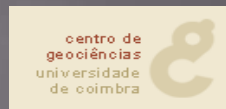


Sedimentation, Source-rocks and Reservoirs in Upper Jurassic sin-rift deposits of the Lusitanian Basin (Portugal)



R. Pena dos Reis ^{1,3} & N. Pimentel ^{2,3}

1: Centro de Geociências, Universidade de Coimbra, 3049-Coimbra, Portugal (Penareis@dct.uc.pt)

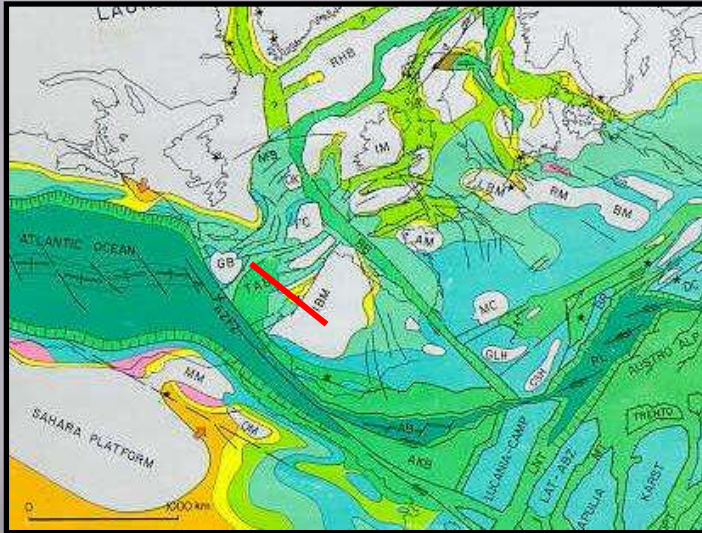
2: Centro de Geologia, Universidade de Lisboa, 1749-Lisboa, Portugal (Pimentel@fc.ul.pt)

3: Margins Exploration Group

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- ❑ The Lusitanian Basin in the West Iberian Margin
- ❑ Upper Jurassic basin's infill
- ❑ Source-Rock – Cabaços & V.Verde Fms (Late Oxfordian)
- ❑ Carbonate Reservoir – Montejunto Fm (Late Oxfordian)
- ❑ Siliciclastic Reservoir – Abadia Fm (Kimmeridgian)
- ❑ Rift evolution and petroleum system

The Lusitanian Basin in the West Iberian Margin (WIM)



Oxfordian-Tithonian (Ziegler, 1999)



