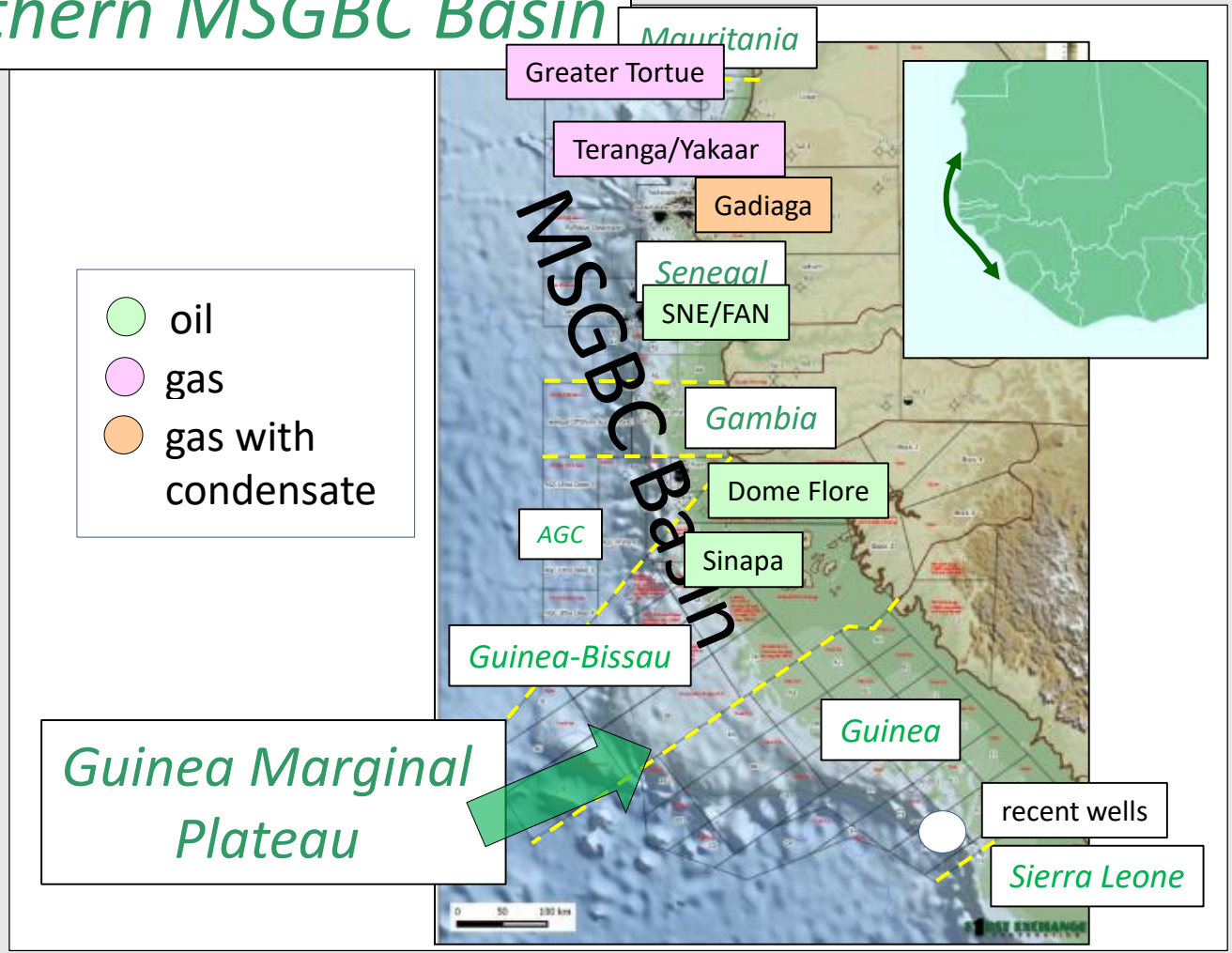
Giant potential emerges from the Guinea Marginal Plateau (Guinea-Bissau and Guinea)

