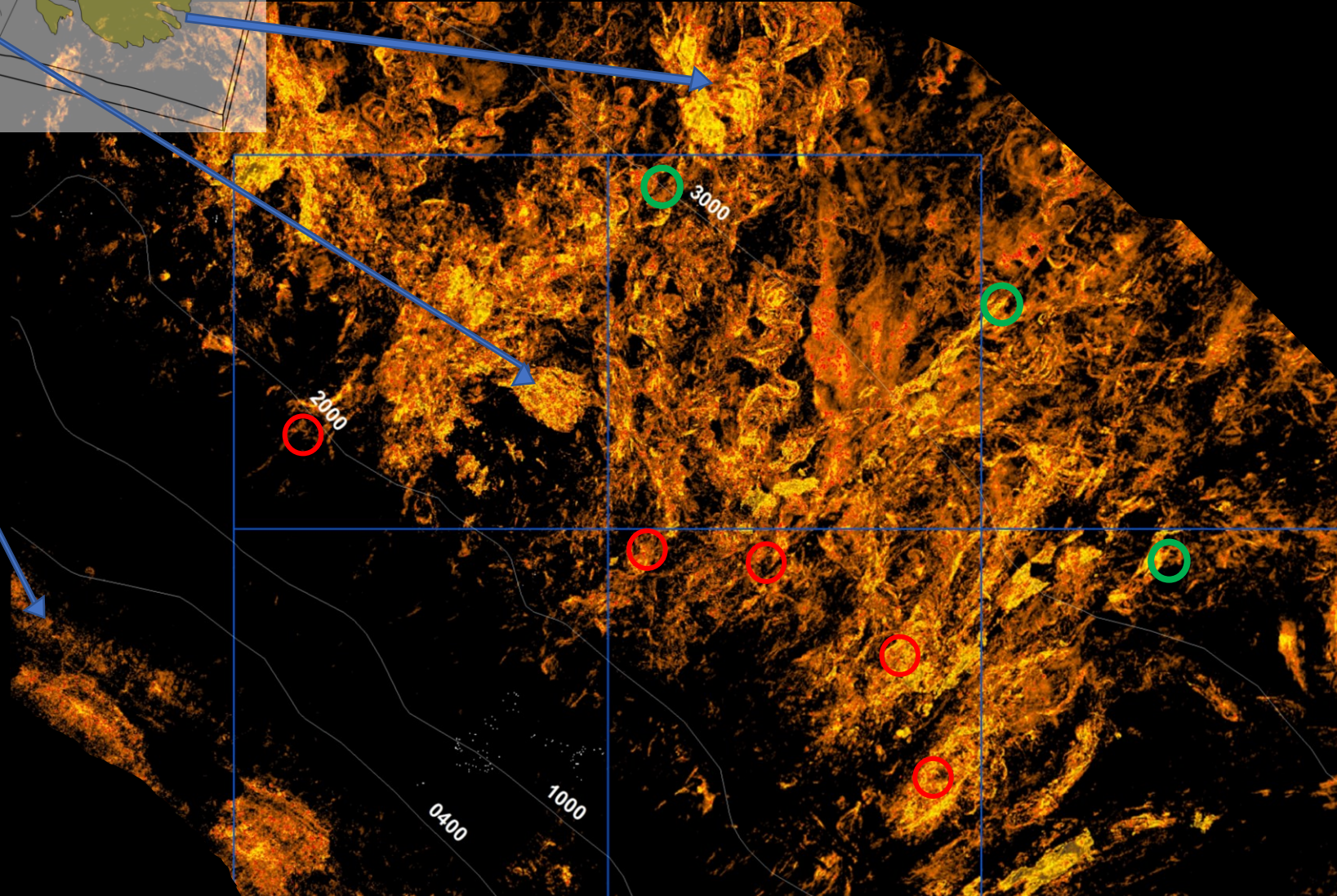
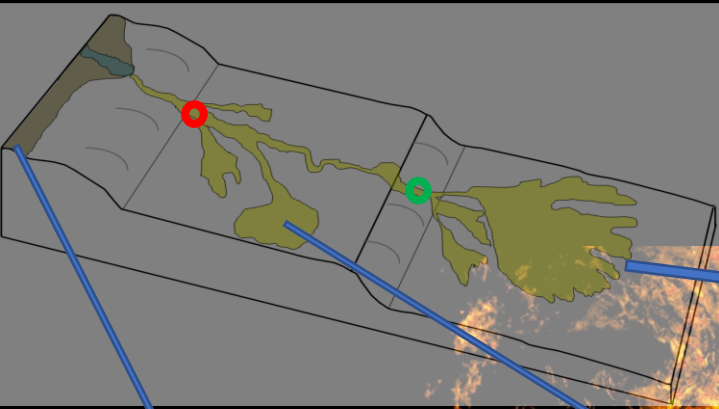
FOZ DO AMAZONAS (FZA) - 3D SEISMIC



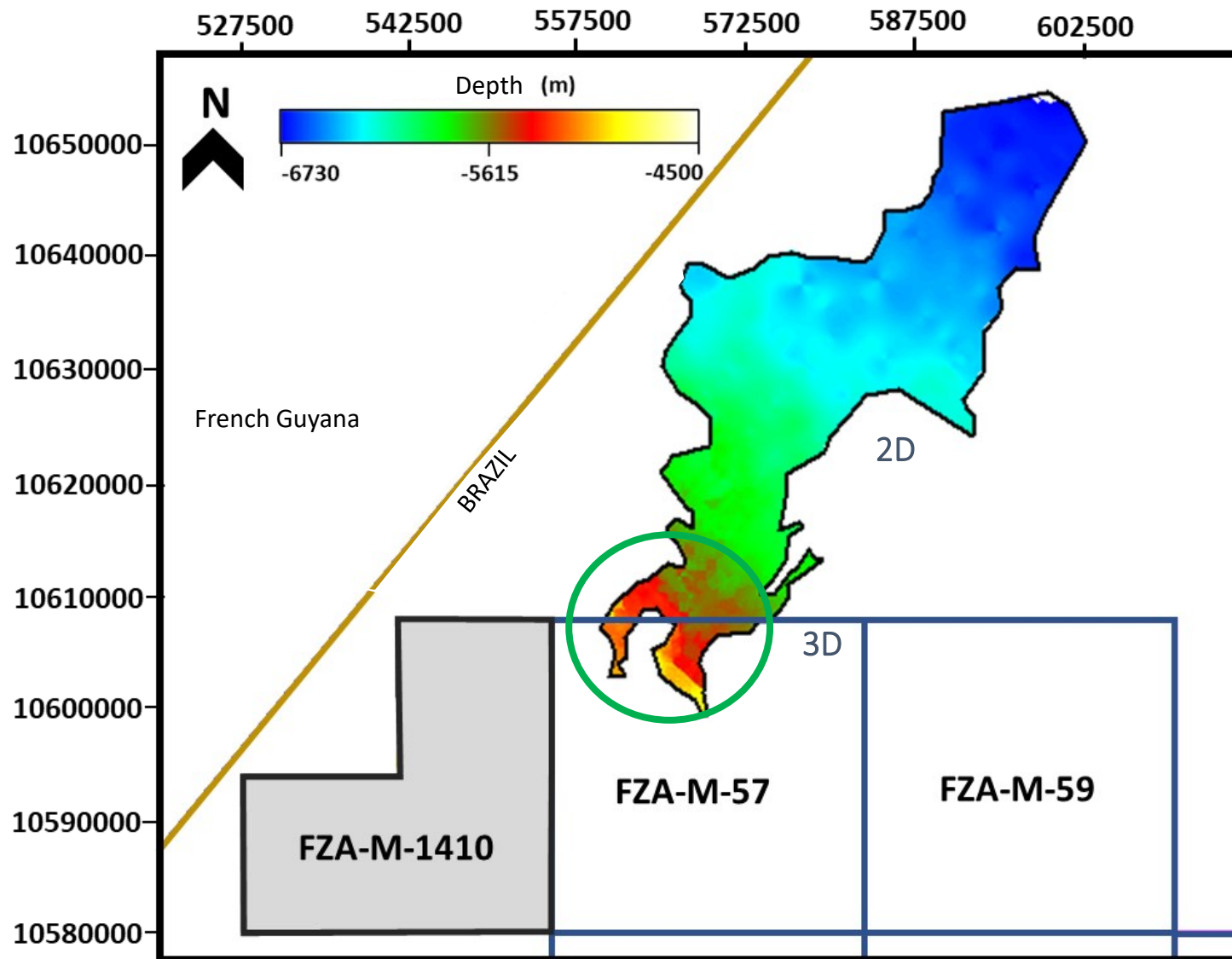
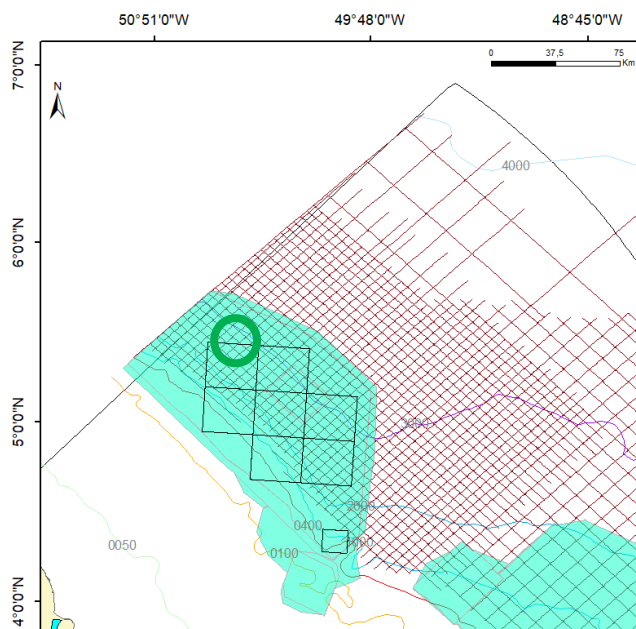
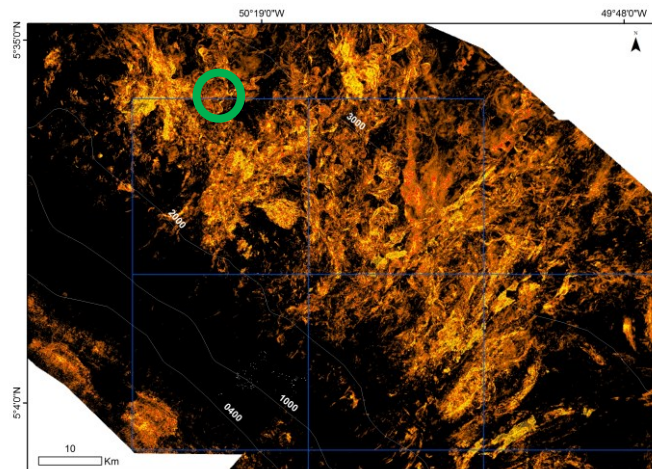
MAIN RESERVOIR INTERVAL



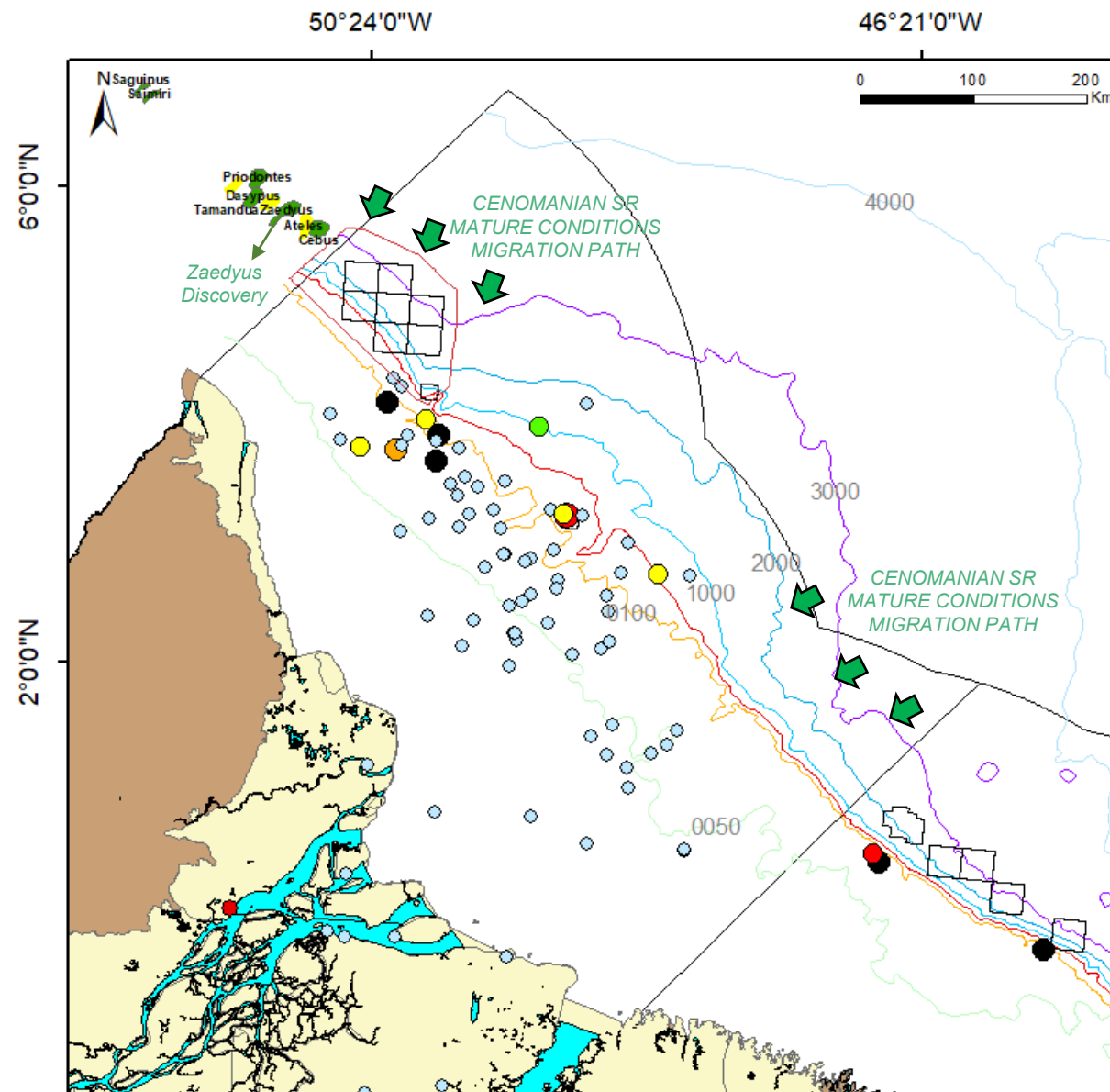
(ALBIAN $\leftrightarrow$ MASTR. INTERVAL)
MARINE TURBIDITES (VAT MIN ATTRIBUTE)
MAIN RESERVOIR INTERVAL