WIM BASINS

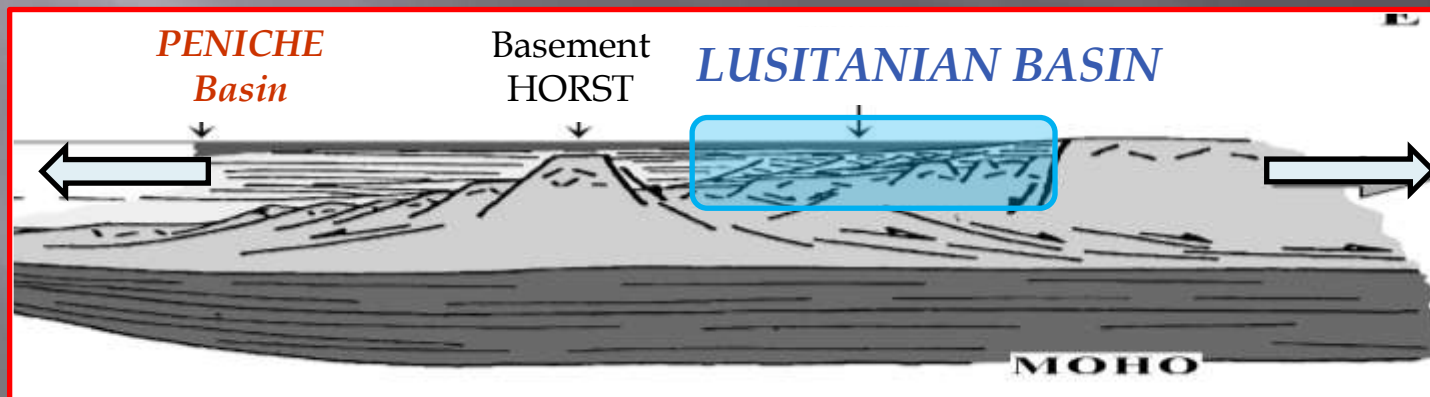
LUSITANIAN

PORTO

GALIZA

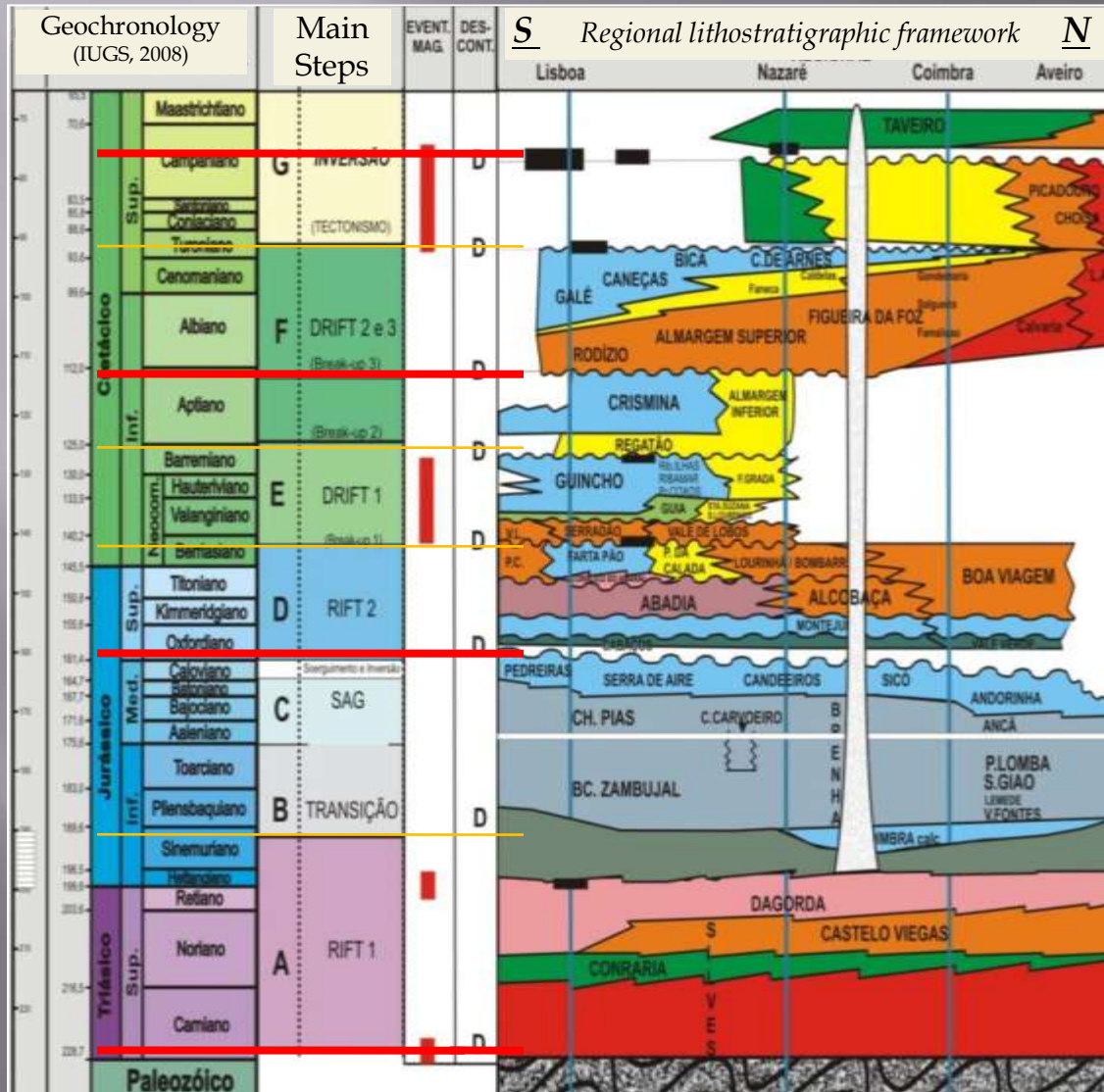
PENICHE

ALENTEJO



Structure of the Western Iberian Margin (adapt. Ribeiro, 1998)