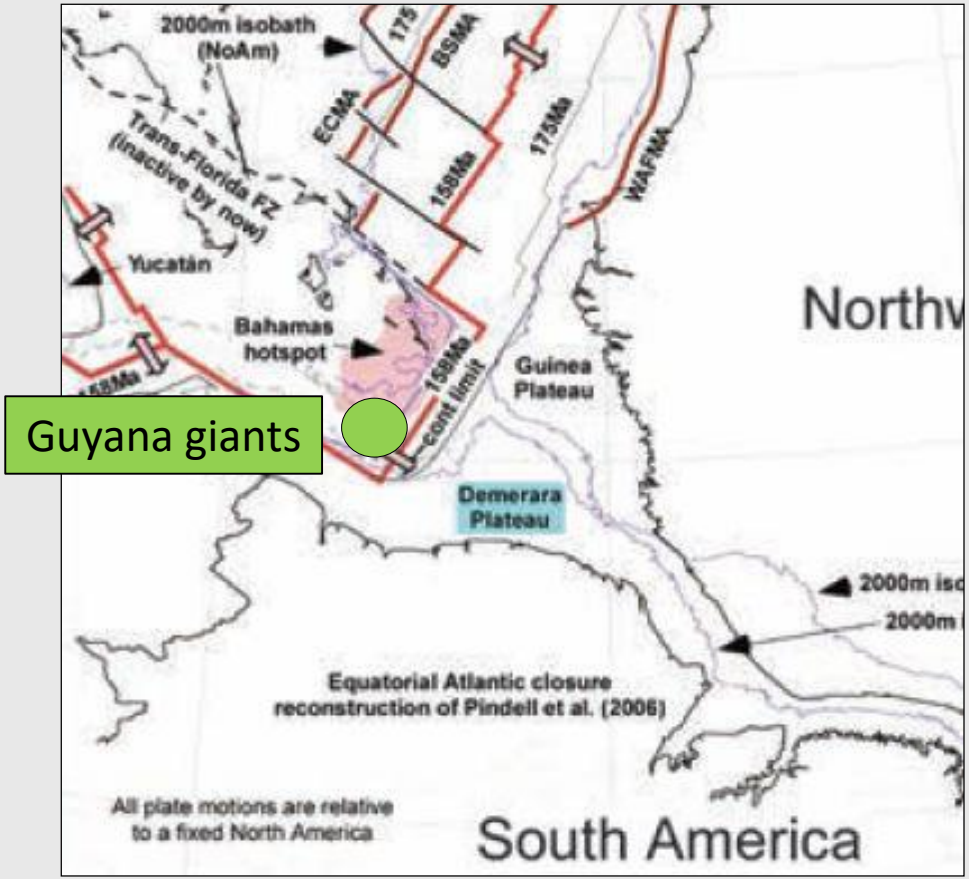
Nick Cameron, FEC

London, 24 May 2019

The southern MSGBC Basin



The tie to Suriname (early Jurassic plate fit)

