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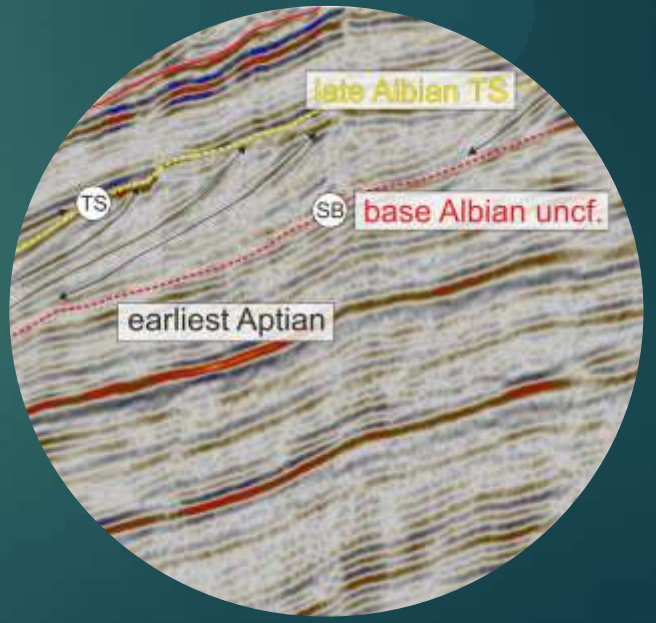
MAX CASSON

Ph.D: Tectono-Stratigraphic Evolution of the North West African Atlantic Margin

Supervisors: Prof. Jonathan Redfern, Prof. Mads Huuse, Dr. Luc Bulot
Collaborator: Jason Jeremiah



Theme 1: Regional expression of the base Albian unconformity

- Central Atlantic presence
- Observations
- Albian reservoir in Senegal

Central Atlantic - BAU Presence

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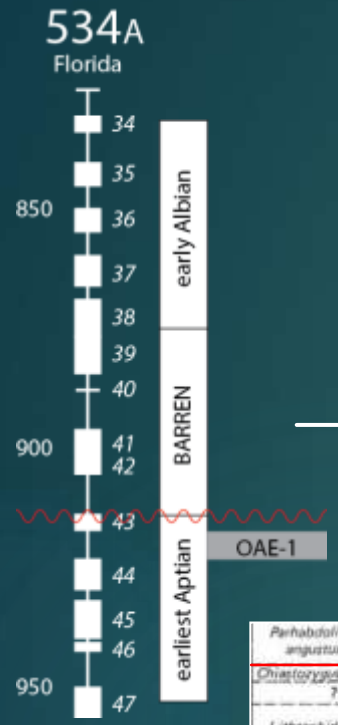
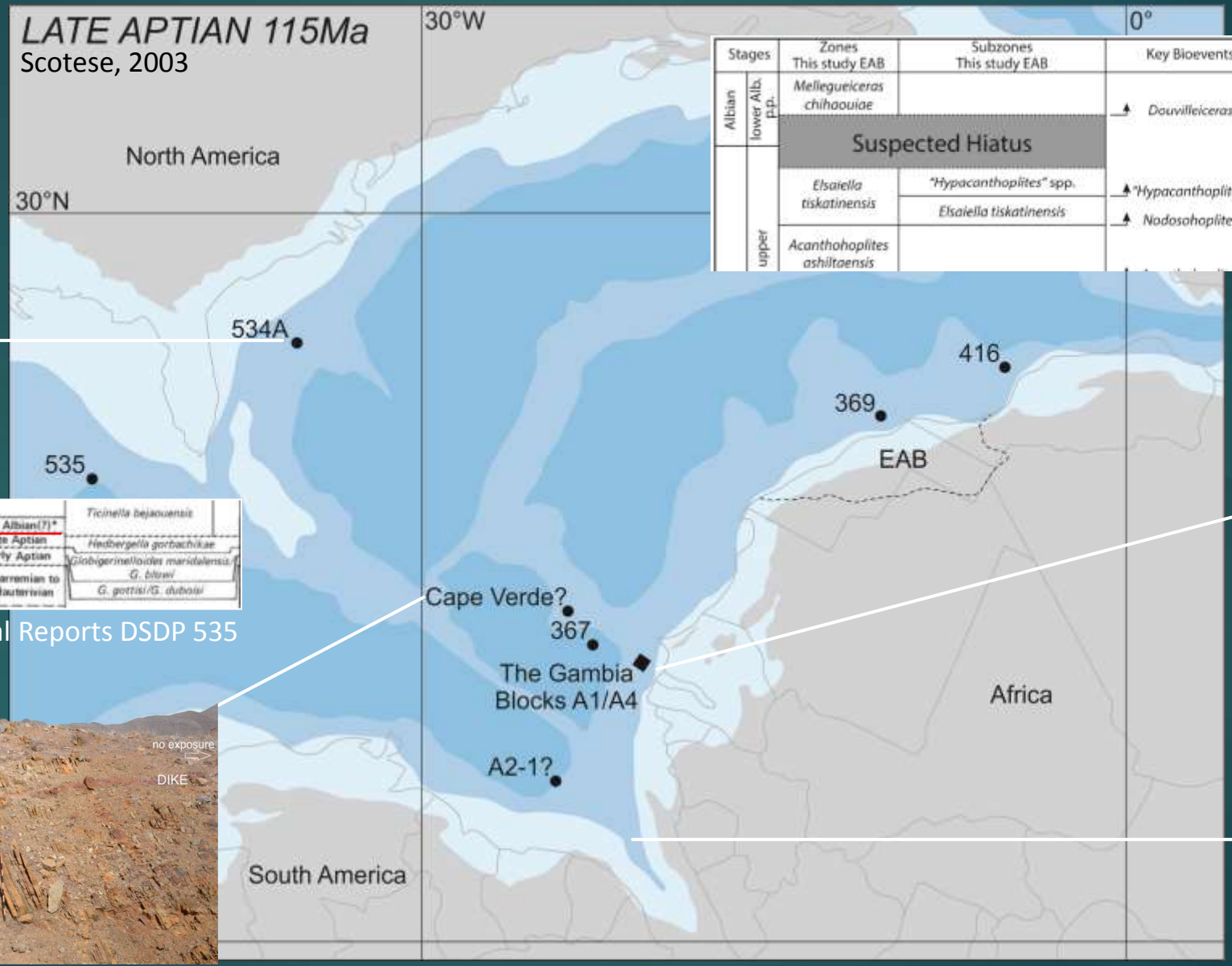
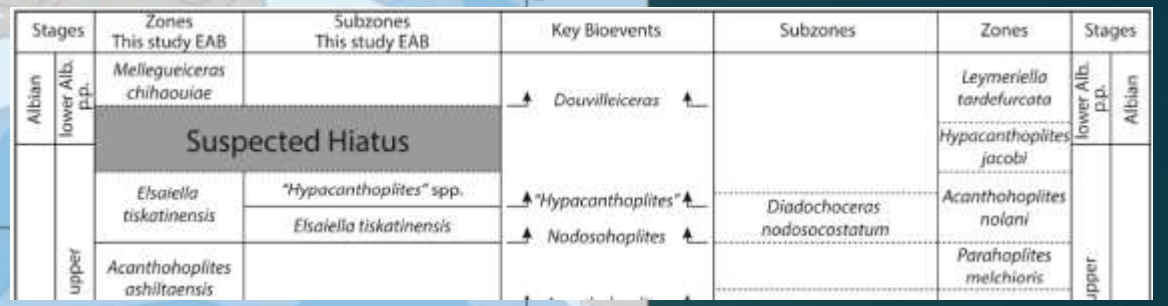
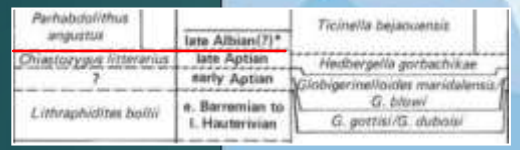