Basin's Evolution and Sedimentary Infill



Late Cretaceous-Tertiary INVERSION

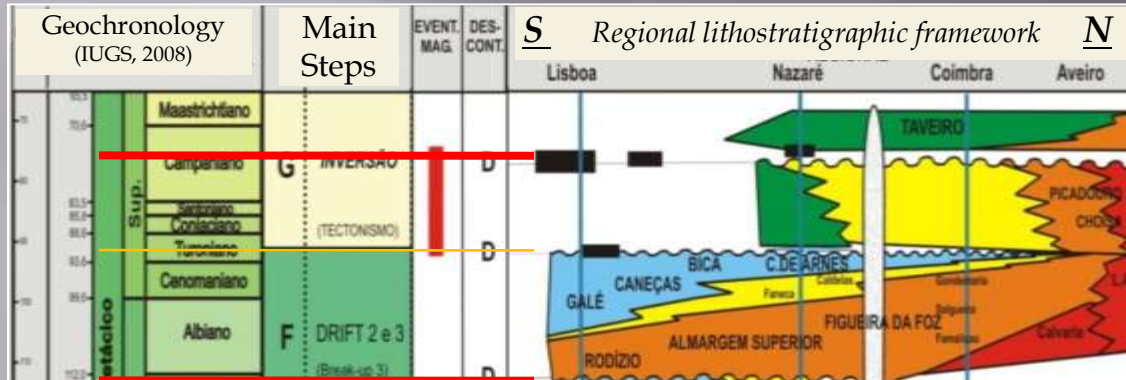
Early Cretaceous DRIFT

Late Jurassic RIFTING

Early-Middle Jurassic SUBSIDENCE

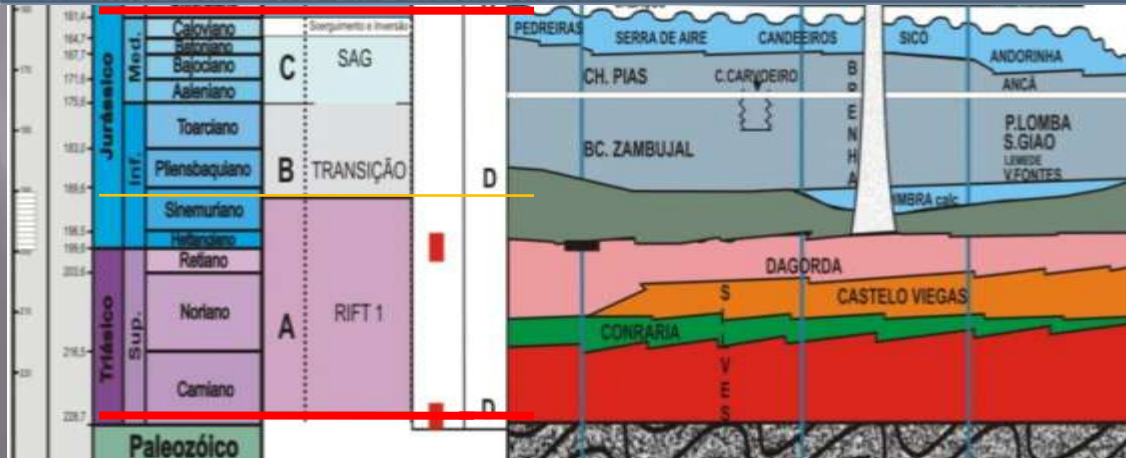
Late Triassic RIFTING

Basin's Evolution and Sedimentary Infill



Late Cretaceous-Tertiary INVERSION

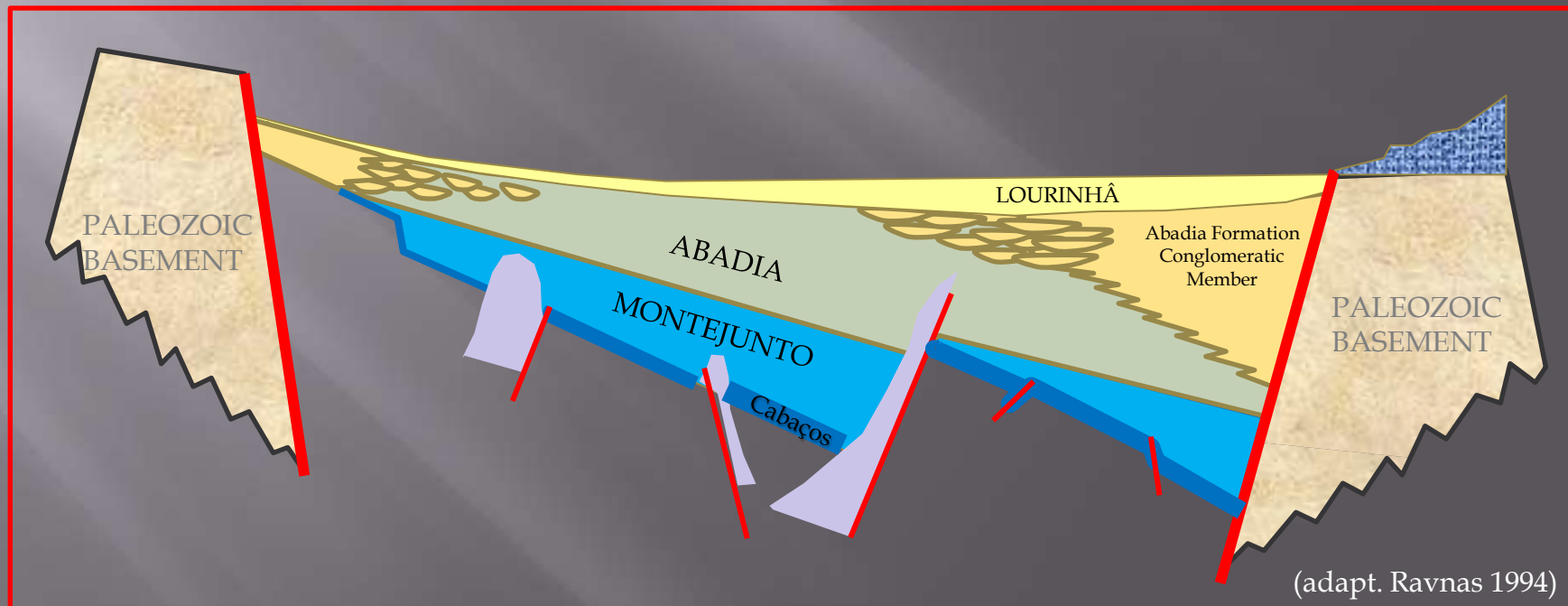
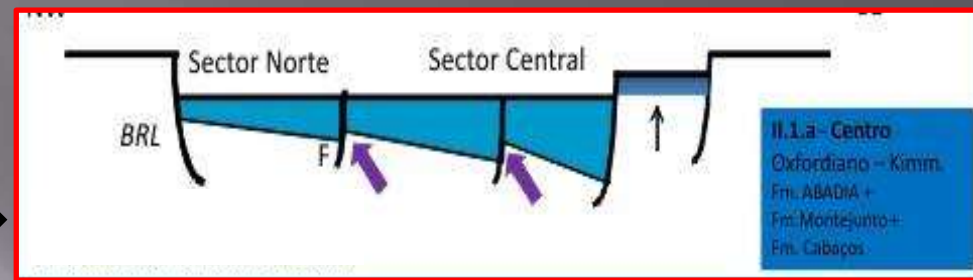
Early Cretaceous DRIFT