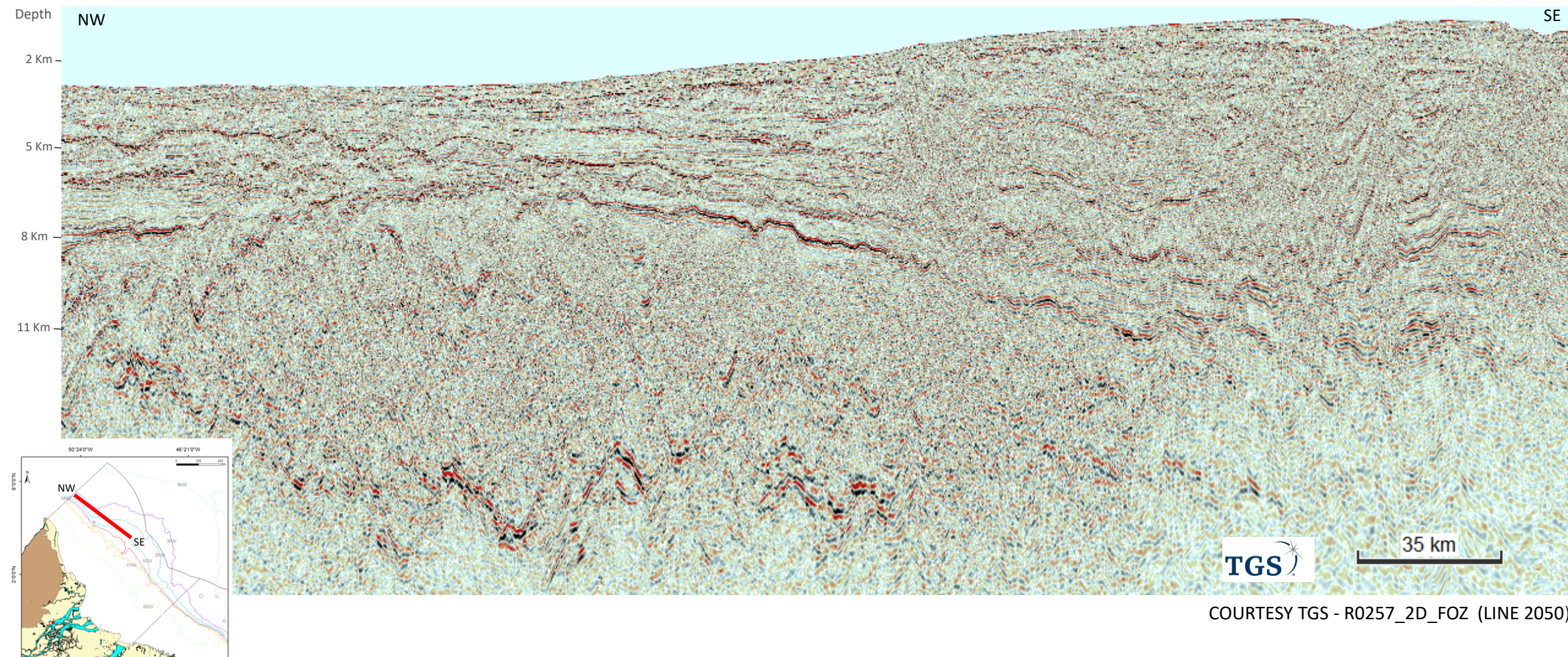
FOZ DO AMAZONAS (FZA) - BEYOND CURRENT CONTRACTS



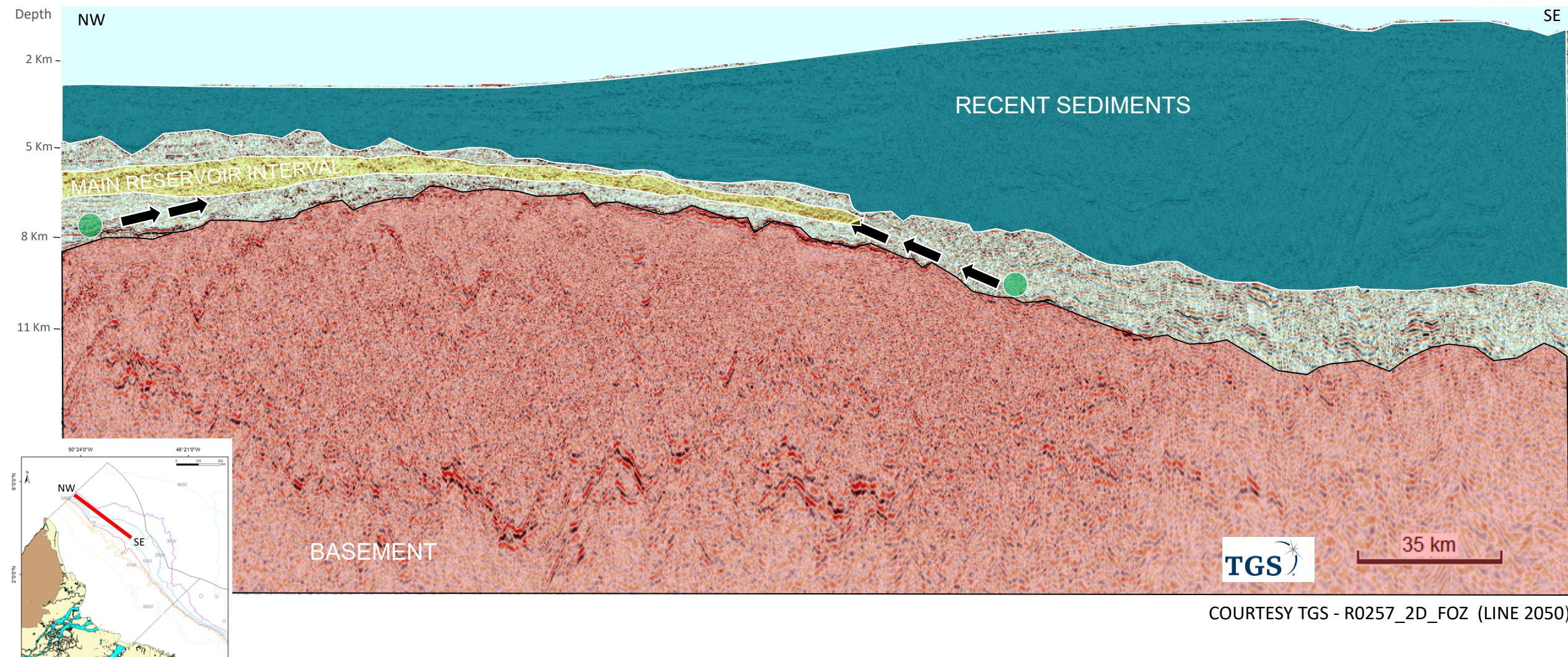
FOZ DO AMAZONAS (FZA) - REGIONAL CENOMANIAN TYPE II MARINE SOURCE ROCK (SR)



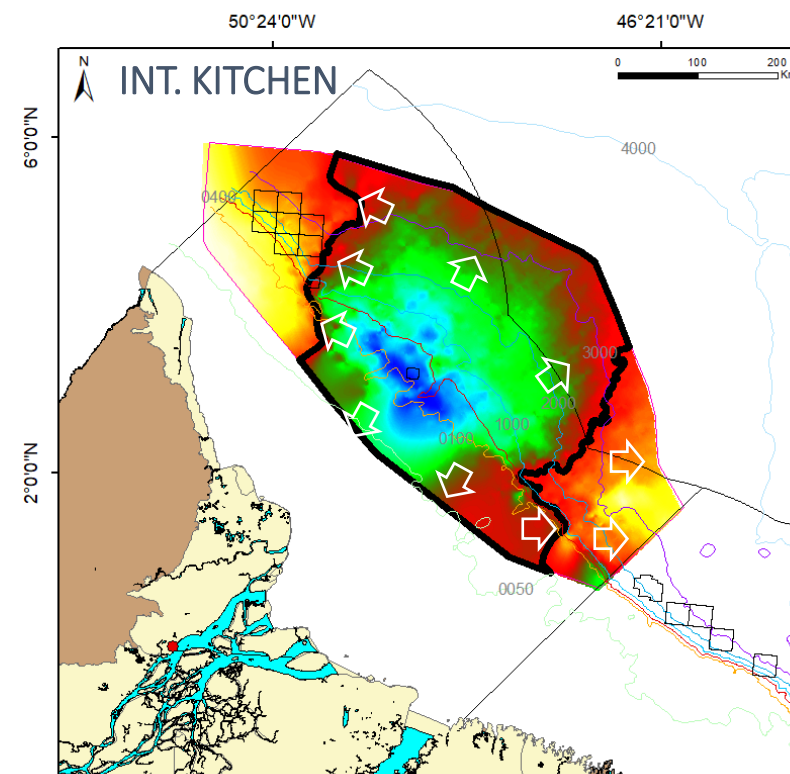
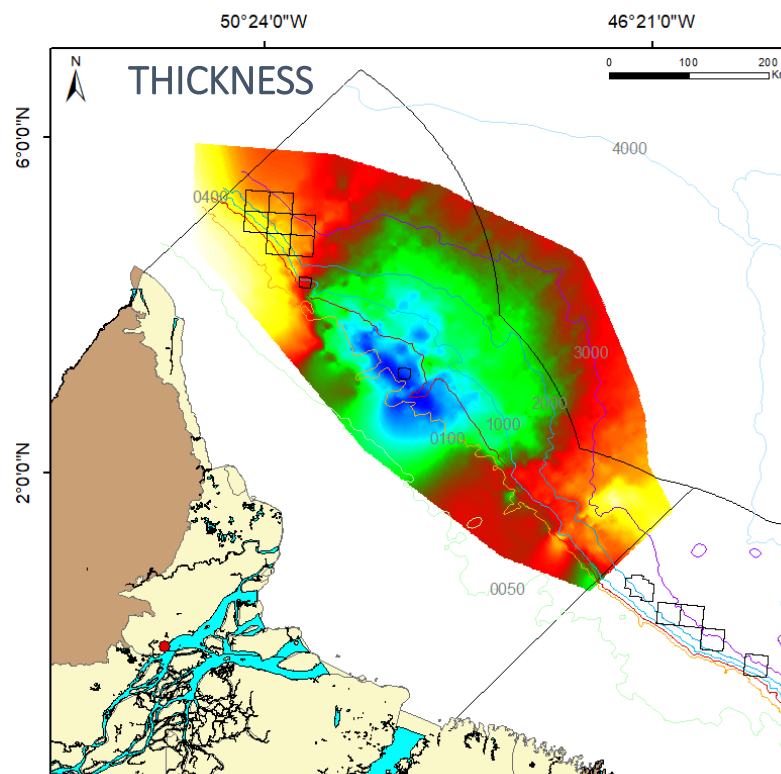
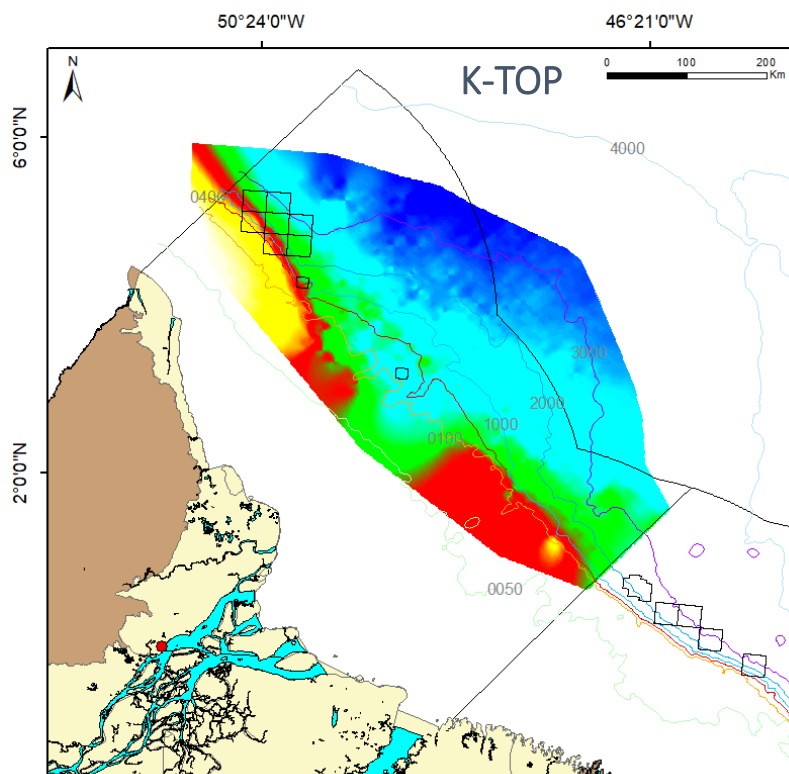
FOZ DO AMAZONAS (FZA) - CONE INFLUENCE – 2D SEISMIC



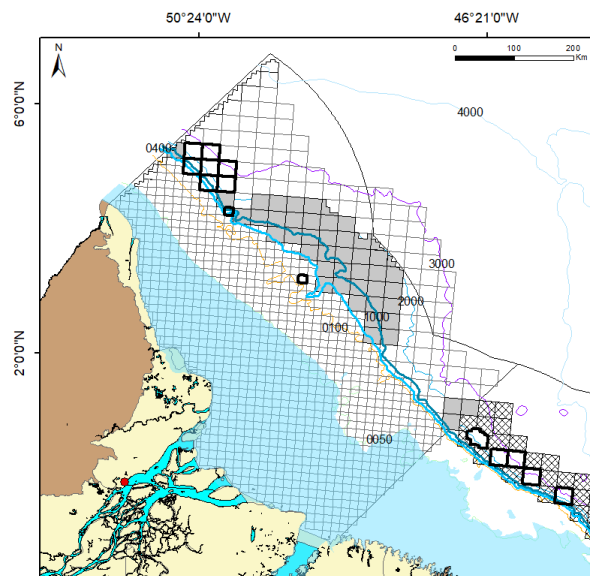
FOZ DO AMAZONAS (FZA) - CONE INFLUENCE – 2D SEISMIC