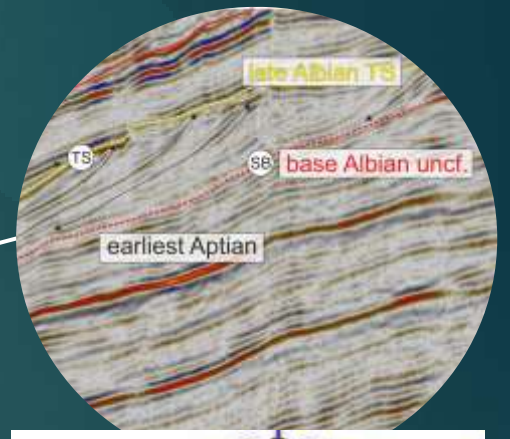


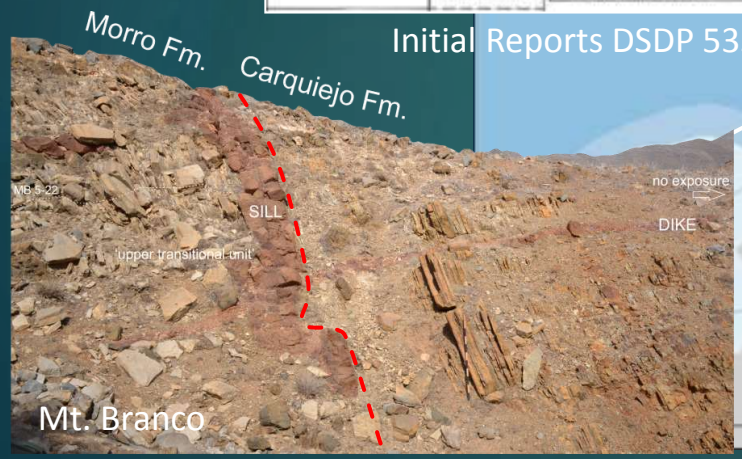


EAB - Luber *et al.* 2017

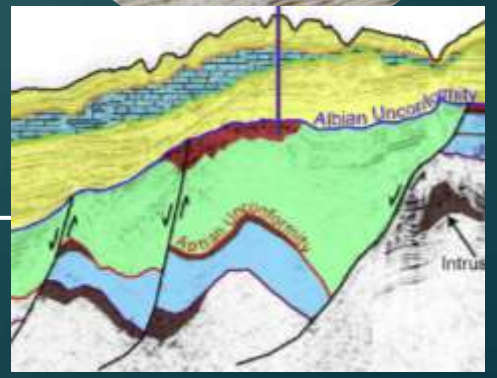


Initial Reports DSDP 535





Mt. Branco



C. Atlantic DSDP

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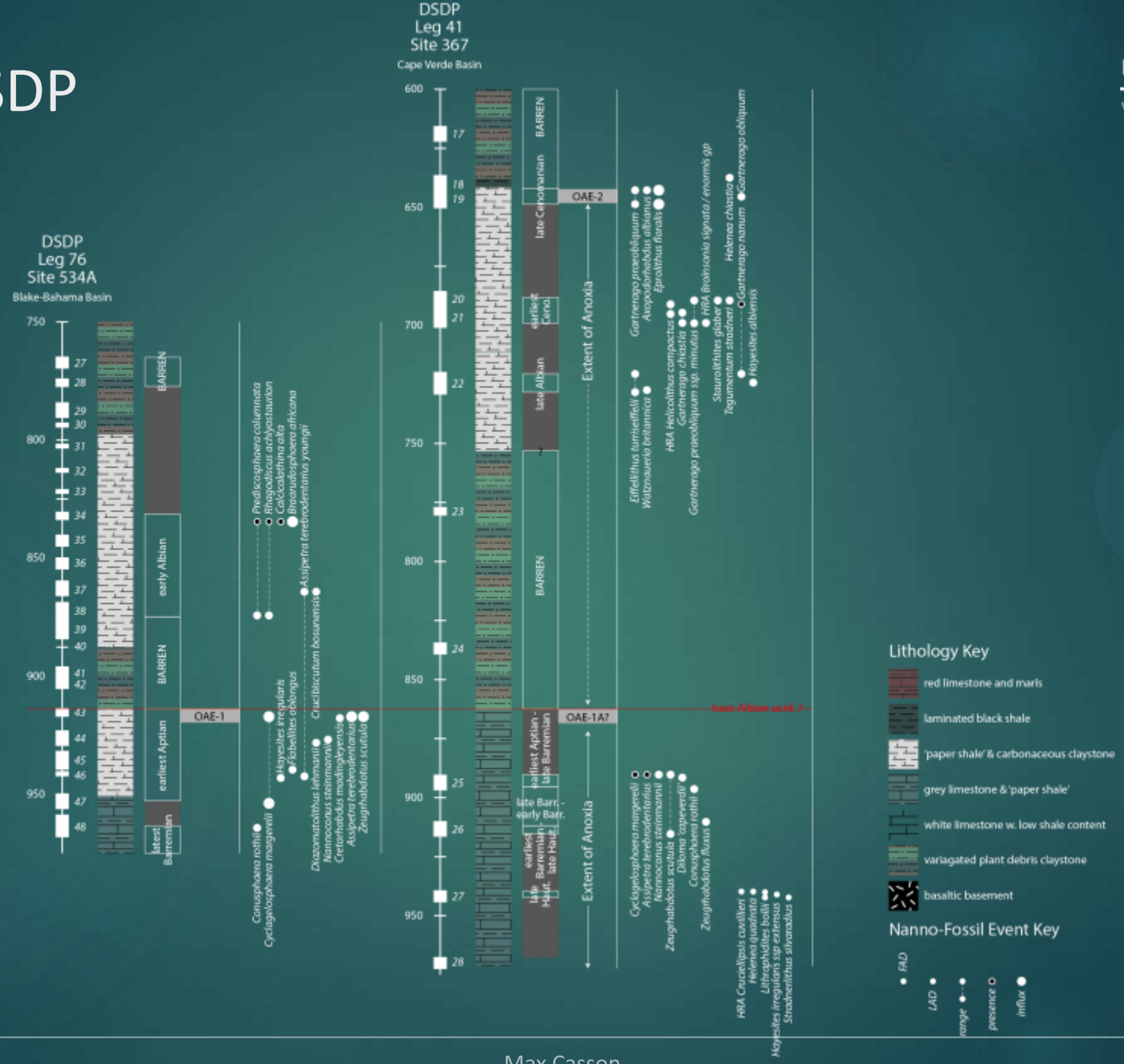