Early-Middle Jurassic SUBSIDENCE

Late Triassic RIFTING

Upper Jurassic basin's infill



Upper Jurassic basin's infill

LITHOSTRATIGRAPHY

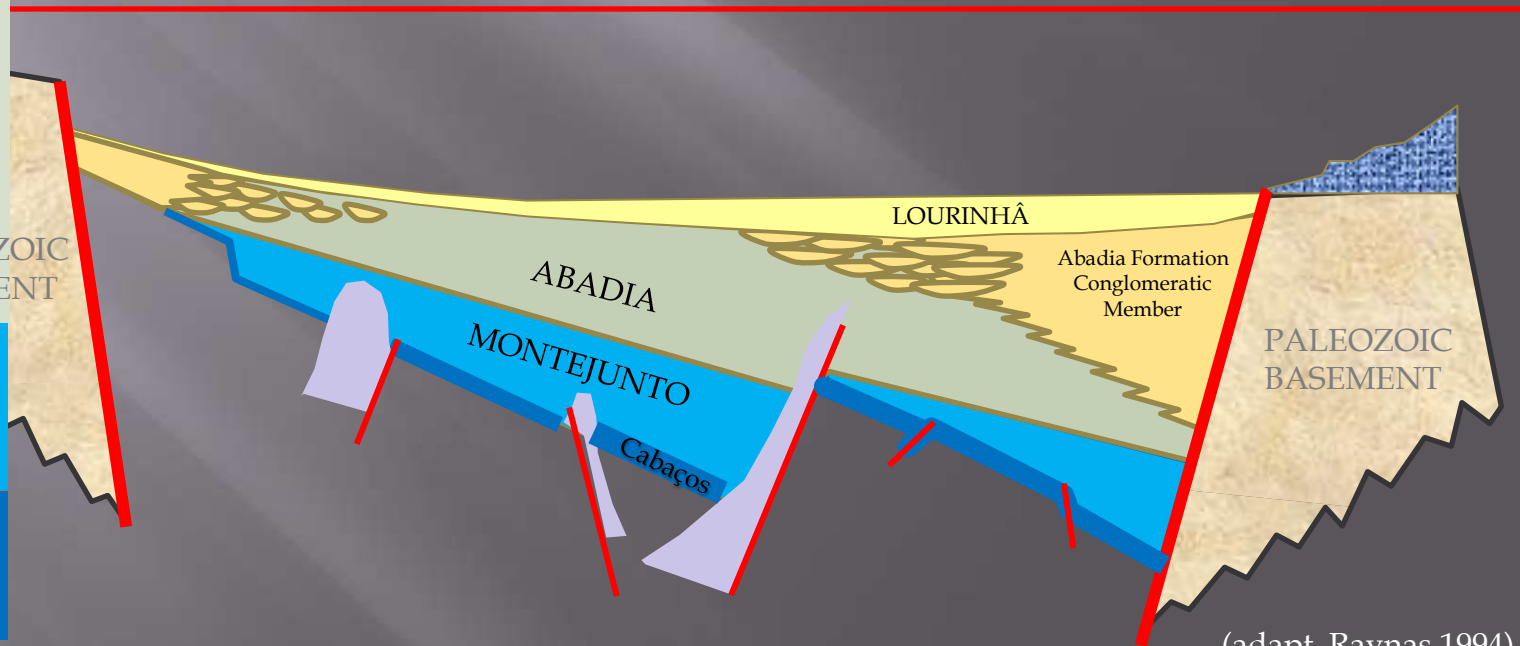
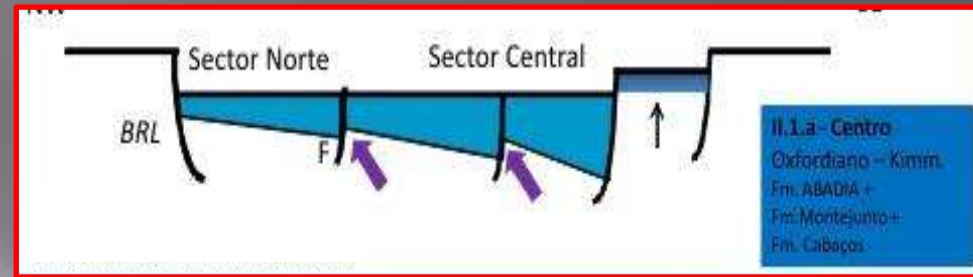
LOURINHÃ
Formation

ABADIA
Formation
(Late Sin-Rift)

PALEOZOIC
BASEMENT

MONTEJUNTO
Formation
(Early Sin-Rift)