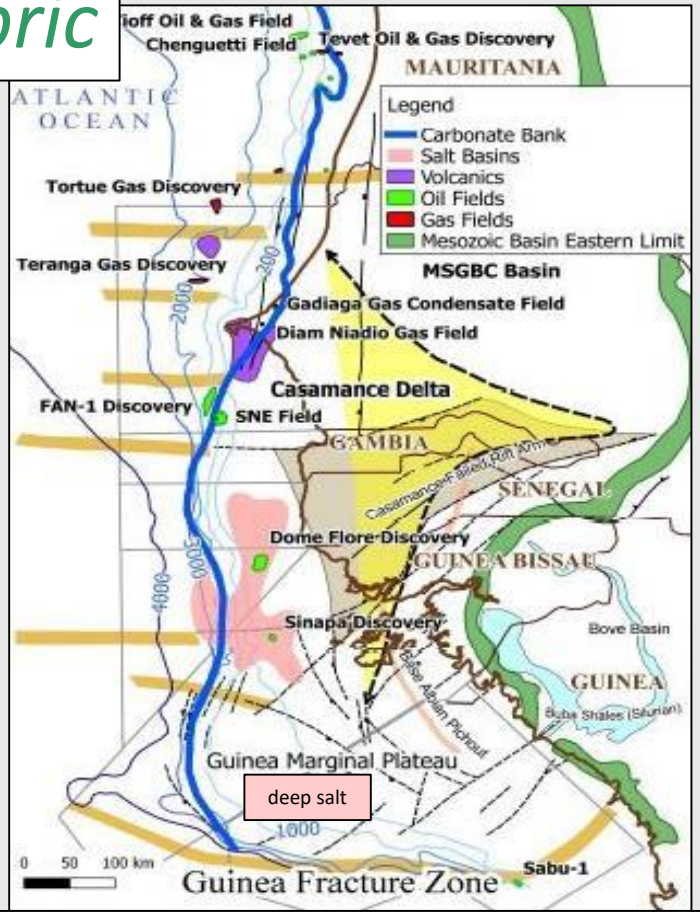


Objective / Topics

To demonstrate that a mature, oil-prone, older Jurassic source exists below much of the Guinea Marginal Plateau

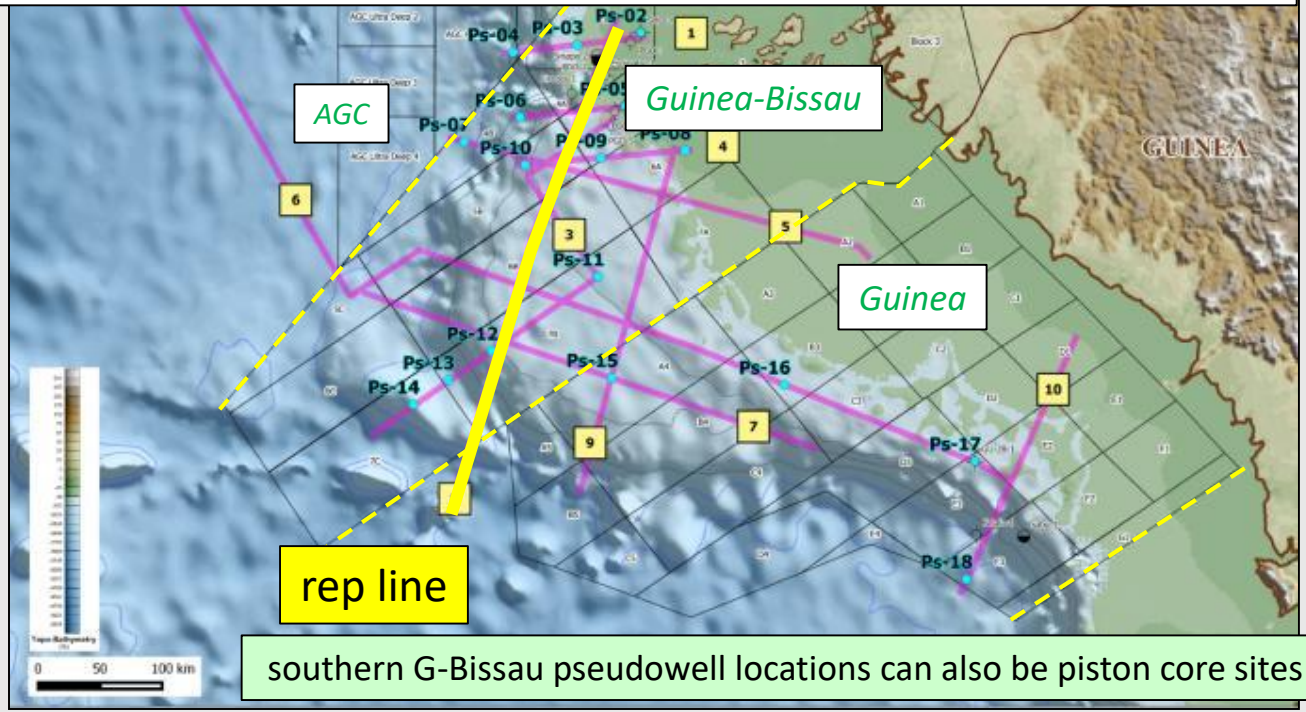
1) Geological setting
2) The modelling results
3) The geochemical evidence for a new source rock
4) Piston core support for a new source