Morro-Carquiejo Fm. Boundary, Maio

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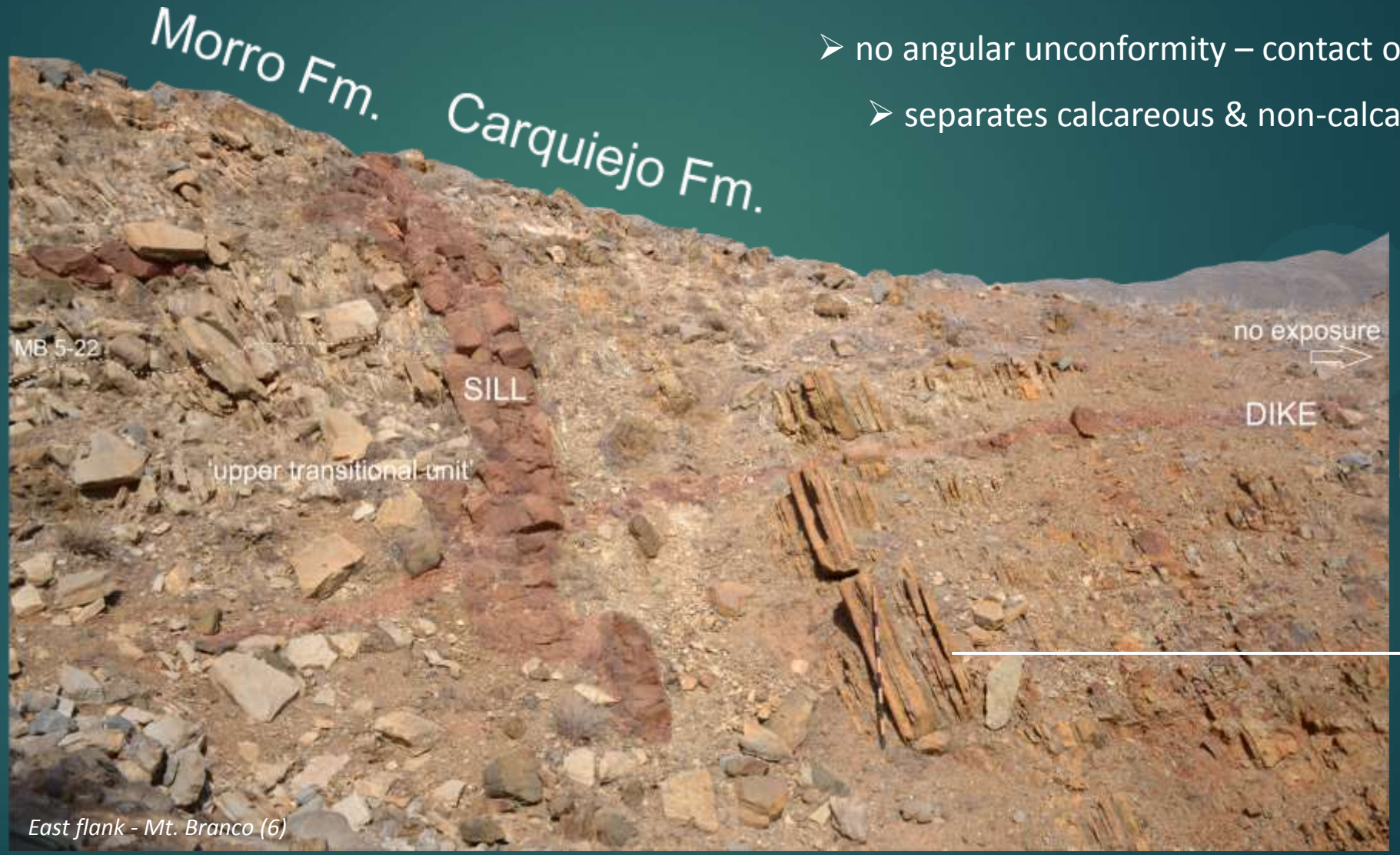

- no angular unconformity – contact obscured by sill
- separates calcareous & non-calcareous systems

plant debris

Seismic: Albian Delta Evolution, The Gambia

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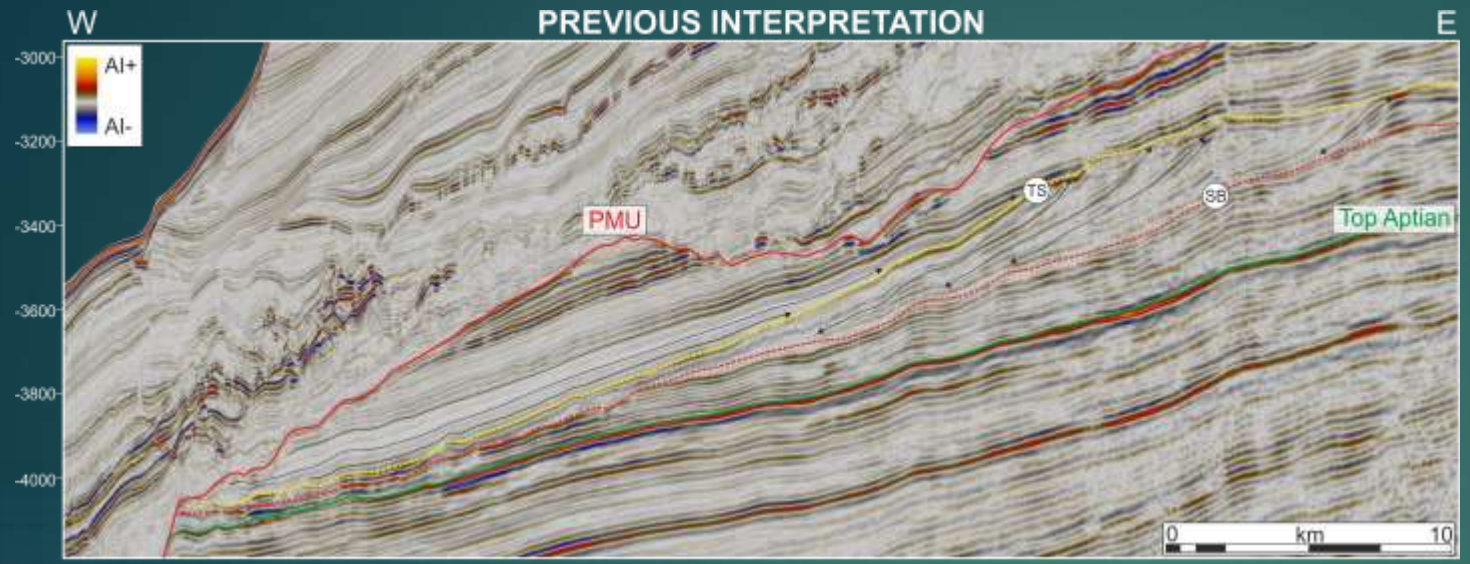