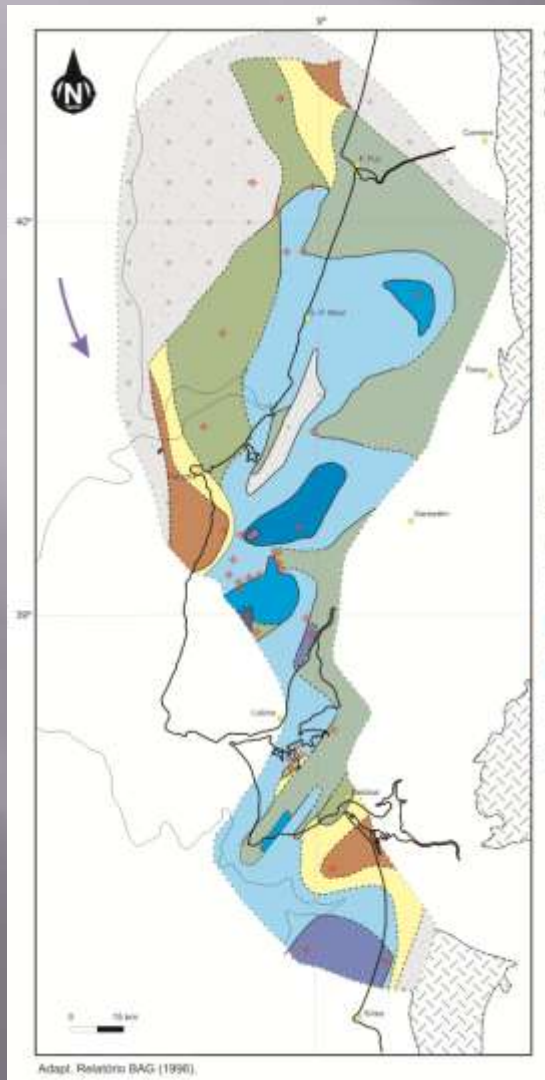
CABAÇOS/VV
Formations
(Early Sin-Rift)



(adapt. Ravnas 1994)

CABAÇOS & Vale Verde Fms

Late Oxfordian SOURCE-ROCK



Cabaços Formation

Restricted marine black marls with some oolitic intercalations, grading northwards into

Vale Verde Formation

Palustrine to alluvio-deltaic shales with plant remains.

Both present significant organic matter accumulation and preservation.

VALE VERDE Formation (NORTH)

Marls and coaly shales (Restricted Lagoon)

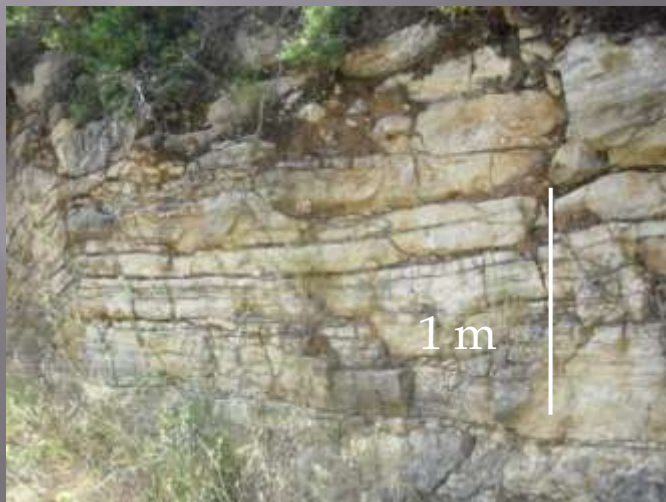


Laminated limestones (Lagoon)



CABAÇOS Formation (SOUTH)

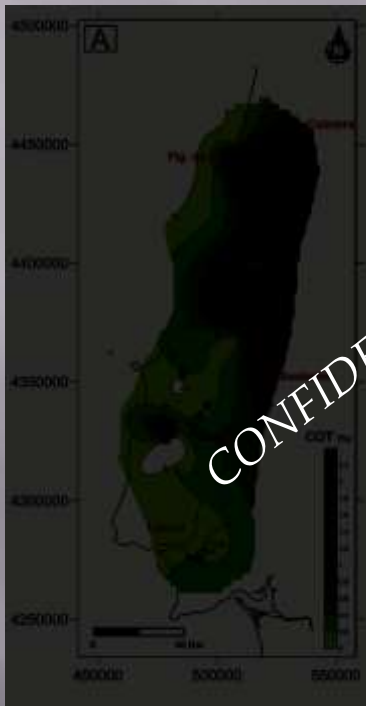
Laminated bituminous limestones (Restricted marine)



SOURCE ROCK

ORGANIC GEOCHEMISTRY

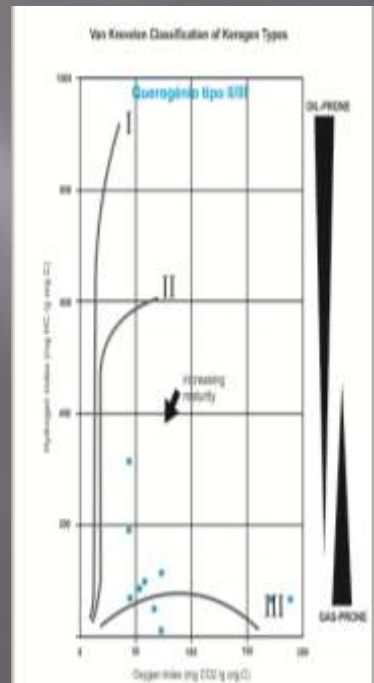
TOC



TMax



Kerogen



TOC – Higher values towards bordering areas to the N

TMax – Higher values towards S, due to higher Kimmeridgian subsidence.