MSGBC Basin fabric



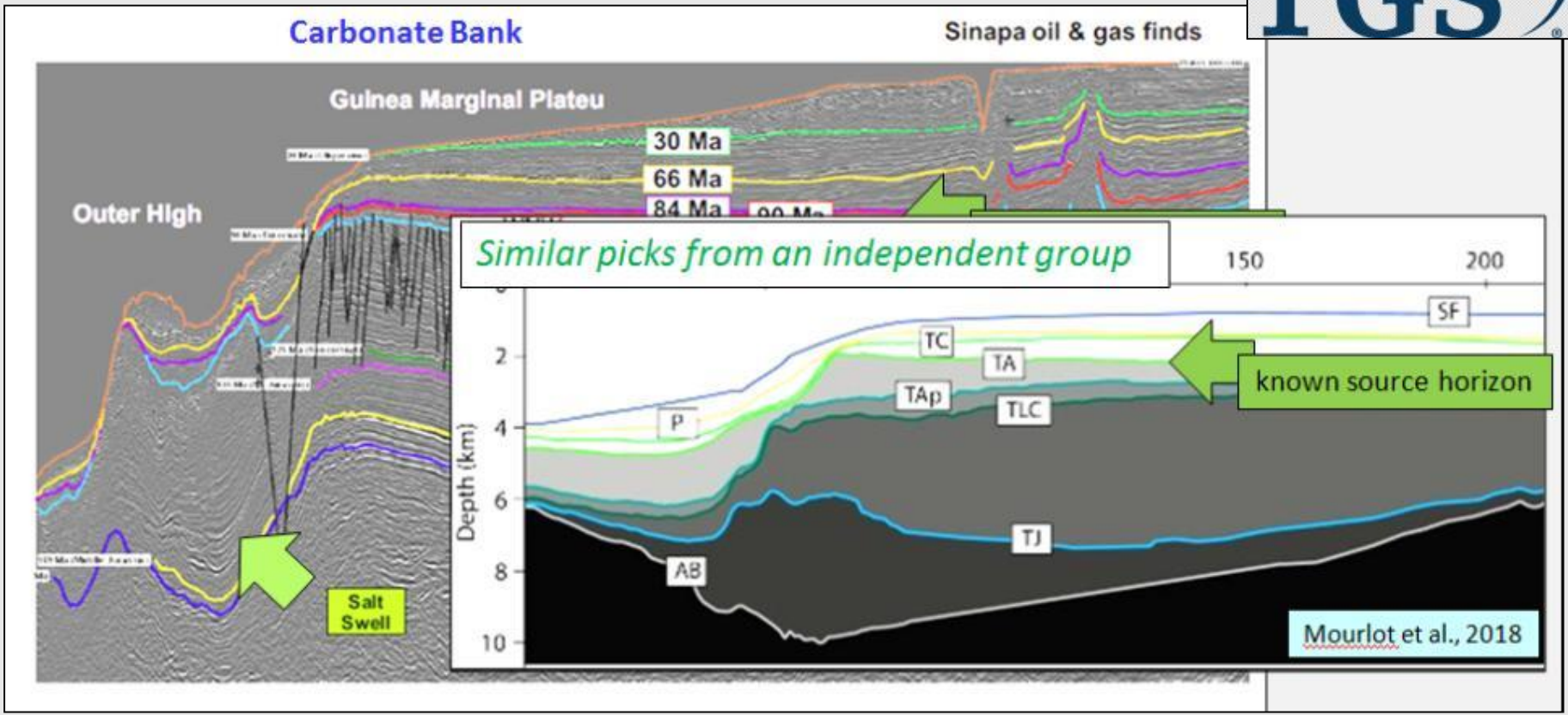
no precursor detail on the geological history of the deep GMP