FOZ DO AMAZONAS (FZA) - CONE INFLUENCE

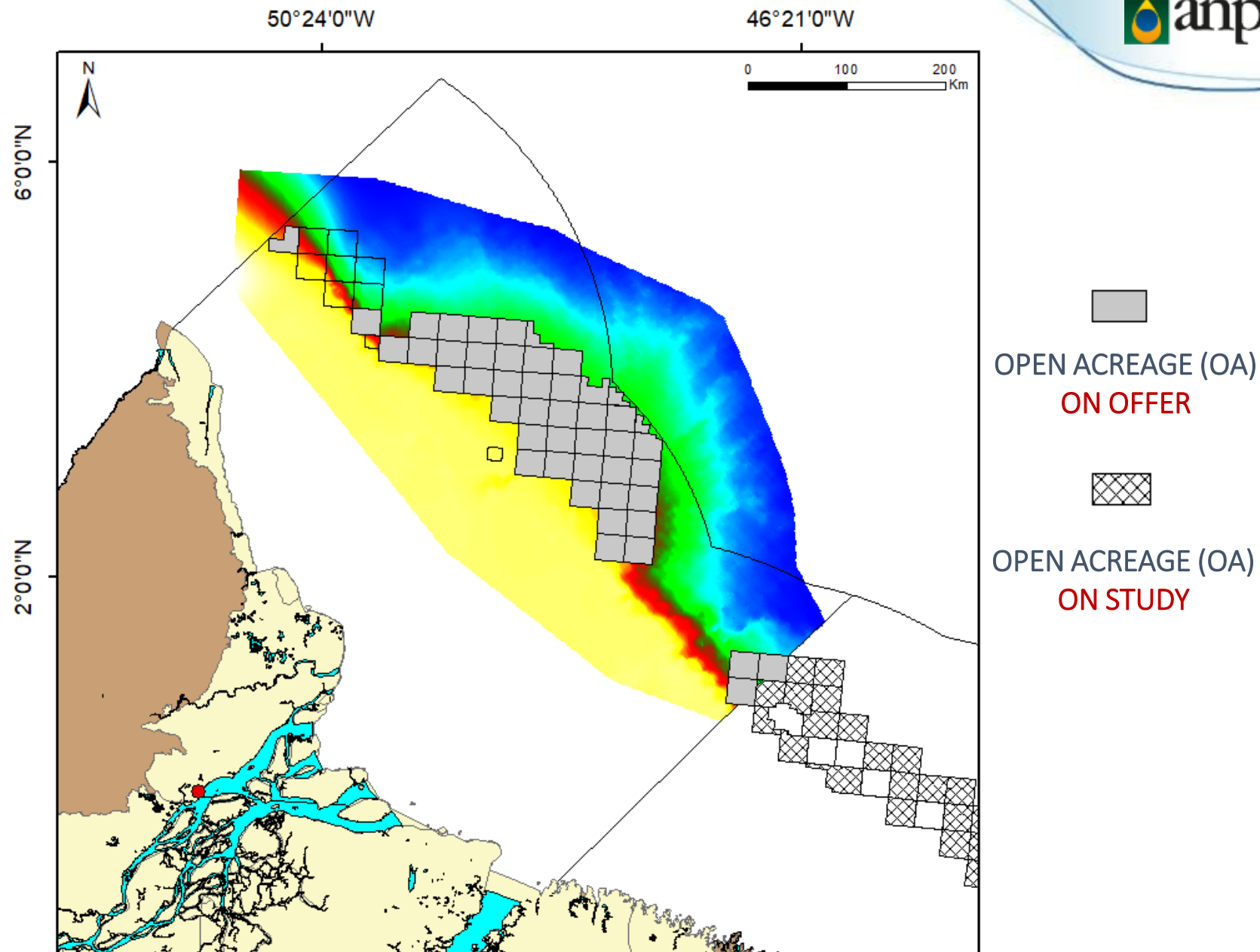


FOZ DO AMAZONAS (FZA)

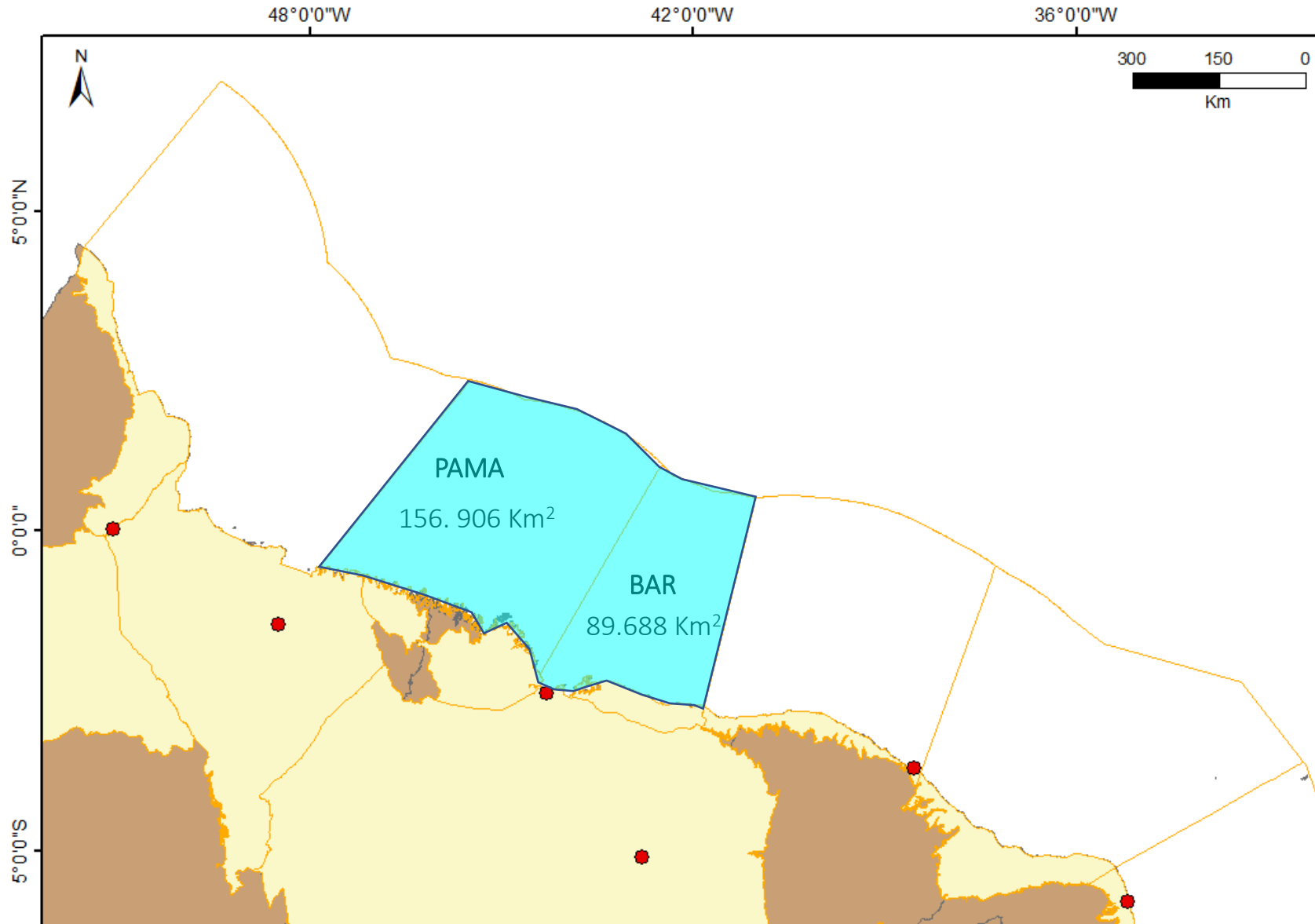


GEOGRAPHIC GRID

[Resolution ANP nº 837/2021](#)

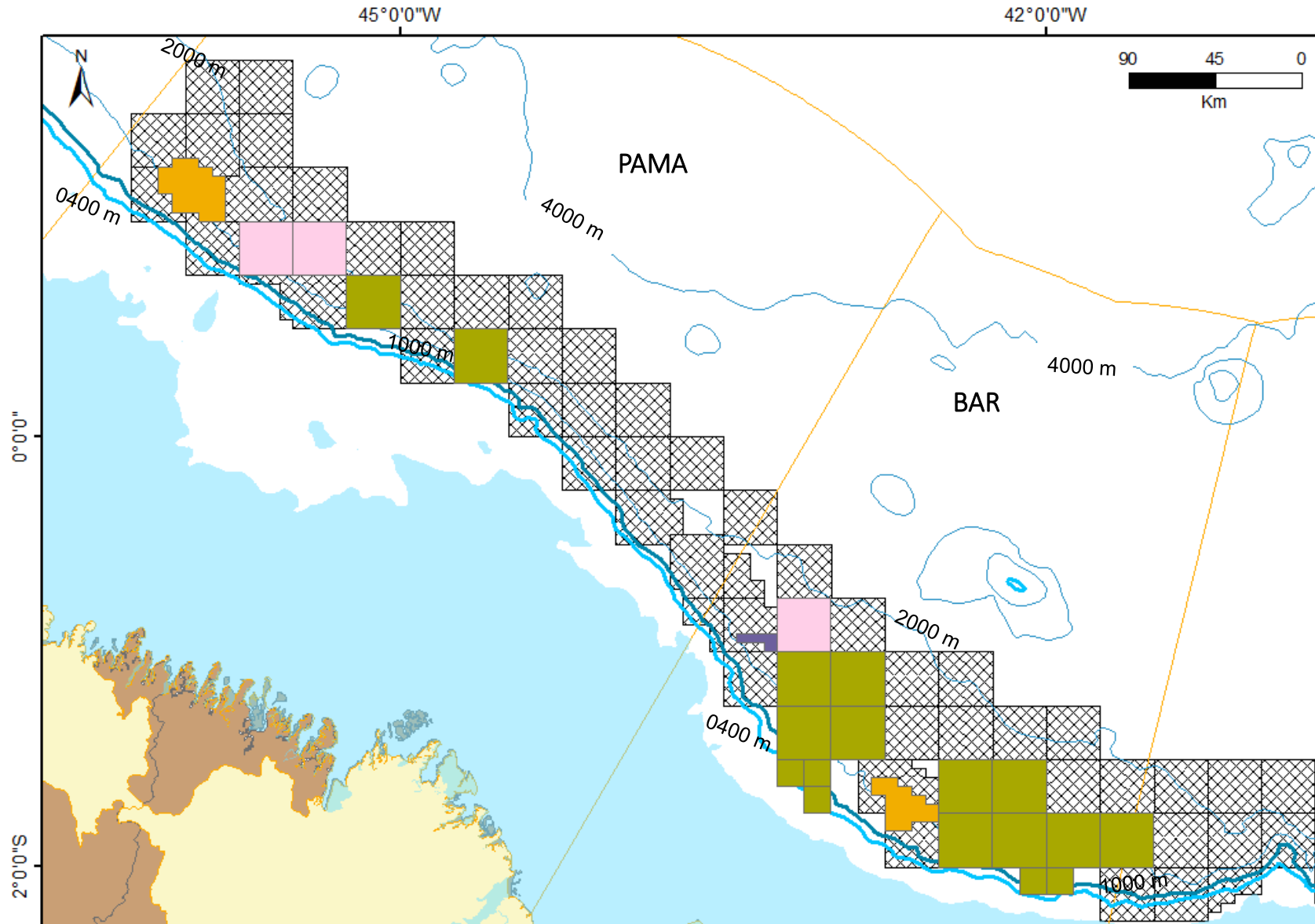


PARA-MARANHÃO (PAMA) – BARREIRINHAS (BAR)



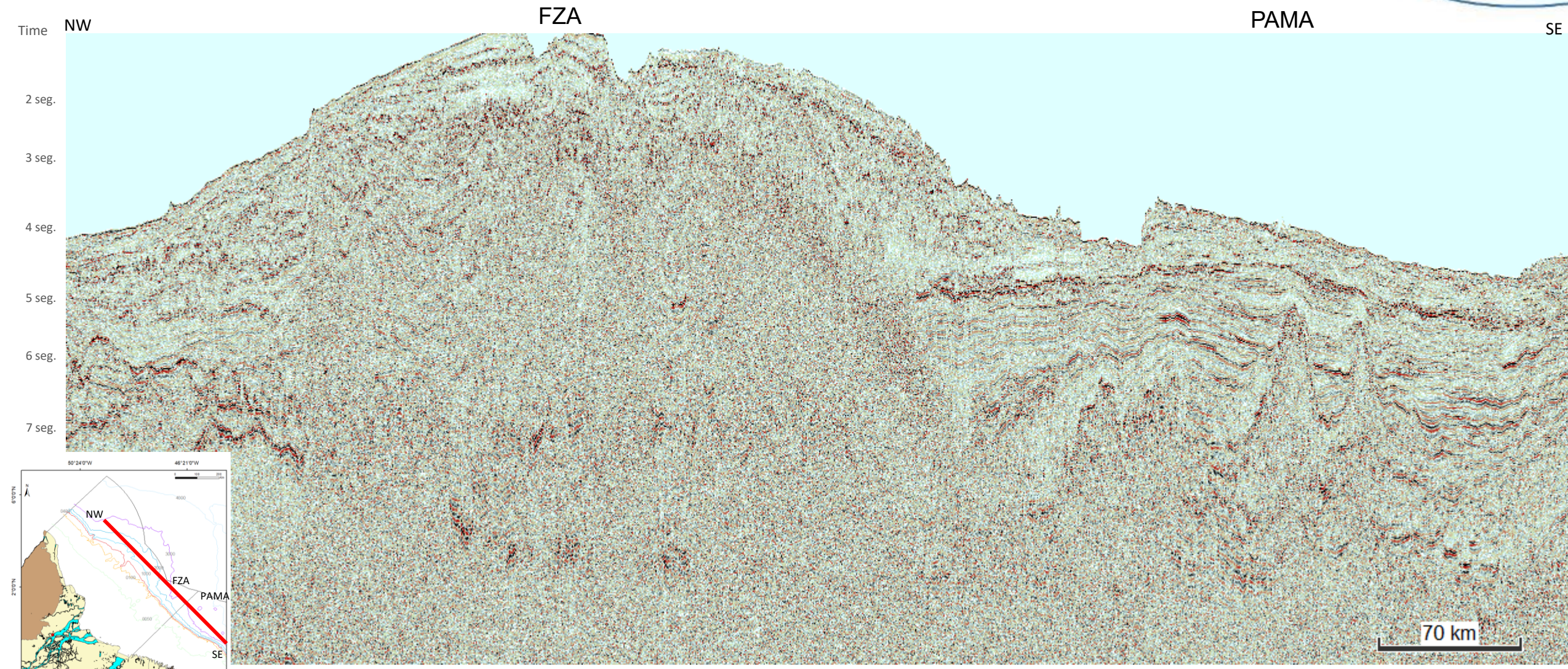
OFFSHORE SEDIMENTARY BASIN

PARA-MARANHÃO (PAMA) – BARREIRINHAS (BAR)