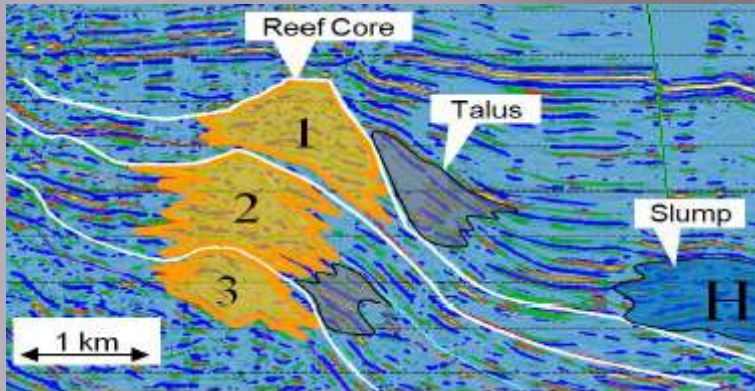
Kerogen – Mixed influences, with more continental influence towards N

	TOC	Ker.Type	IH	TMax
V.VERDE (N)	6%	I/II/III	351	429
CABAÇOS (S)	4%	II/III	563	498

MONTEJUNTO Fm

Late Oxfordian CARBONATE RESERVOIR

STRATIGRAPHIC RESERVOIR



Reef-talus-slump porous bodies
<http://www.portoenergy.com/investorpresent.html>



FRACTURED RESERVOIR

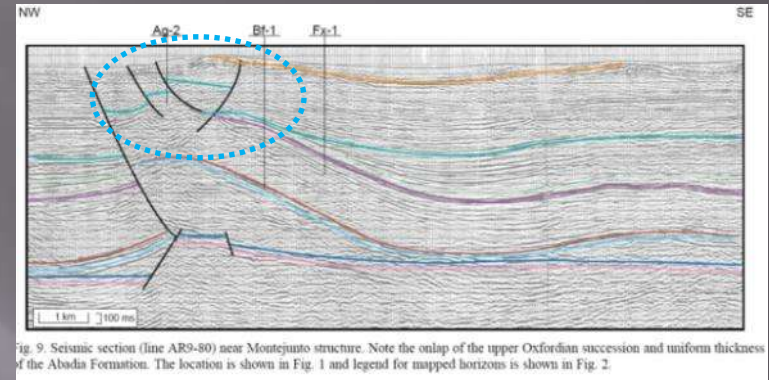
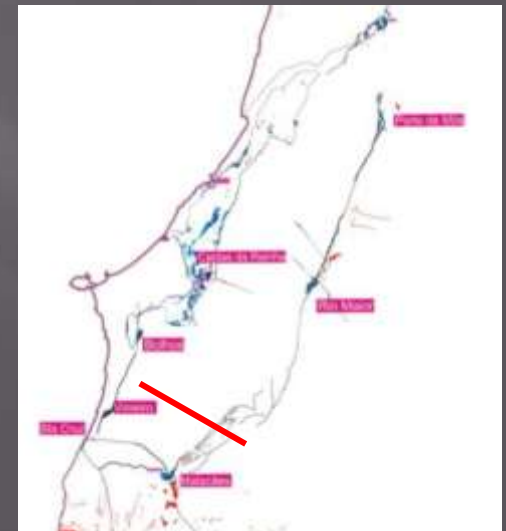


Fig. 9. Seismic section (line AR9-80) near Montejuno structure. Note the onlap of the upper Oxfordian succession and uniform thickness of the Abadia Formation. The location is shown in Fig. 1 and legend for mapped horizons is shown in Fig. 2.