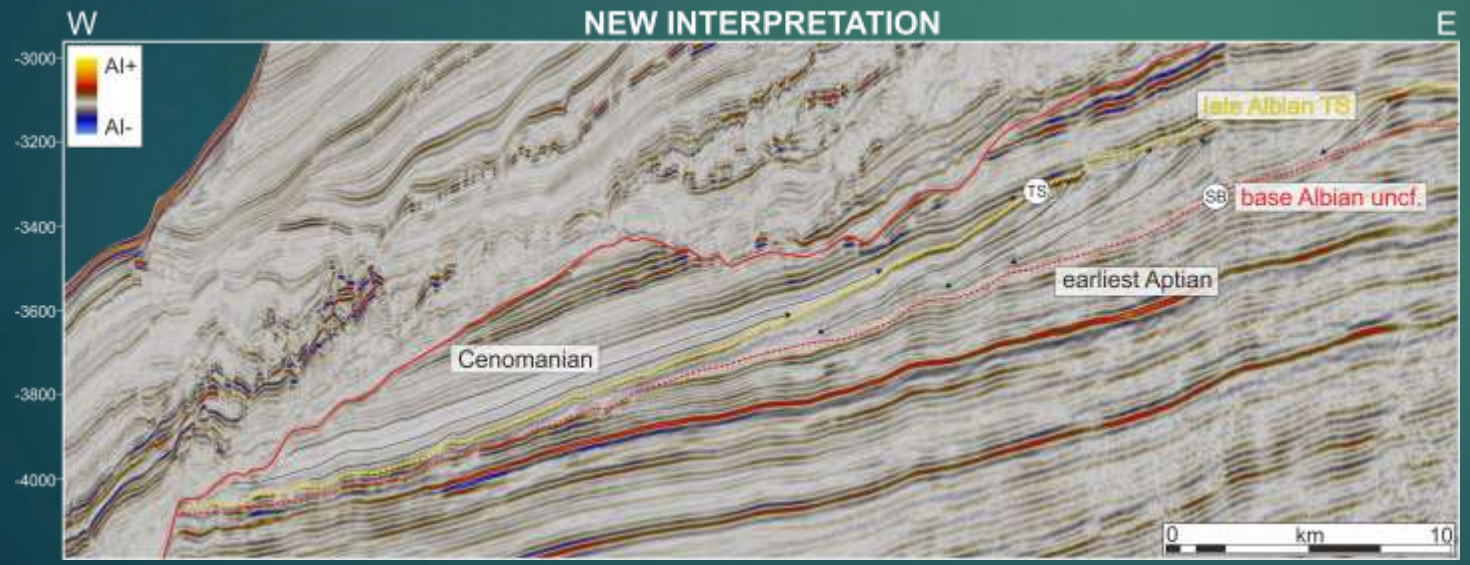

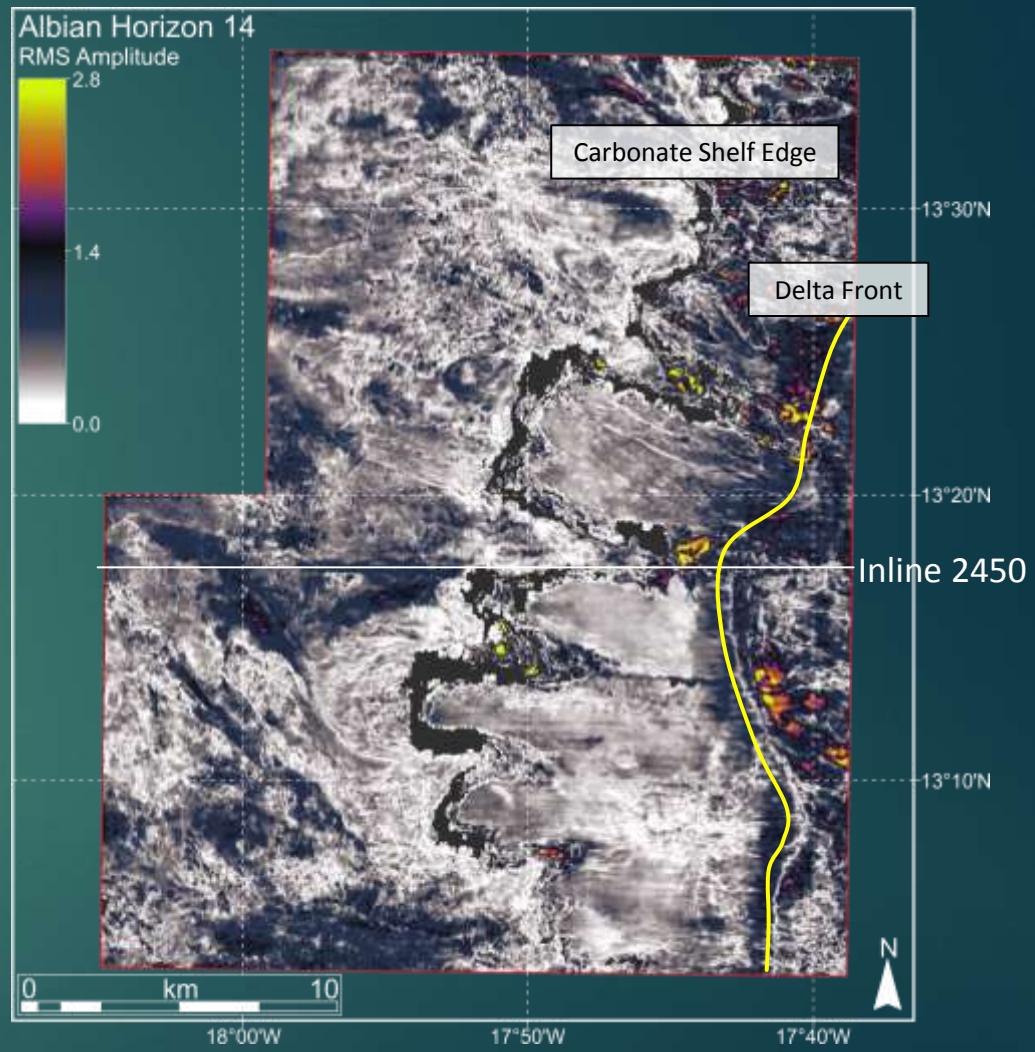

TGS The Gambia Blocks A1/A4 – Inline 2450

Albian Reservoirs, Senegal

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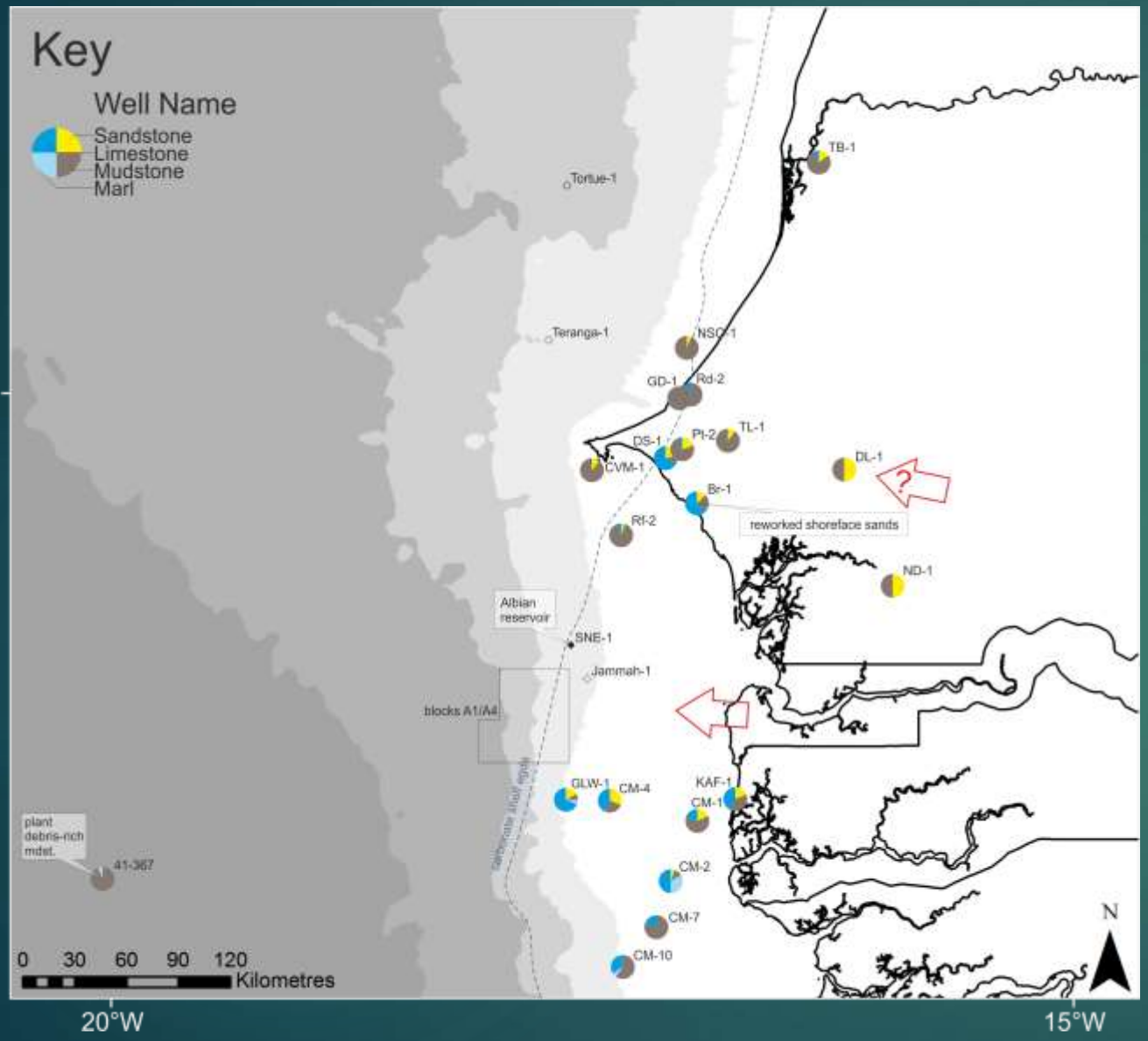
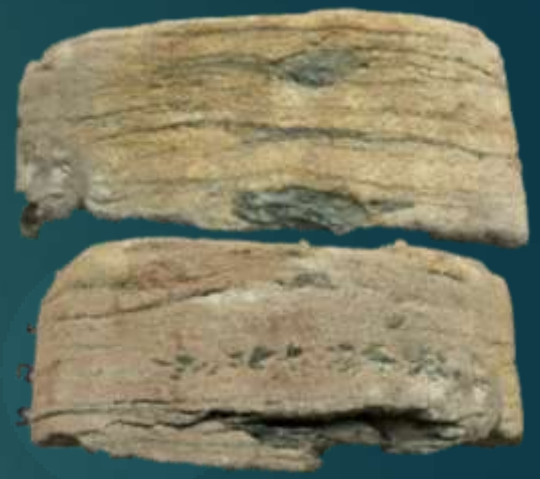


Albian Core Observations



(1) Asymmetrical ripples in medium-to-fine-grained sandstone; (2) Silty laminations and lag deposits; DL-1 Core 20

(3) Laminated, micaceous, fine-grained sandstone; Br-1 Core 22

Questions? Theme 1: Regional expression of the base Albian unconformity

- Understanding the spatial distribution of the unconformity
- Characterising the early-late Aptian stratigraphy
- Effects on the Aptian source rock (OAE-1A)
- Super-regional mechanisms

Theme 2: *J/K Boundary – Maio to 367*

- Recognition of the lower Berriasian unconformity in 367
- Absence of Jurassic stratigraphy on Maio, Cape Verde
- Discussion: Correlation