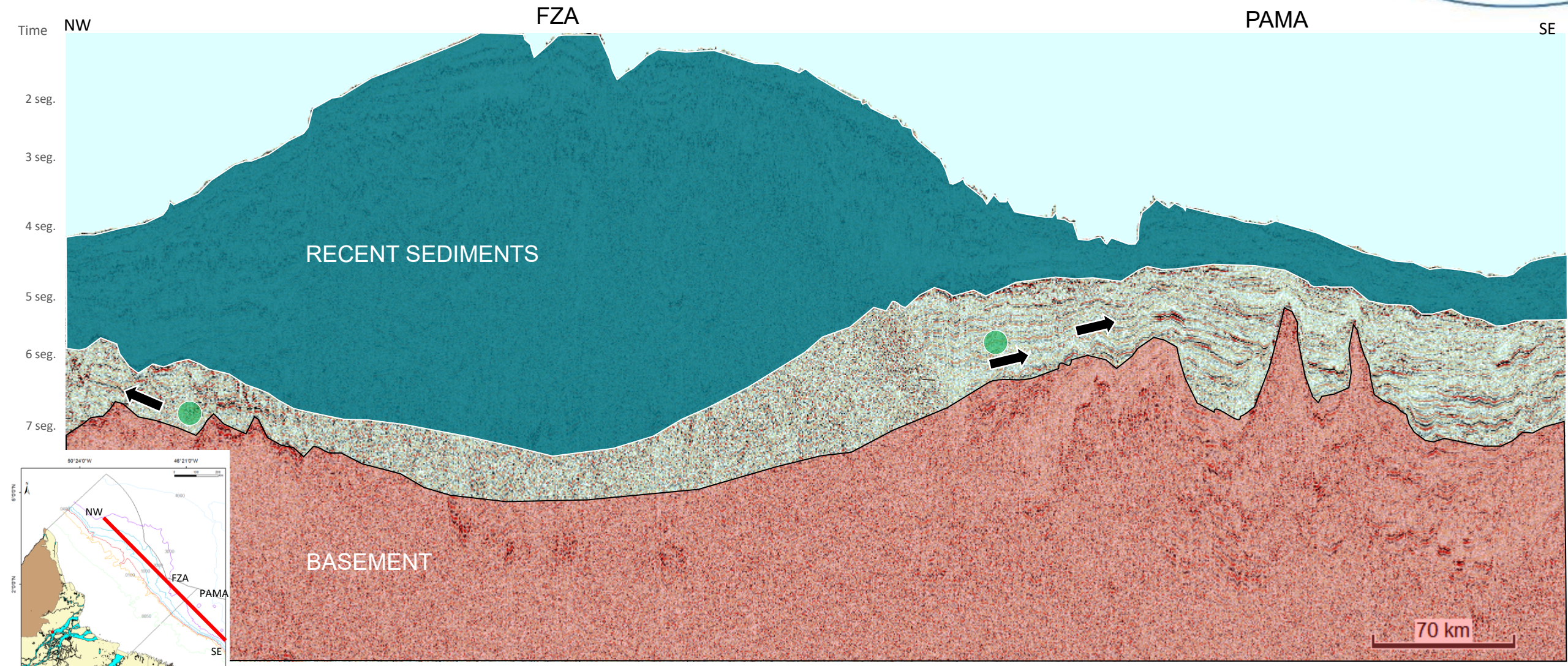
 OA (ON STUDY)

PARA-MARANHÃO (PAMA) - CONE INFLUENCE – 2D SEISMIC

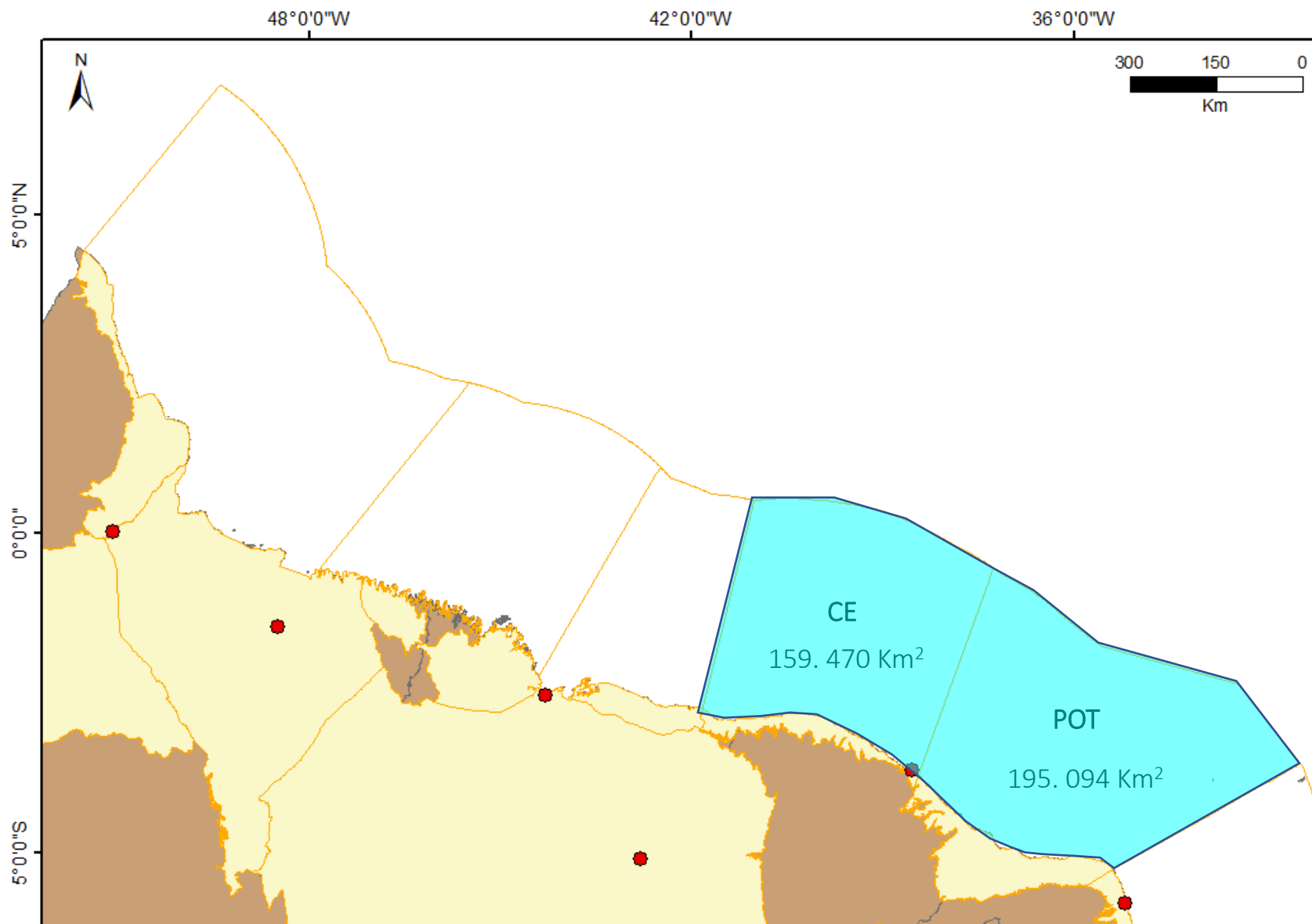


0270_2D_SPEC_BM_FZA_LINE 2006

PARA-MARANHÃO (PAMA) - CONE INFLUENCE – 2D SEISMIC

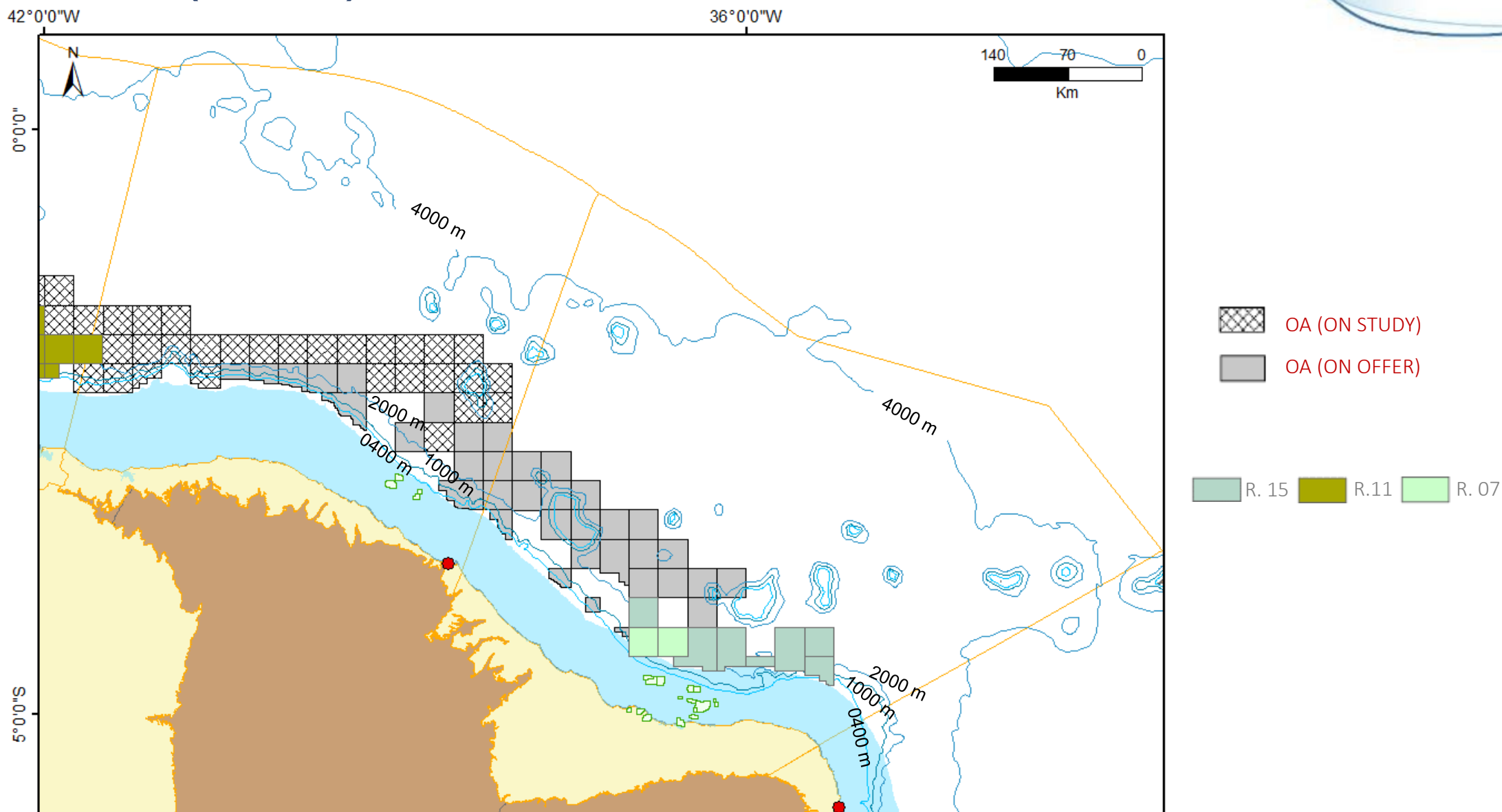


CEARA AND POTIGUAR (CE & POT)