Salt related deformation & fractures



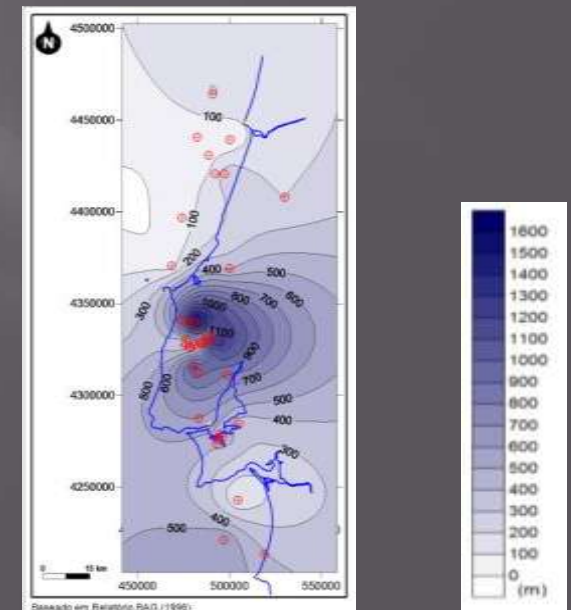
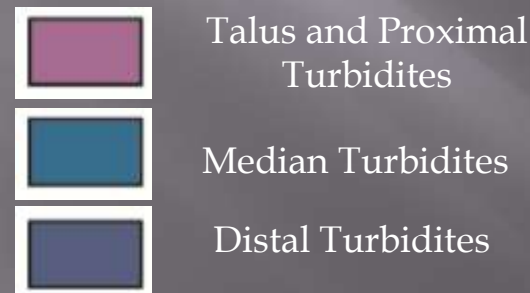
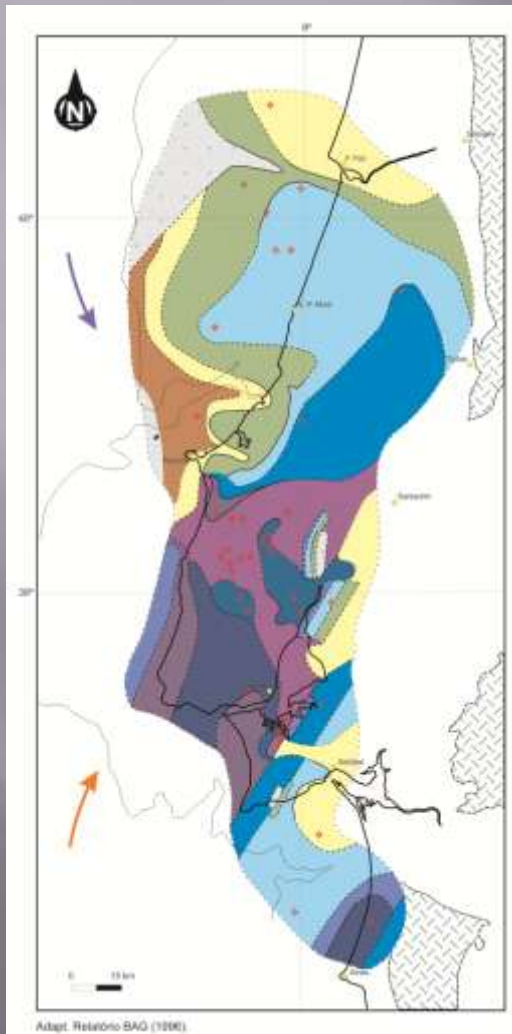
Main diapiroclite structures

ABADIA Formation

Kimmeridgian Siliciclastic RESERVOIR

Incised canyons and talus deposits, fed the median and distal fine-grained turbidites.

Two clastic feeding systems coming from East and West, into the highly subsident areas.

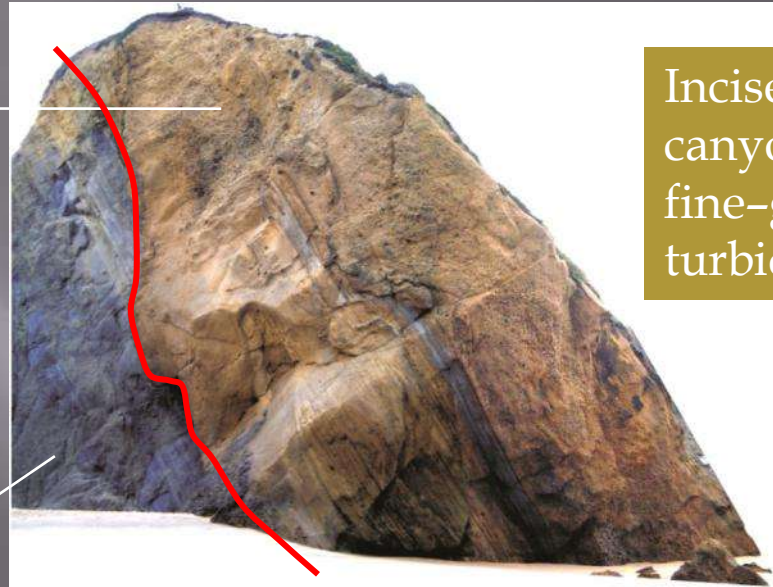


ABADIA Fm

Kimmeridgian SILICICLASTIC RESERVOIR



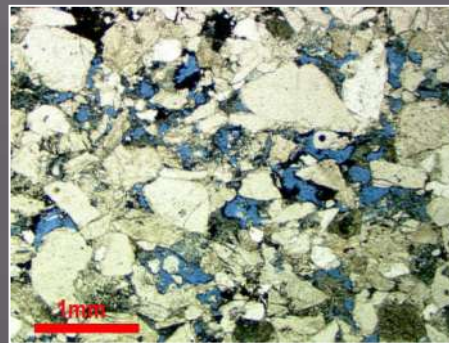
Coarse-grained canyon facies, with sandstones and conglomerates