367: Lower Berriasian Unconformity

Leg 41 Site 367 Core 32-5

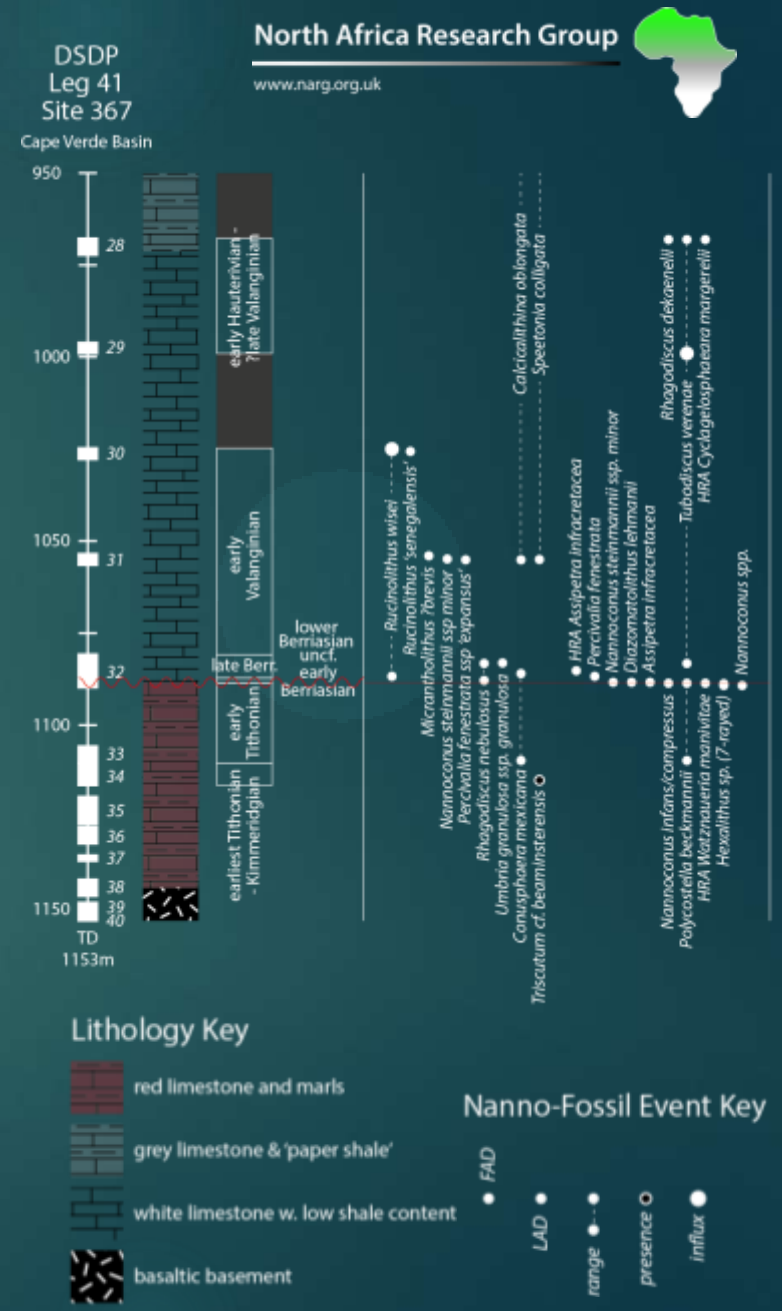
←base *Nannoconus steinmannii ssp minor* at 1088.07m

lower Berriasian unconformity 1088.10m

←top *Nannoconus infans/compressus* and *Polycostella beckmannii* at 1088.19m

←base *Nannoconus infans/compressus* at 1088.82m

- late Tithonian missing – J/K boundary
- Condensed interval, heavily bioturbated



Maio, Cape Verde

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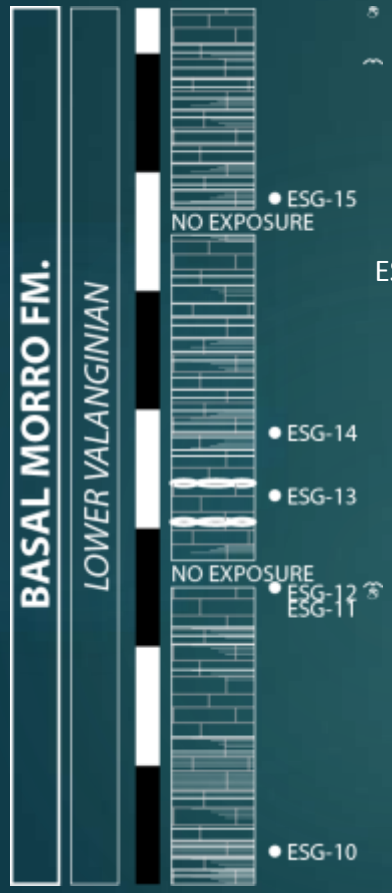
ESG-3 – *Neolissoarus (Vergoligeras) sp. juv.*

ESG-9 – *Kilianella sp. juv.*

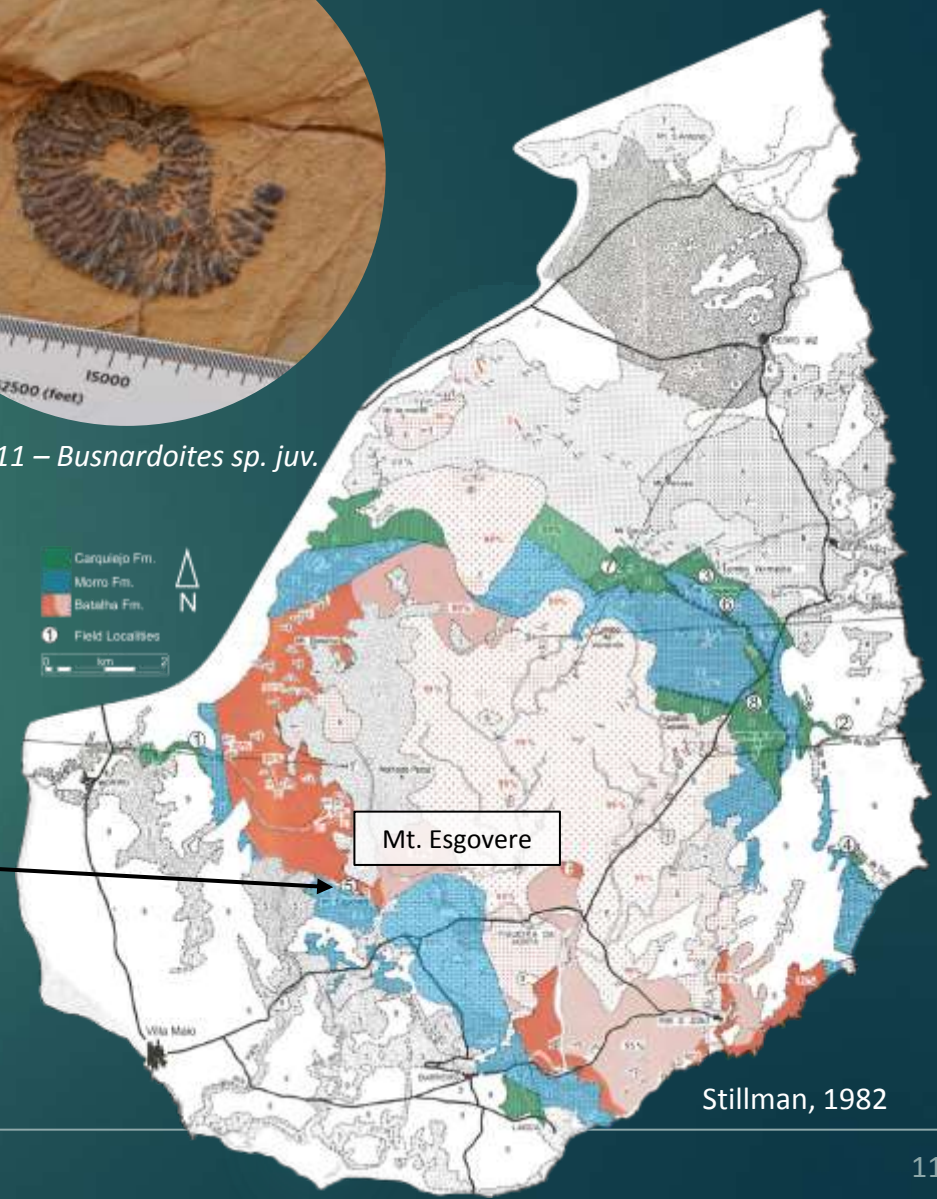
ESG-11 – Busnardoites sp. juv.