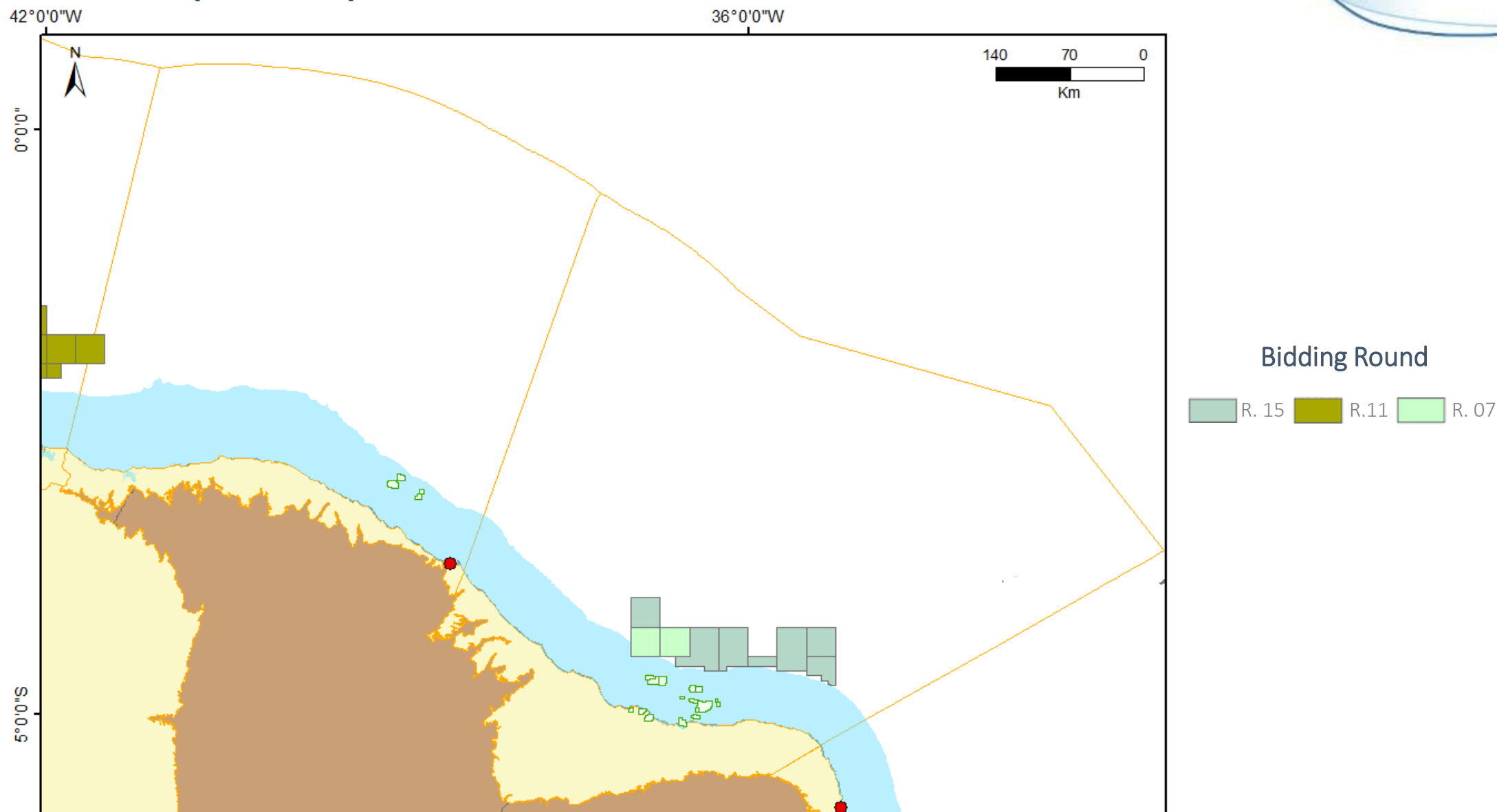


OFFSHORE SEDIMENTARY BASIN

CEARA AND POTIGUAR (CE & POT) - ALL BLOCKS

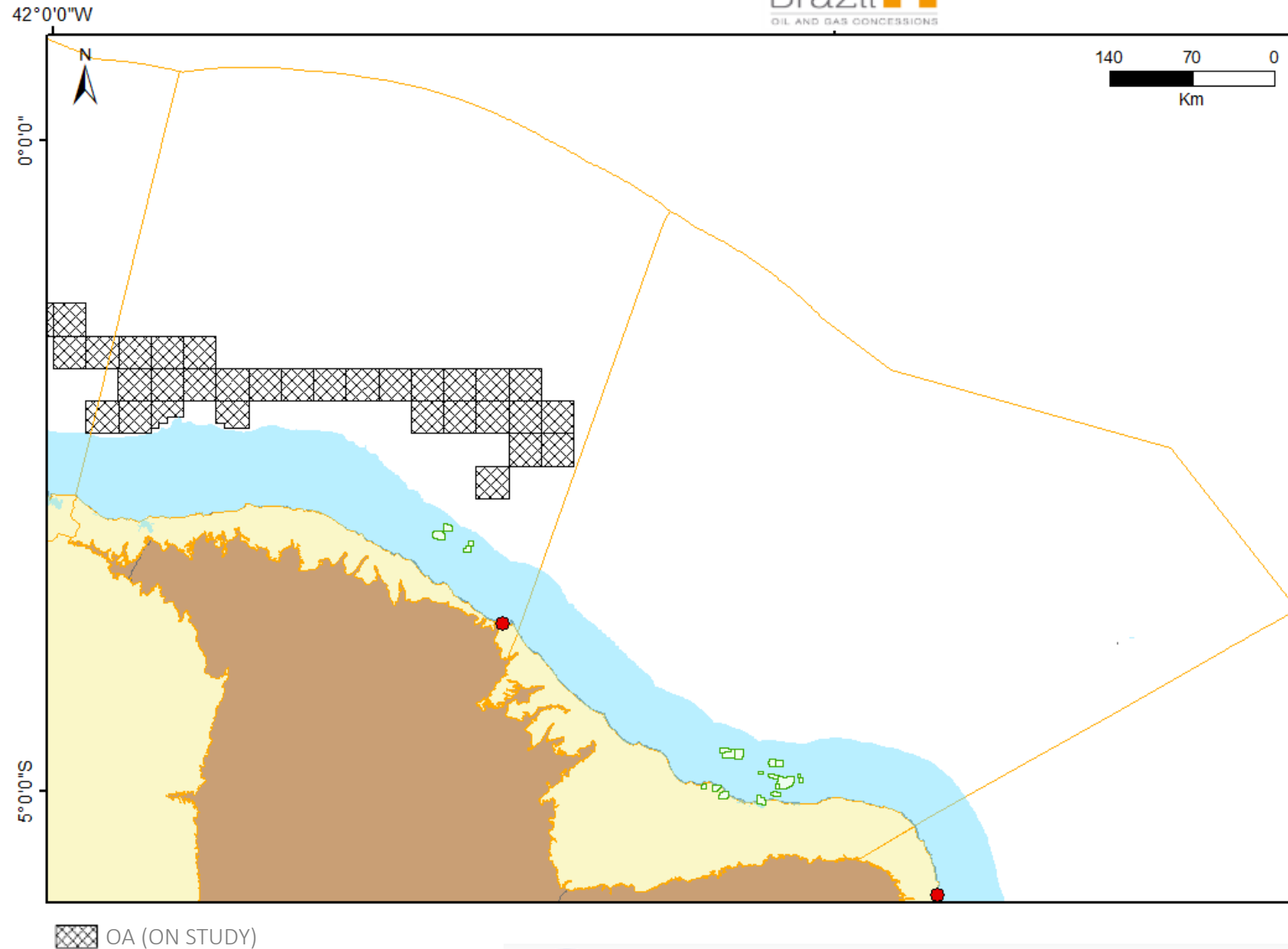


CEARA AND POTIGUAR (CE & POT) - EXPLORATORY CONTRACT ONGOING



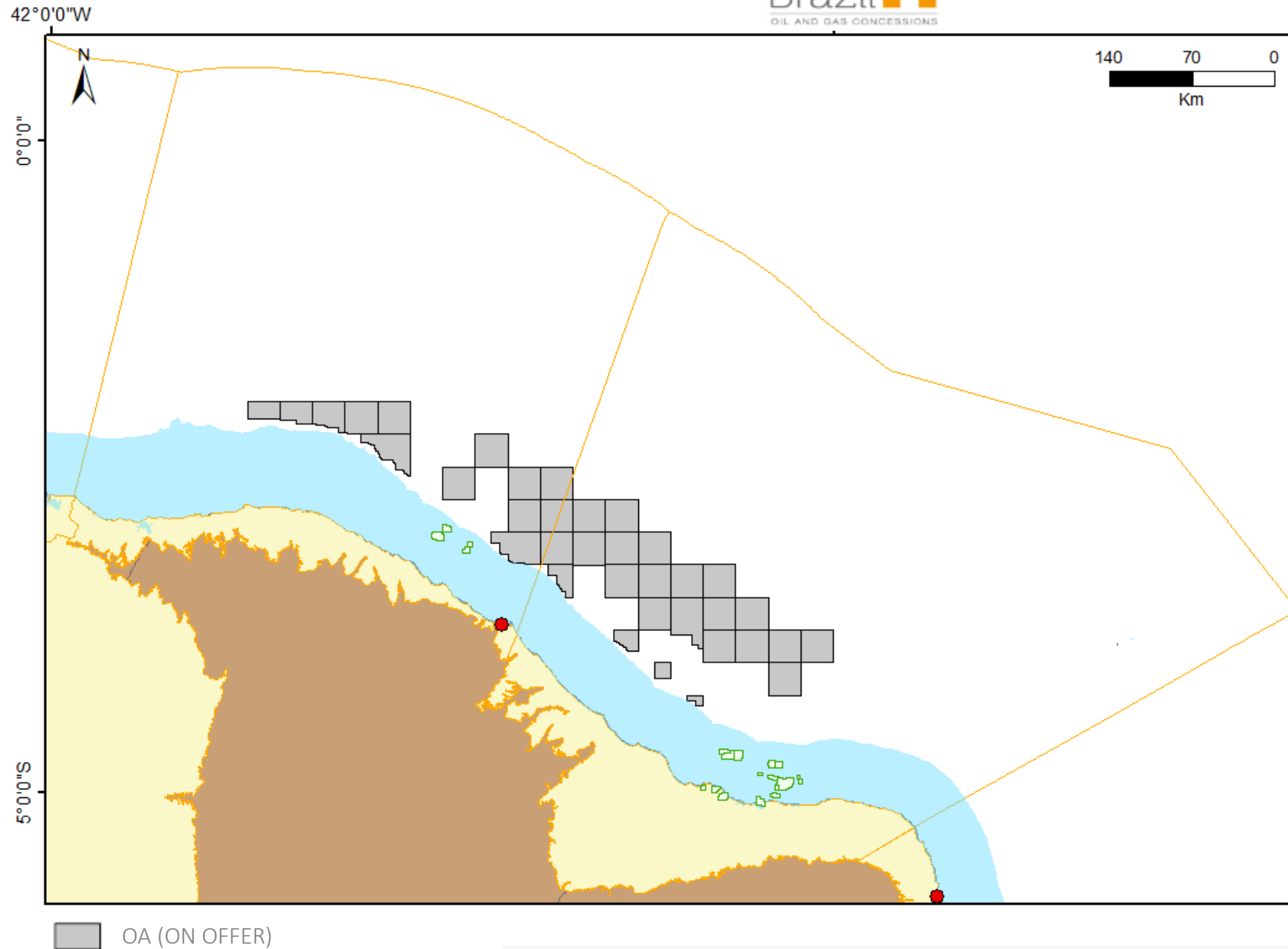
CEARA AND POTIGUAR (CE & POT) - BLOCK ON STUDY

OPEN
ACREAGE
Brazil
OIL AND GAS CONCESSIONS



CEARA AND POTIGUAR (CE & POT) - BLOCK ON OFFER

OPEN
ACREAGE
Brazil
OIL AND GAS CONCESSIONS

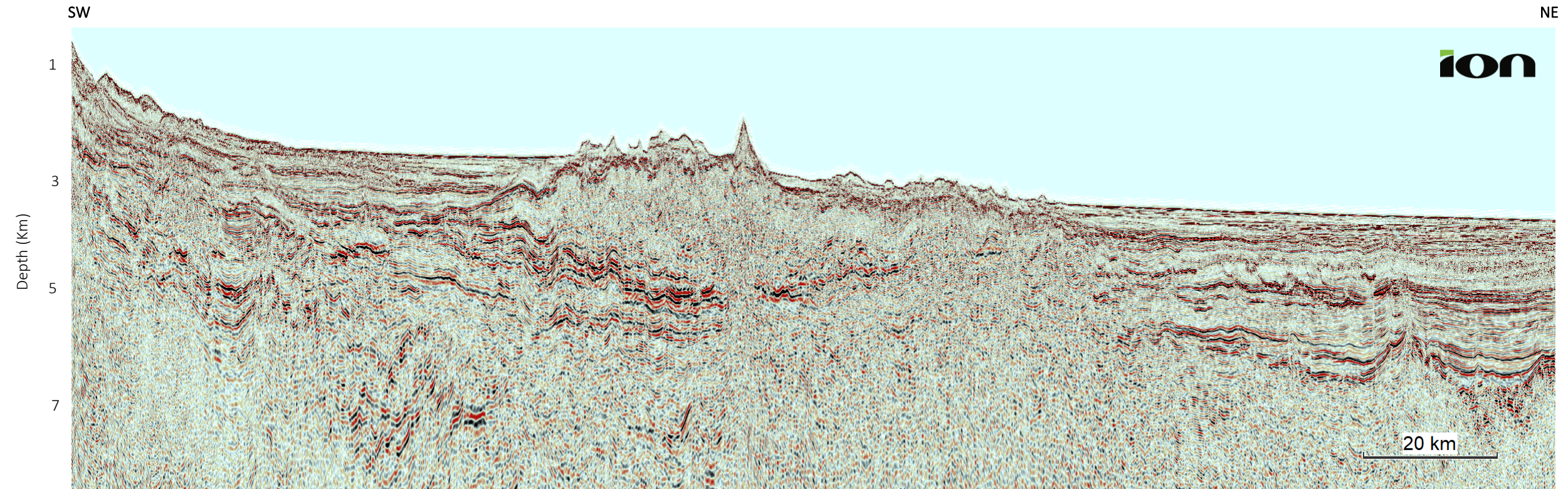


OA (ON OFFER)