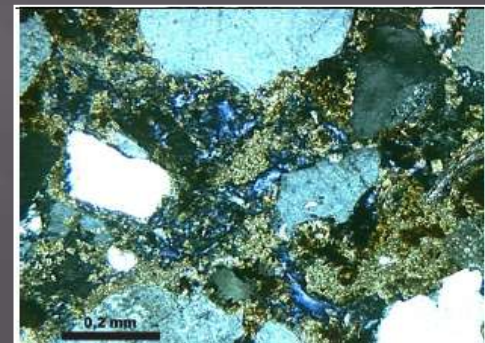
Incised canyon in fine-grained turbidites



Fine-grained turbidites, with marls and sandstones

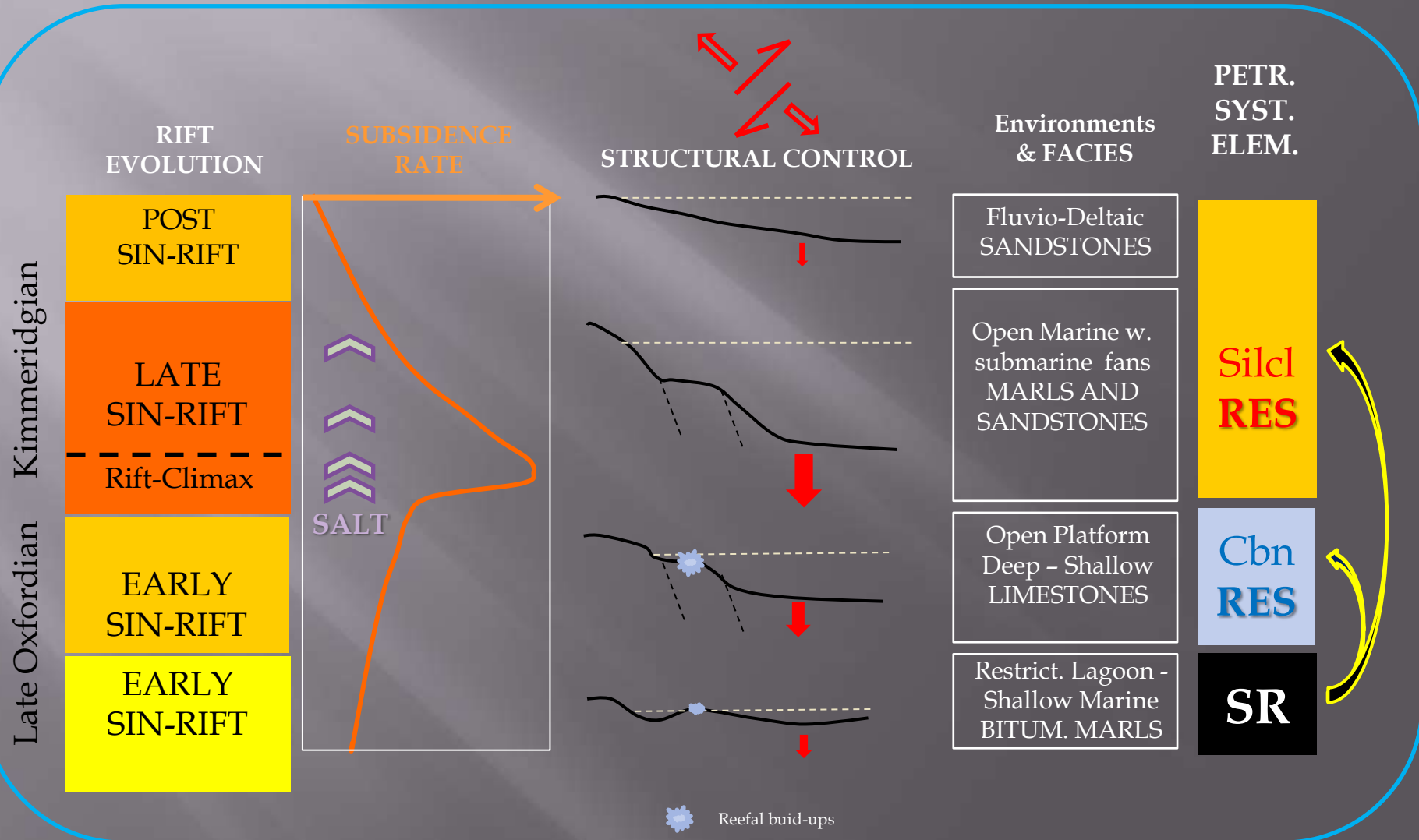


Coarse-grained sandstone with moldic and intragranular secondary porosity.



Coarse-grained sandstone with secondary porosity resulting from carbonate cement and grain dissolution

Late Jurassic Rift evolution and petroleum system



Conclusions

As a whole, the Lusitanian Basin's Late Jurassic sin-rift sequence hosts an active petroleum system, sourced on the early Oxfordian bituminous marls of the Vale Verde and Cabaços Formations, having as main **reservoirs** both the Montejunto Formation **fractured or reefal carbonates** (with several oil-shows and oil-seeps) and the Abadia Formation **sandy turbidites** (also with several oil-shows).

The proximity of source-rocks and reservoirs in the same rift-related sequence, originated a petroleum system with high generation and efficiency.

Thank you !



Acknowledgements
PETROBRAS (Brazil)
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