Mt. Esgrovere Stratigraphy

All samples – Mt. Esgrovere (5)

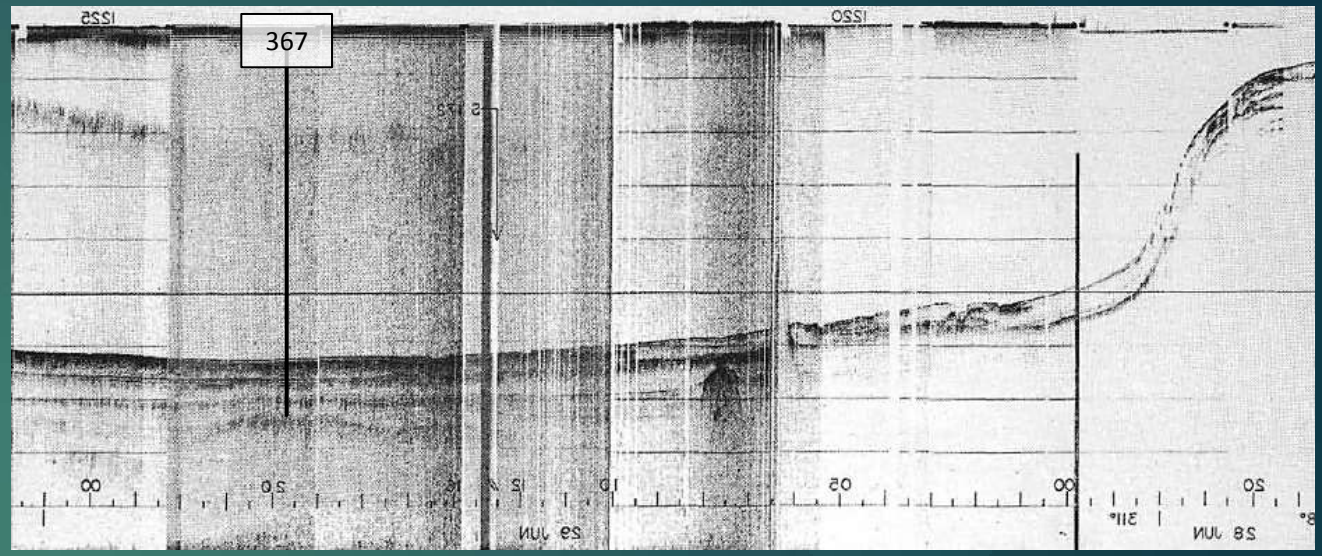
Geological Map – Maio, Cape Verde



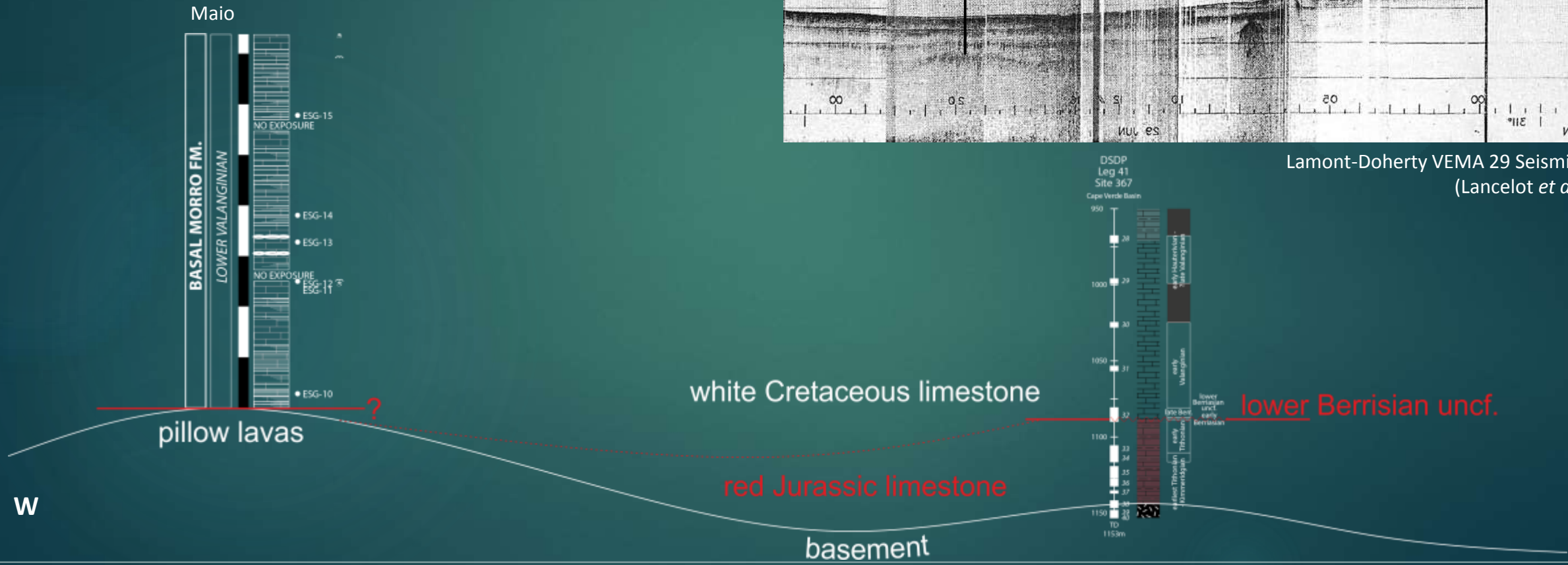
Stillman, 1982

Maio – 367 Correlation

1. lower Berriasian unconformity
2. onlap on to a pre-existing high



Lamont-Doherty VEMA 29 Seismic Profile
(Lancelot *et al.*, 1976)