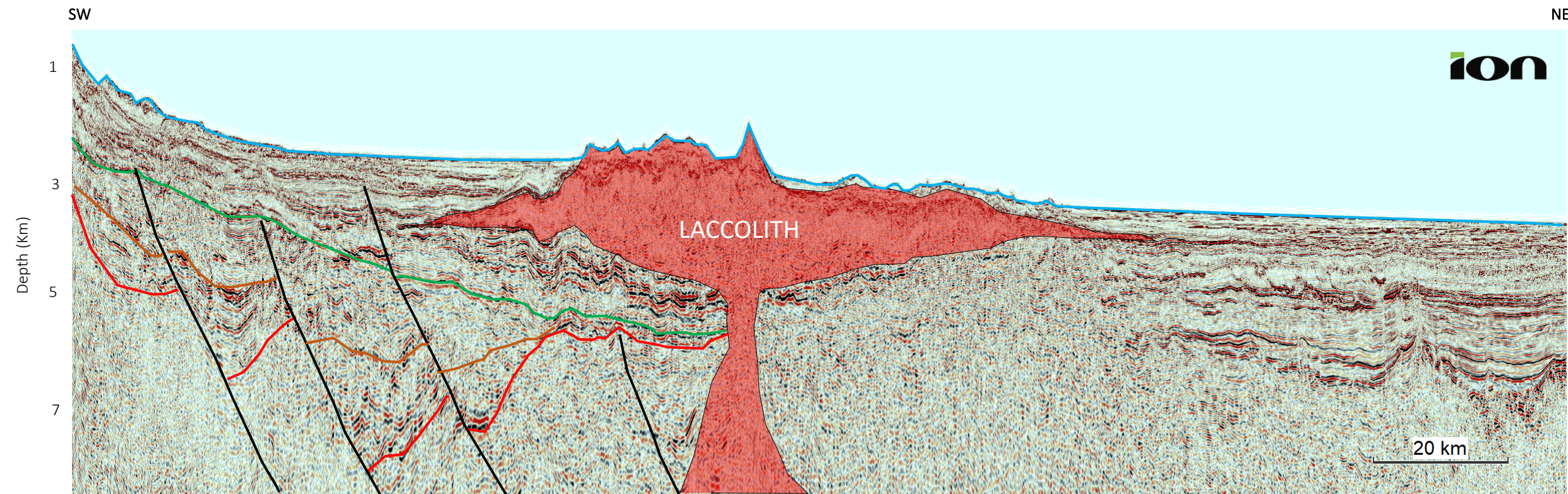


Workshop The Deep and Ultra-Deep Waters of the Equatorial Margin Of Brazil

POTIGUAR (POT) - 2D SEISMIC

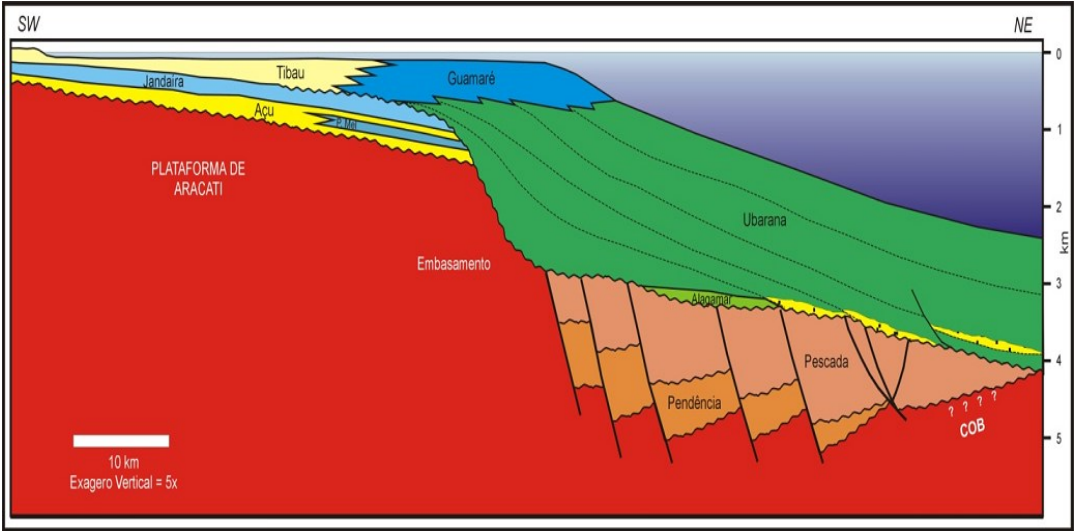
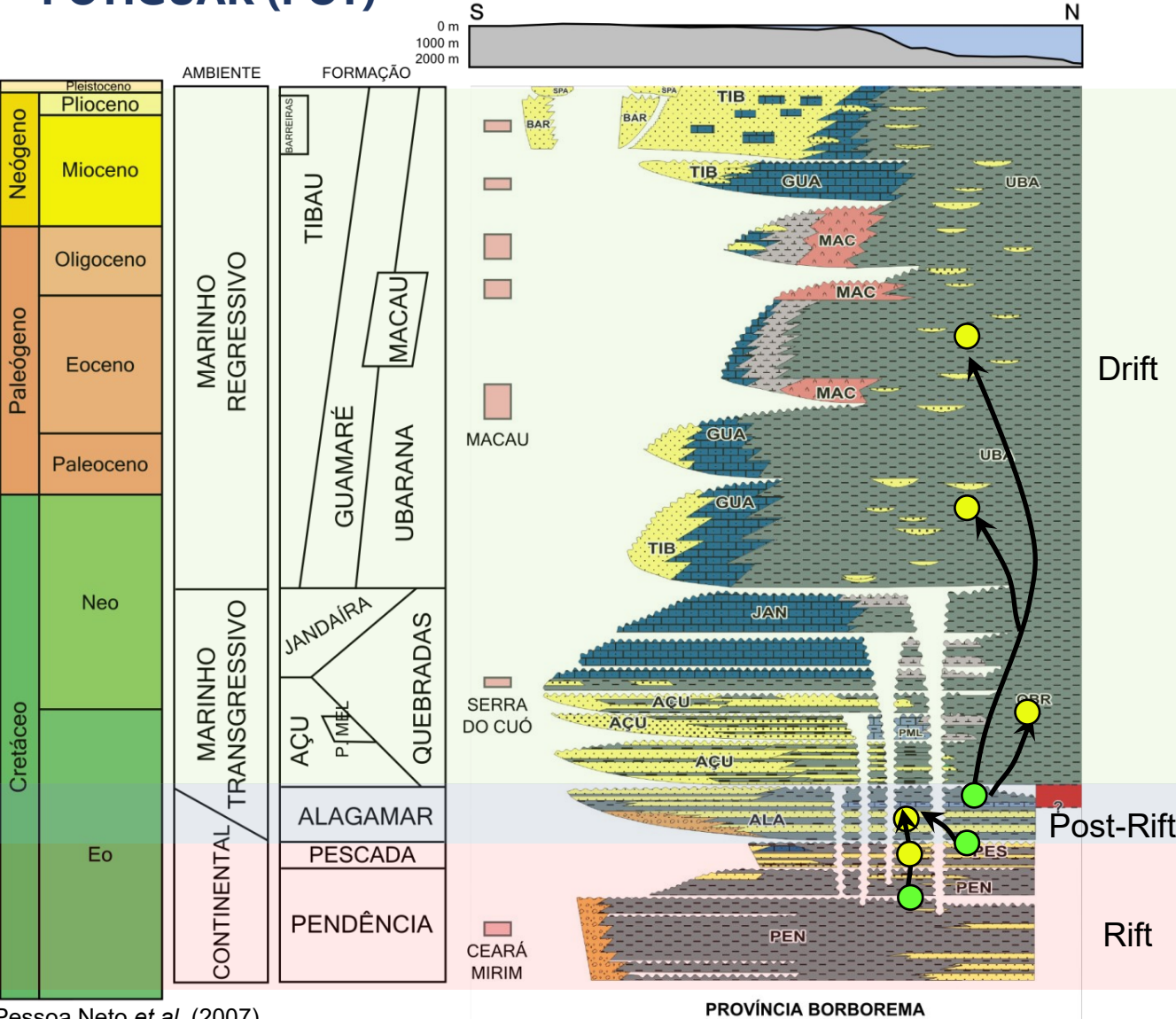


COURTESY ION - 0022_GREATERBRASILSPAN



COURTESY ION - 0022_GREATERBRASILSPAN

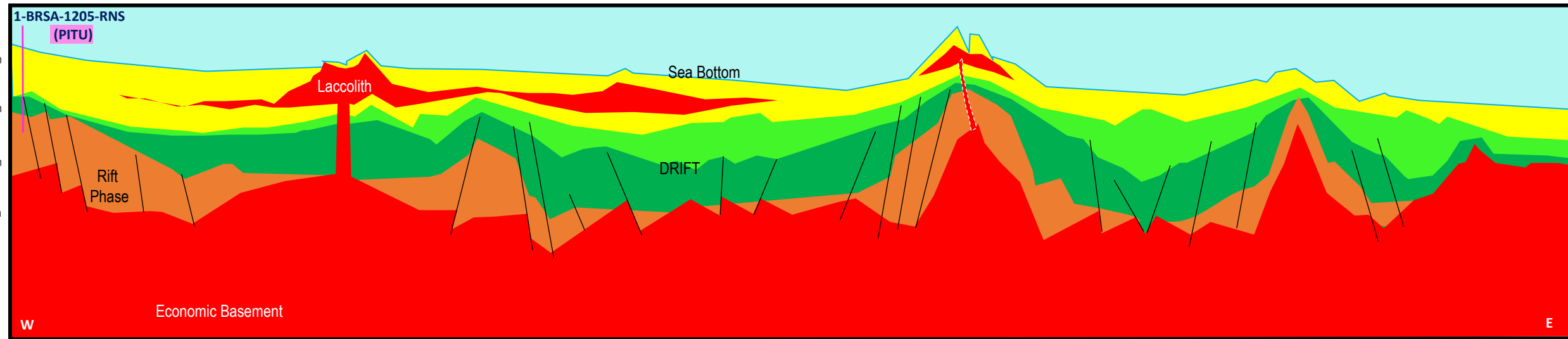
POTIGUAR (POT)



Bertani et al., 1989

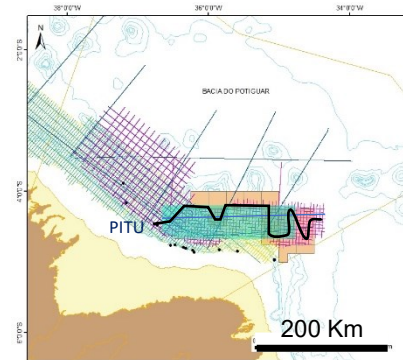
Pessoa Neto et al. (2007)



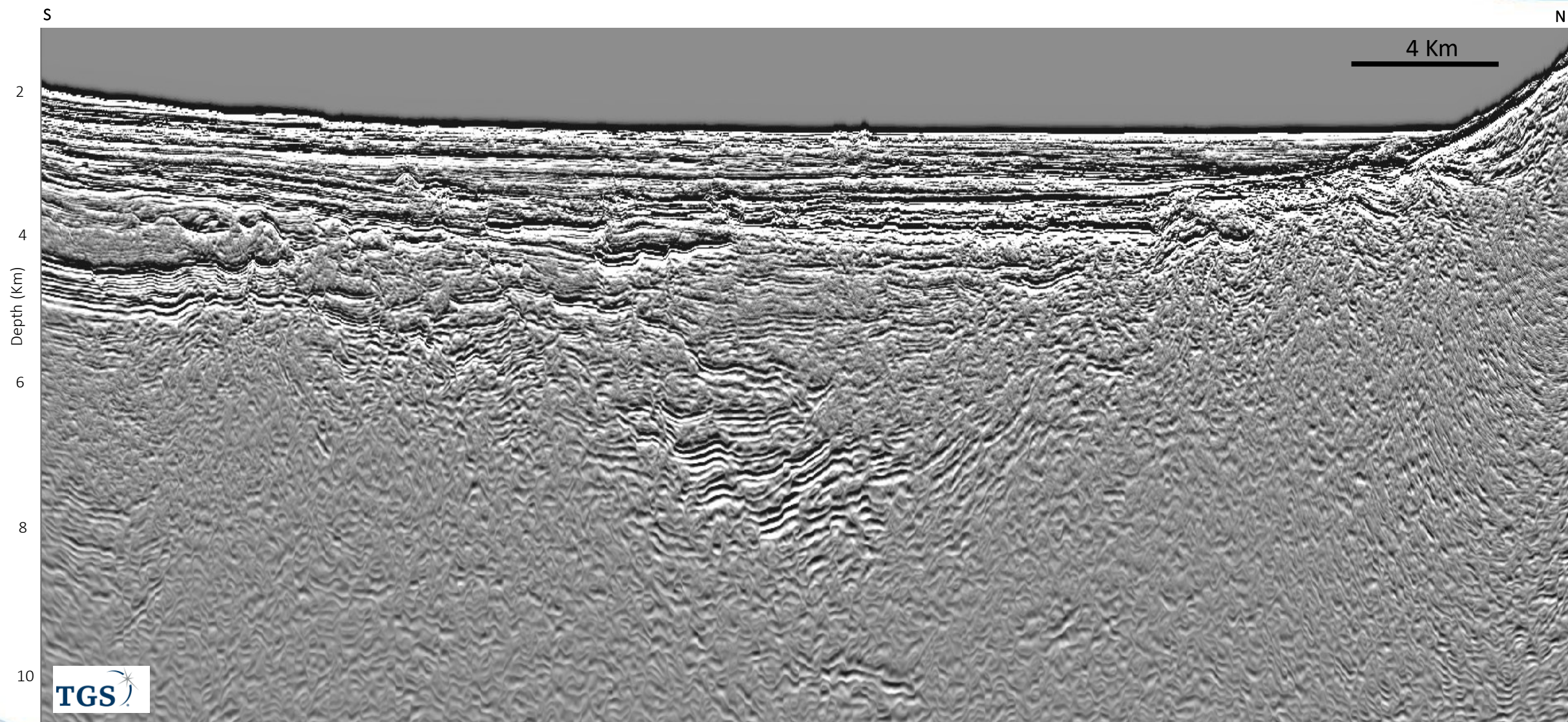


ANP, 2021

Marine source rock as well as from the evaporitic phase identified in deep waters of the Potiguar Basin, representing a new frontier.

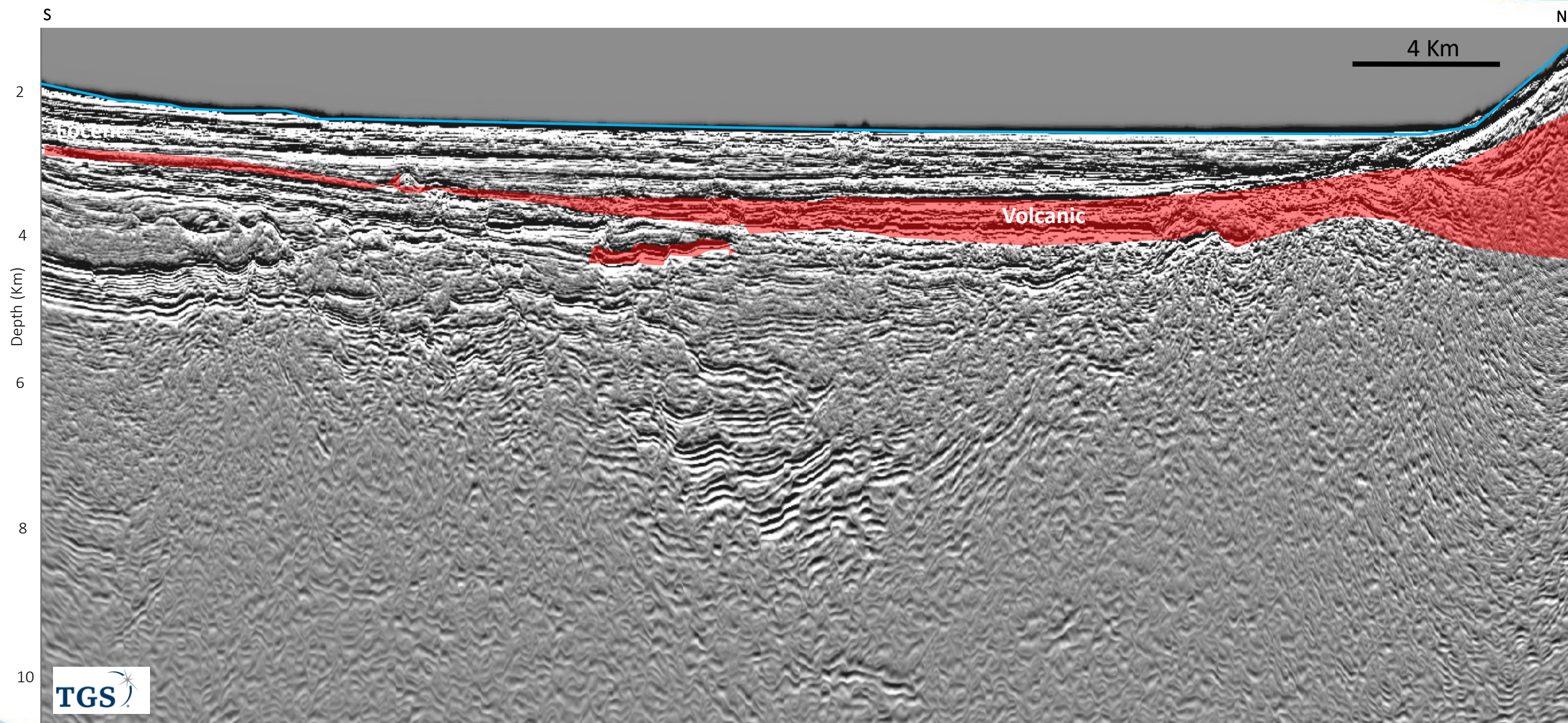


POTIGUAR (POT) - 3D SEISMIC



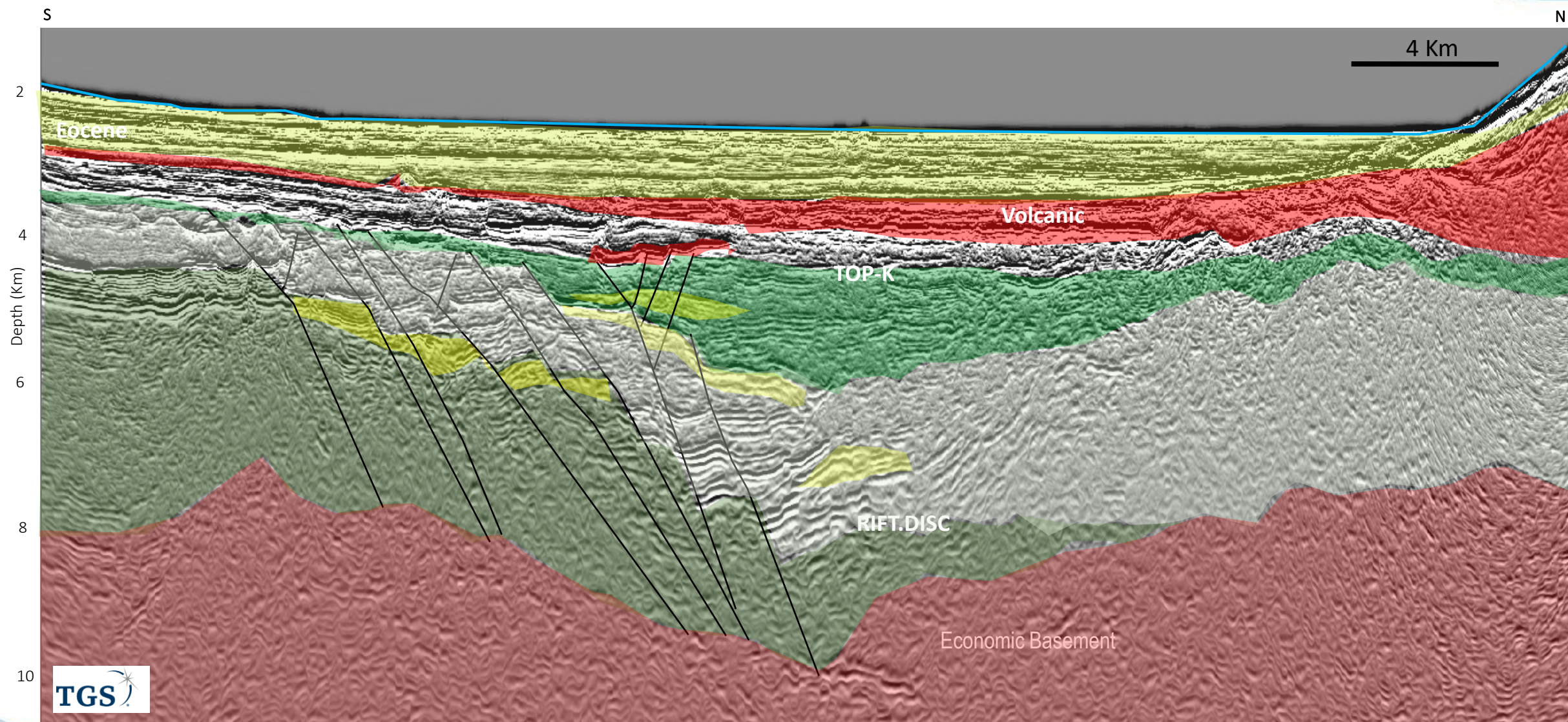
COURTESY TGS - 0257 3D PBP1 PSDM

POTIGUAR (POT) - 3D SEISMIC



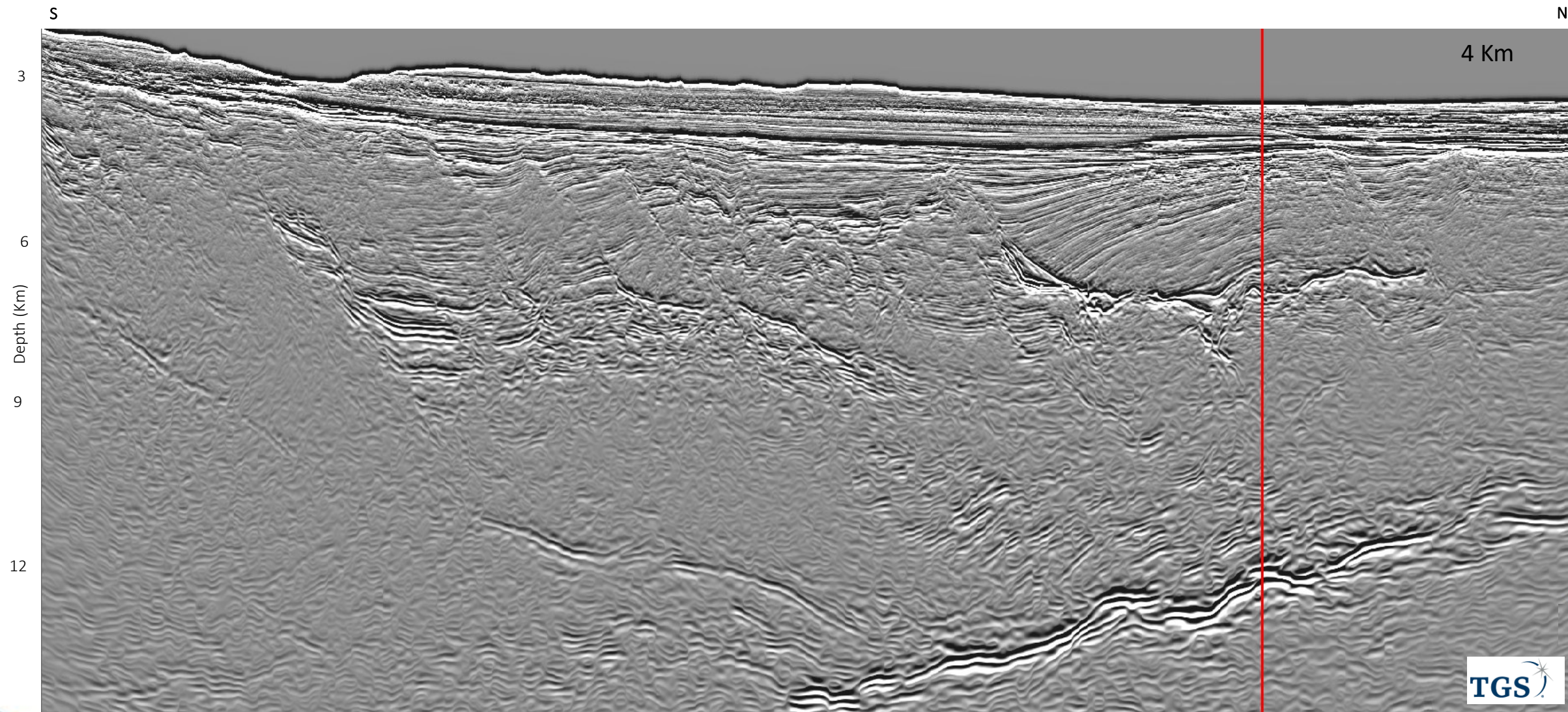
0257 3D PBP1 PSDM – Courtesy of TGS

POTIGUAR (POT) - 3D SEISMIC



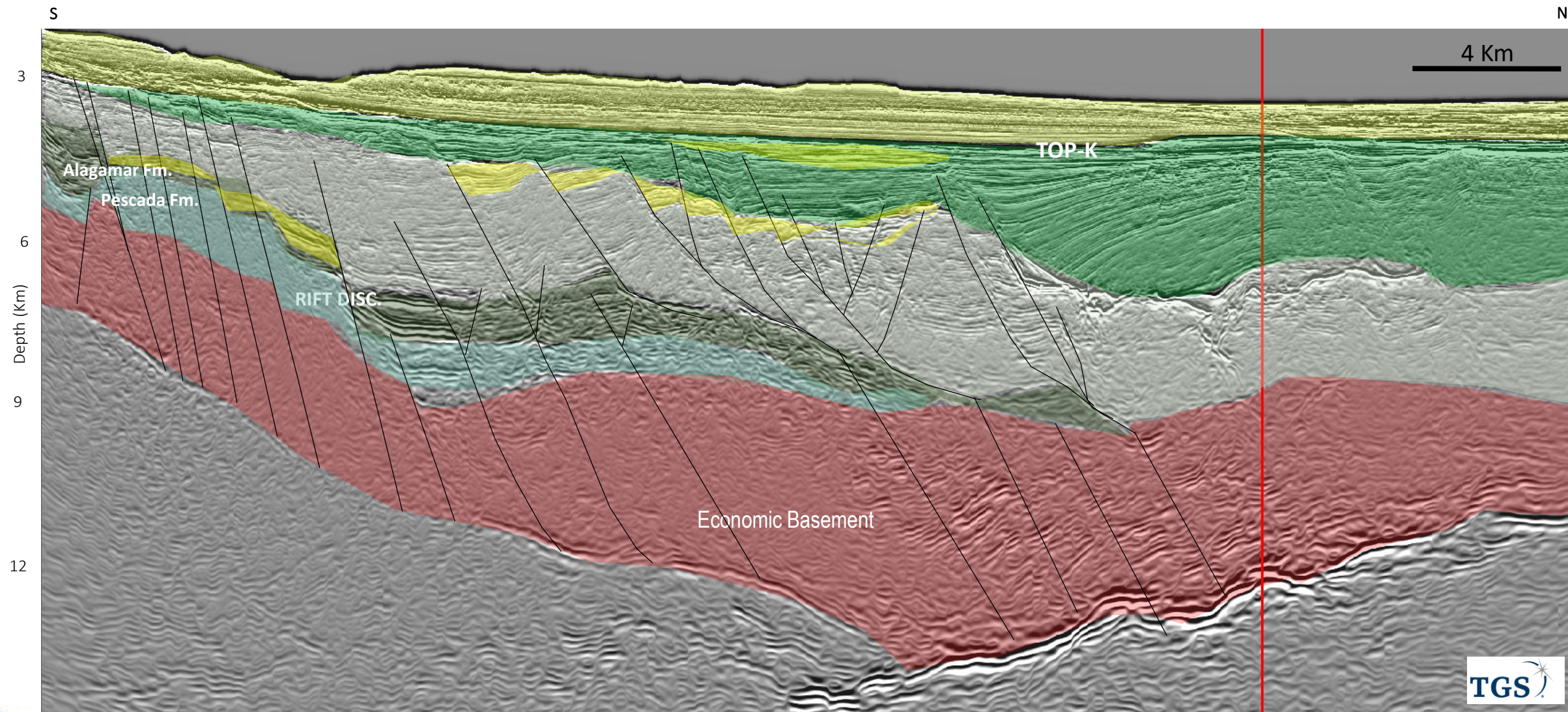
0257 3D PBP1 PSDM – Courtesy of TGS

POTIGUAR (POT) - 3D SEISMIC



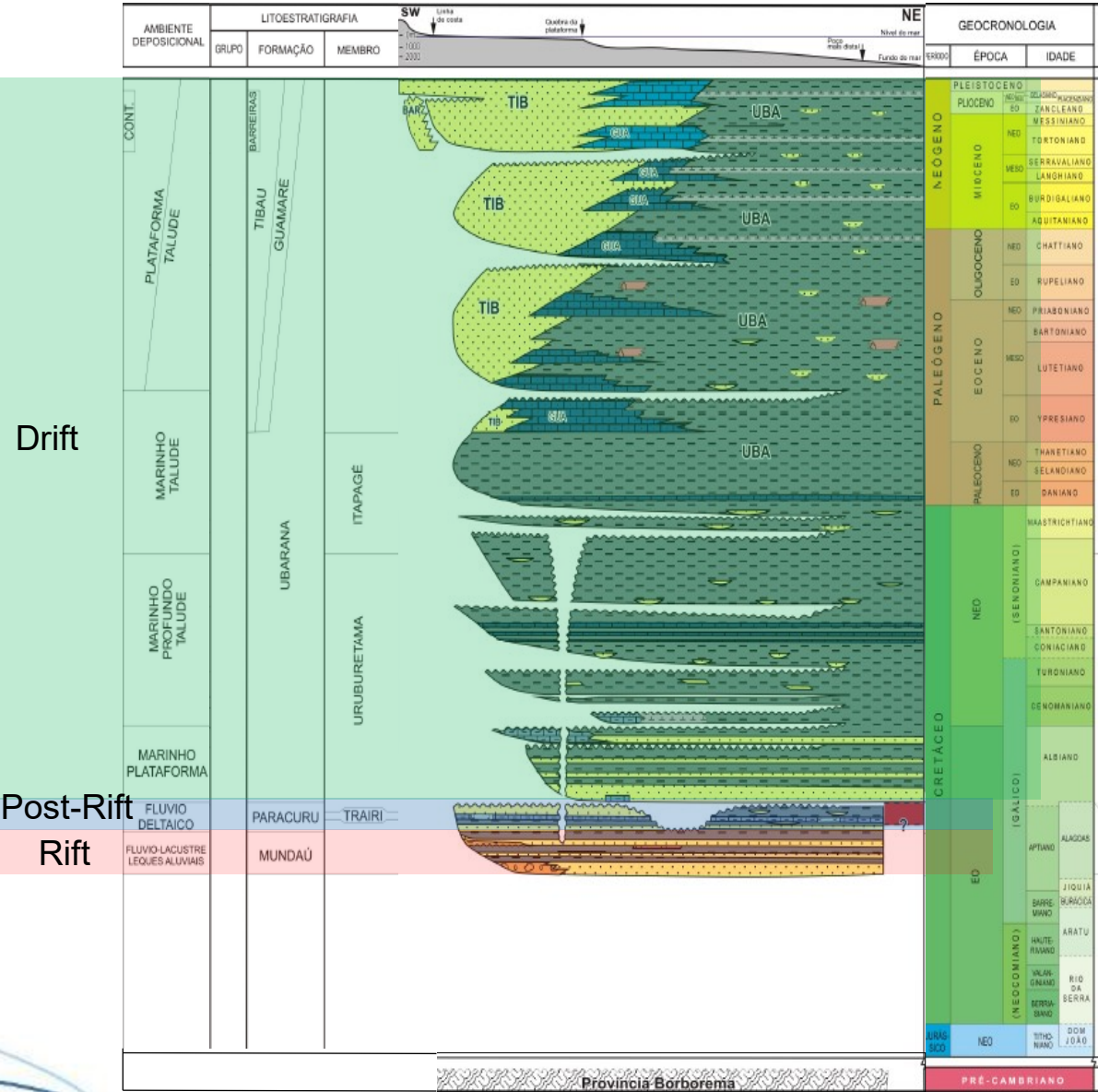
0257 3D PBP1 PSDM – Courtesy of TGS

POTIGUAR (POT) - 3D SEISMIC

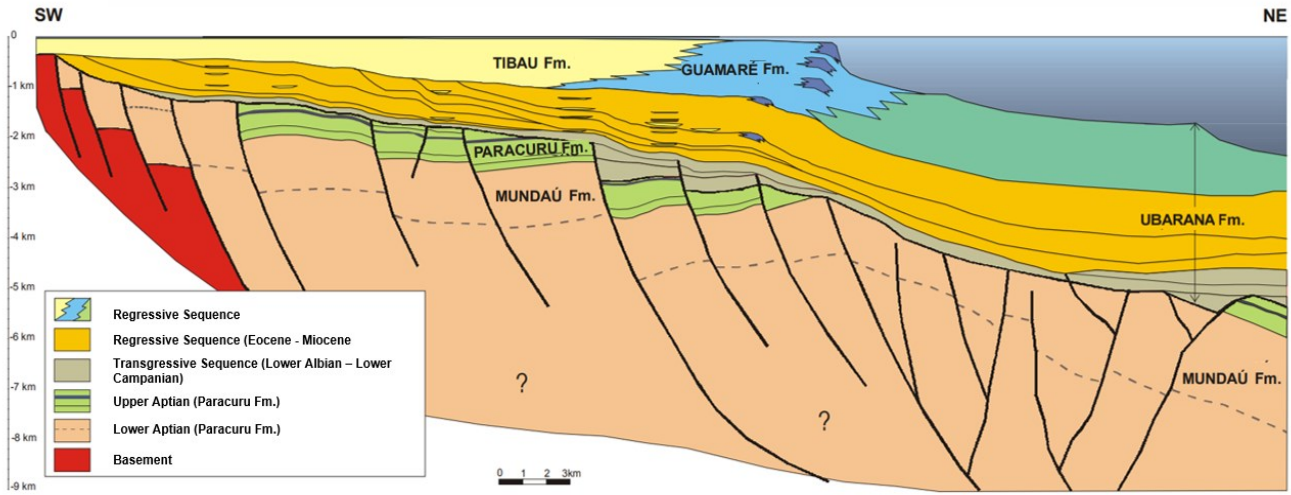


0257 3D PBP1 PSDM – Courtesy of TGS

CEARA (CE)