Problem 3: Basin to Shelf Stratigraphic Correlation

- Constructing a stratigraphic framework across the full depositional system

Basin to Shelf Seismic Tie

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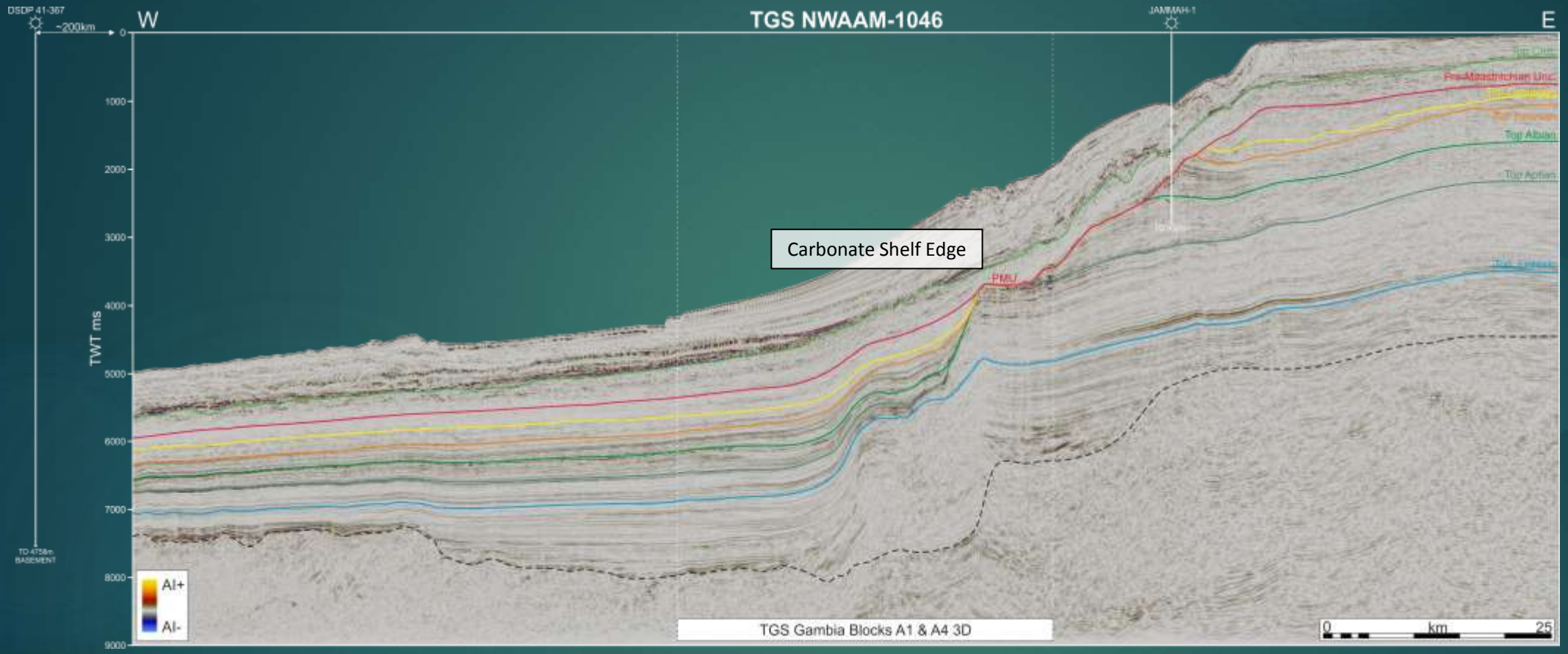

Senegal well database

- Carbonate shelf edge prevents correlation from the basin (367) to the shelf
- Define two frameworks or …

Many thanks for your on-going support

DSDP Results: C/T Source Rock Distribution

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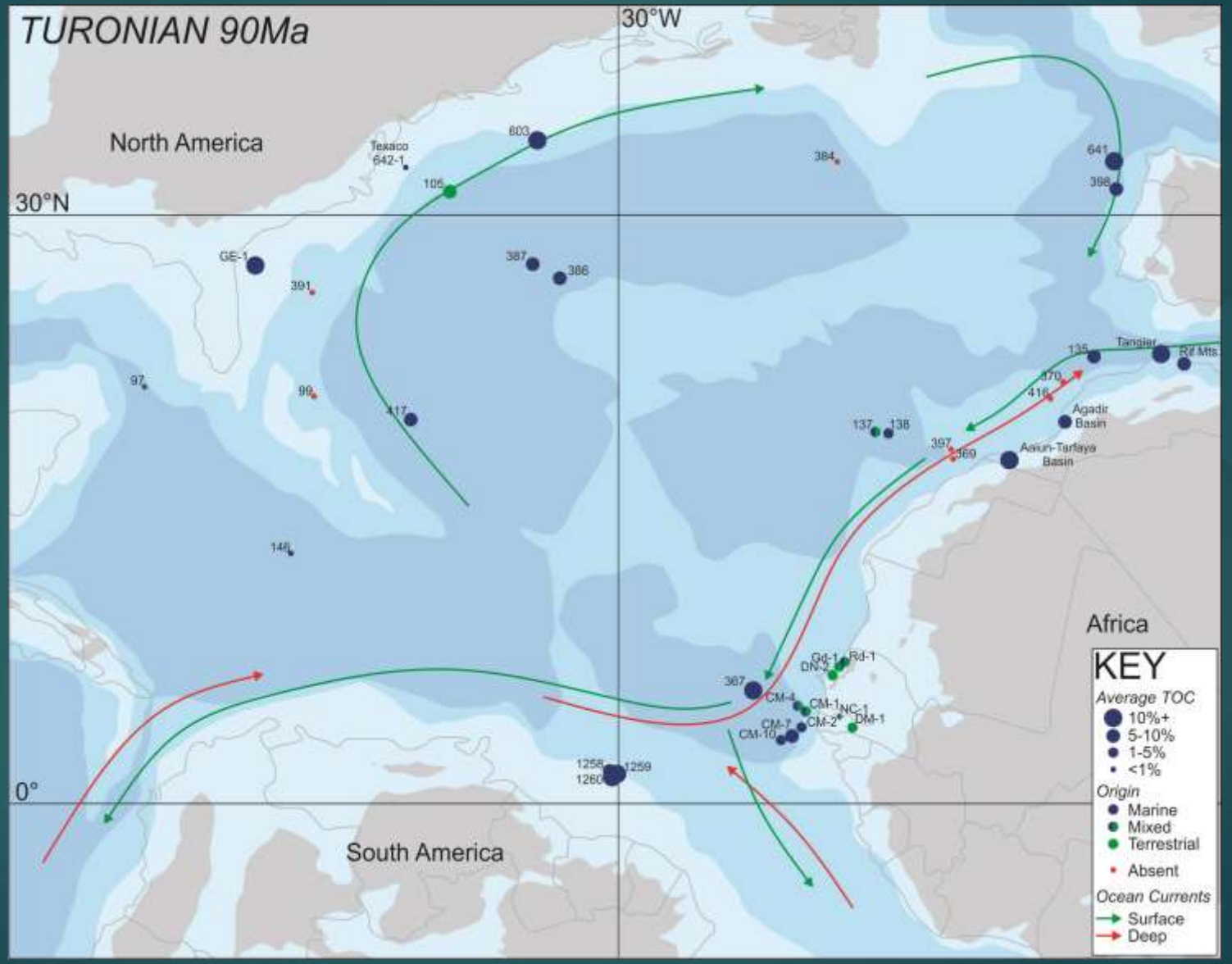

Compilation of published TOC data averaged for Cenomanian-Turonian period, displayed on Scotese, 2003 palaeogeography.