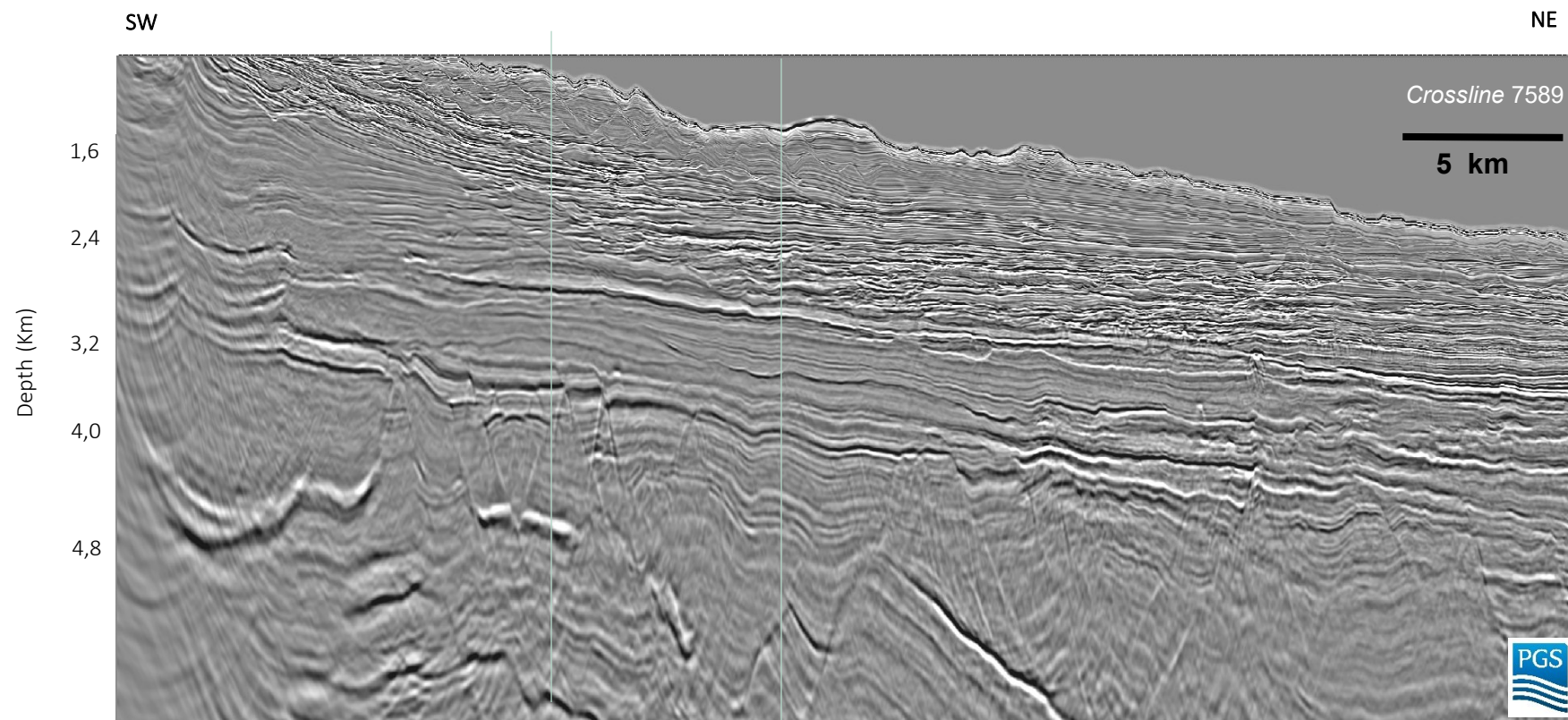
Condé et al., 2007



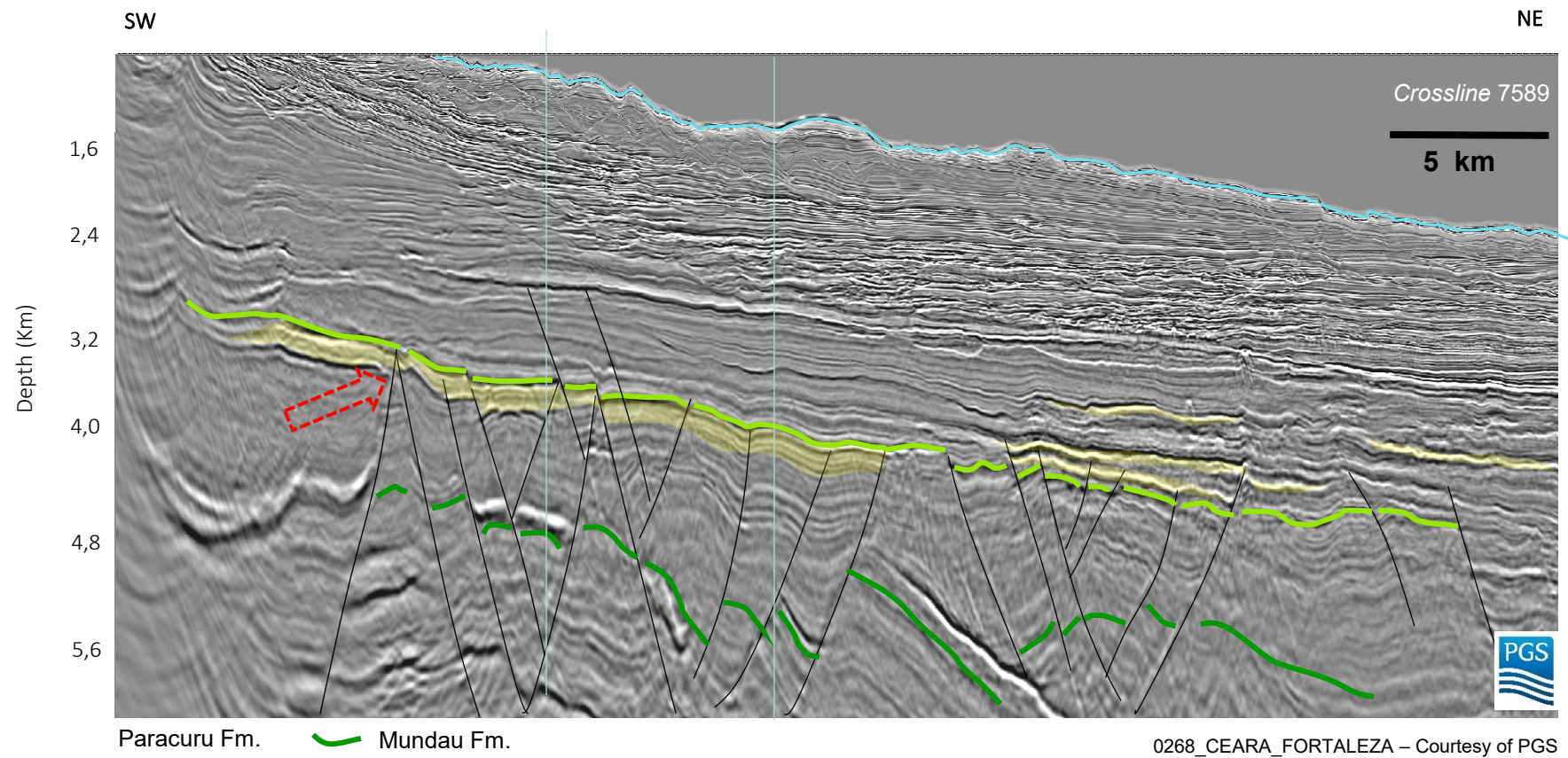
Morais Neto et al., 2003



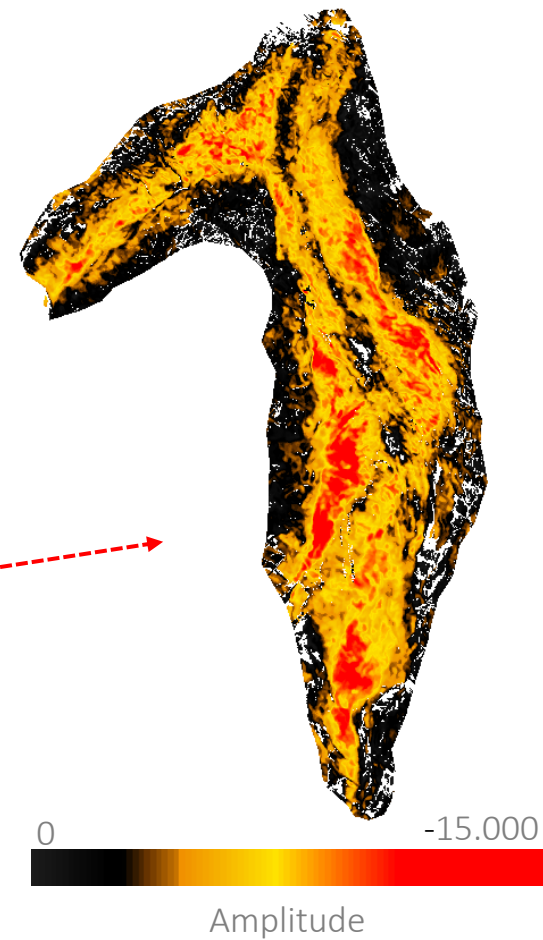
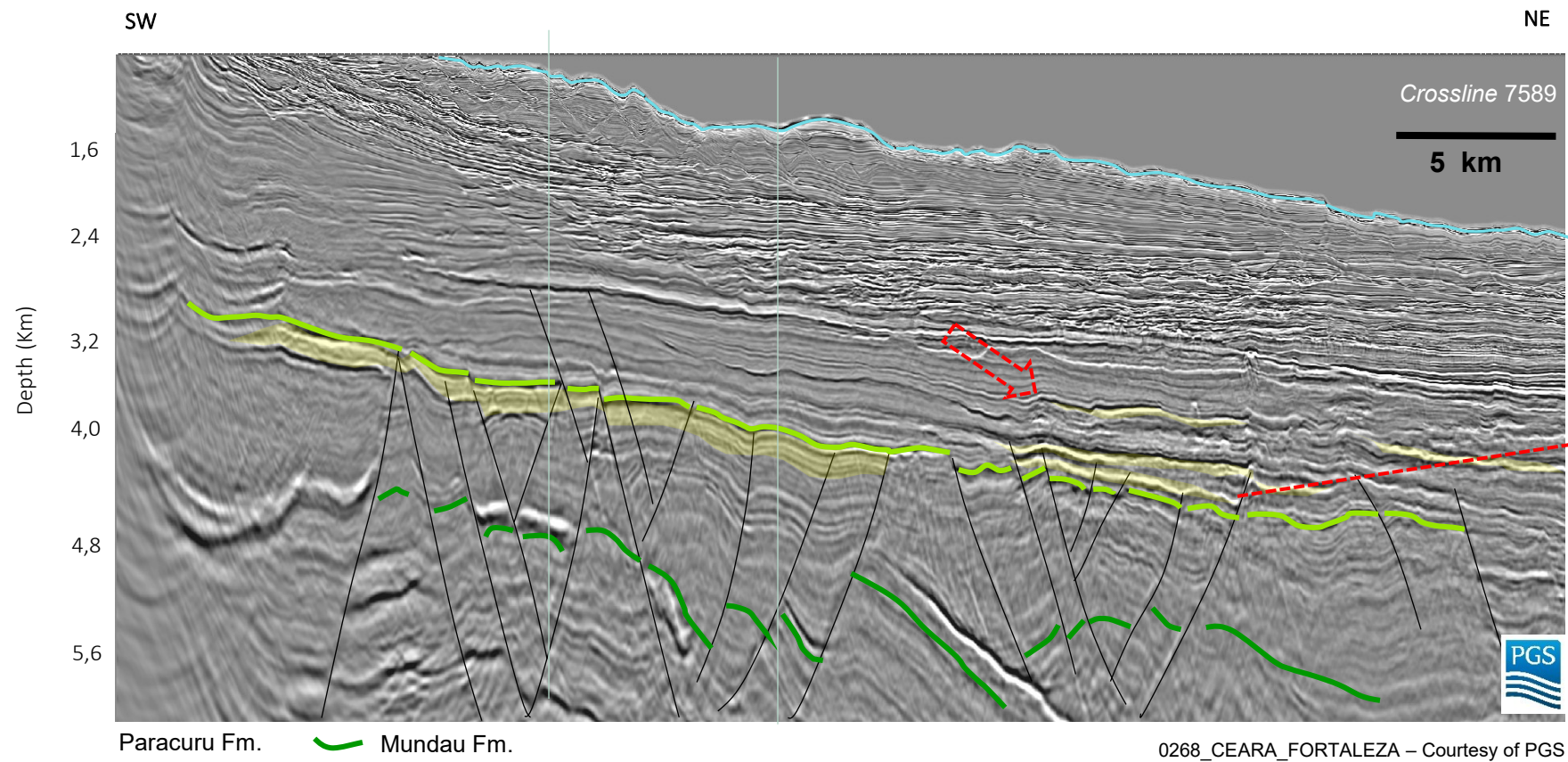
CEARA BASIN (CE) - 3D SEISMIC



0268_CEARA_FORTALEZA – Courtesy of PGS



CEARA BASIN (CE) - 3D SEISMIC



GUYANA AND SURINAME HAVE BEEN REPORTING WORLD-CLASS HYDROCARBONS DISCOVERIES

AFRICAN CORRELATED SEDIMENTARY BASINS HAVE ALSO BEEN ACHIEVING EXPLORATORY SUCCESS

THE BEST RESULTS WERE PRESENTED IN CRETACEOUS SANDSTONE TURBIDITES (RESERVOIR) AND CENOZOIC MARINE SOURCE

IN BRAZIL ONLY 21 WELLS WERE DRILLED ON THE EQUATORIAL MARGIN DEEP WATERS (THE LAST IN 2015)

IT IS AN UNEXPLORED REGION WHERE SEISMIC DATA HIGHLIGHTS HUGE GEOLOGICAL POTENTIAL

THERE ARE GEOLOGICAL ANALOGUES WITH RECENT DISCOVERIES ON CORRELATED BASINS

THE EQUATORIAL MARGIN IS THE EXPLORATORY FRONTIER REGION OF BRAZIL WITH THE GREATEST POTENTIAL TO

INCORPORATE RELEVANT VOLUMES OF HYDROCARBONS OVER THE NEXT DECADE

THERE ARE **83** BLOCKS **ON OFFER** IN THE EQUATORIAL MARGIN OF BRASIL IN THE OPEN ACREAGE MODEL

47 BLOCKS IN FOZ DO AMAZONAS BASIN / **13** BLOCKS IN CEARÁ BASIN / **23** IN POTIGUAR BASIN

THERE ARE **71** BLOCKS **ON STUDY** IN THE EQUATORIAL MARGIN OF BRASIL IN THE OPEN ACREAGE MODEL

47 BLOCKS IN PARÁ-MARANHÃO BASIN / **16** BLOCKS IN BARREIRINHAS BASIN / **23** IN CEARÁ BASIN

DECLARATION OF INTEREST ≠ NOMINATION

DECLARATION OF INTEREST: THE PURPOSE IS TO START A NEW CYCLE OF OPEN ACREAGE

NOMINATION: THE OBJECTIVE IS TO POINT OUT DIRECT AREAS TO BE STUDIED BY THE ANP

[NOMINATION RES. ANP nº 837/2021](#)

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