The grid and pseudowells used for the basin modelling (seismic courtesy of TGS and FEC/Spectrum)

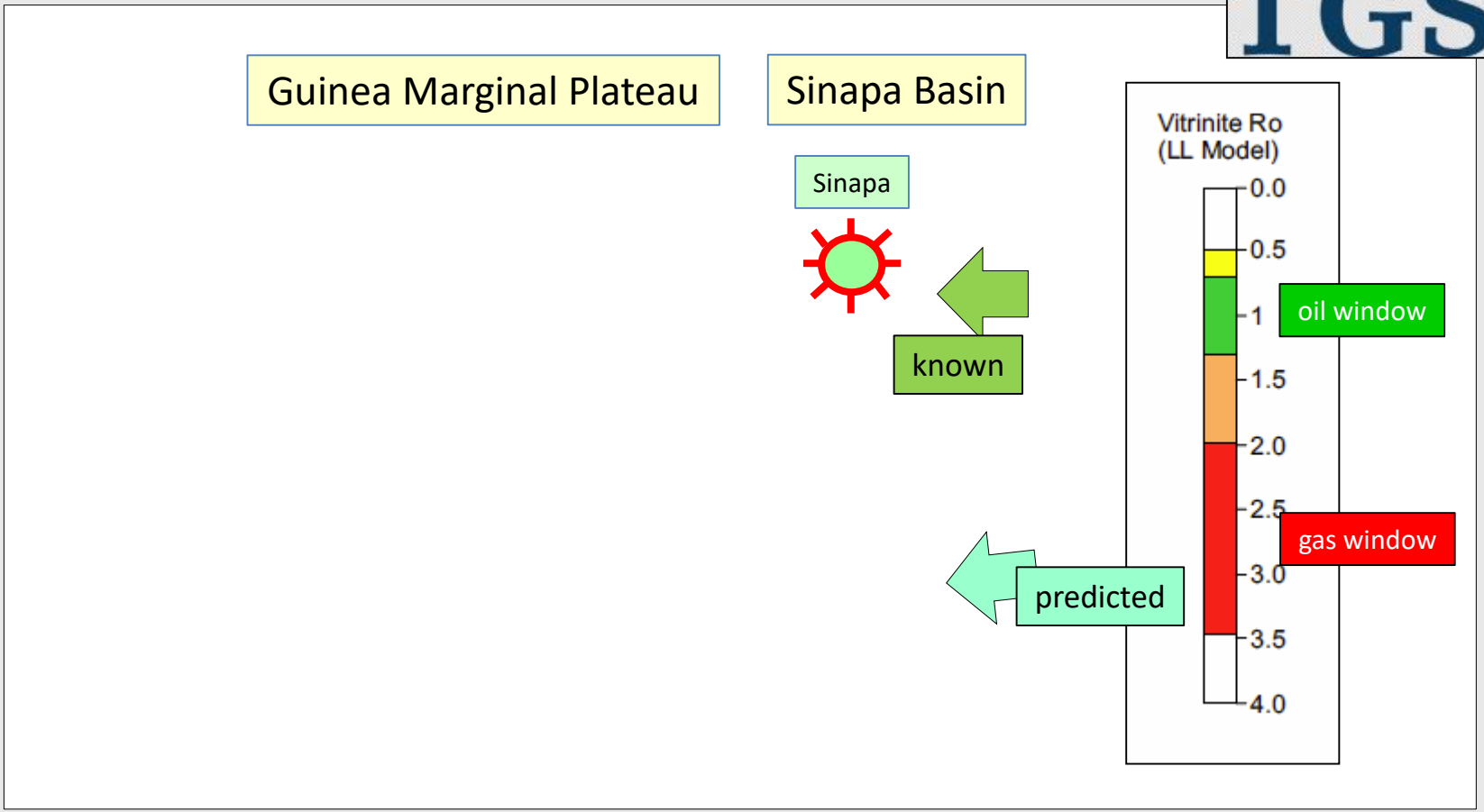


southern G-Bissau pseudowell locations can also be piston core sites

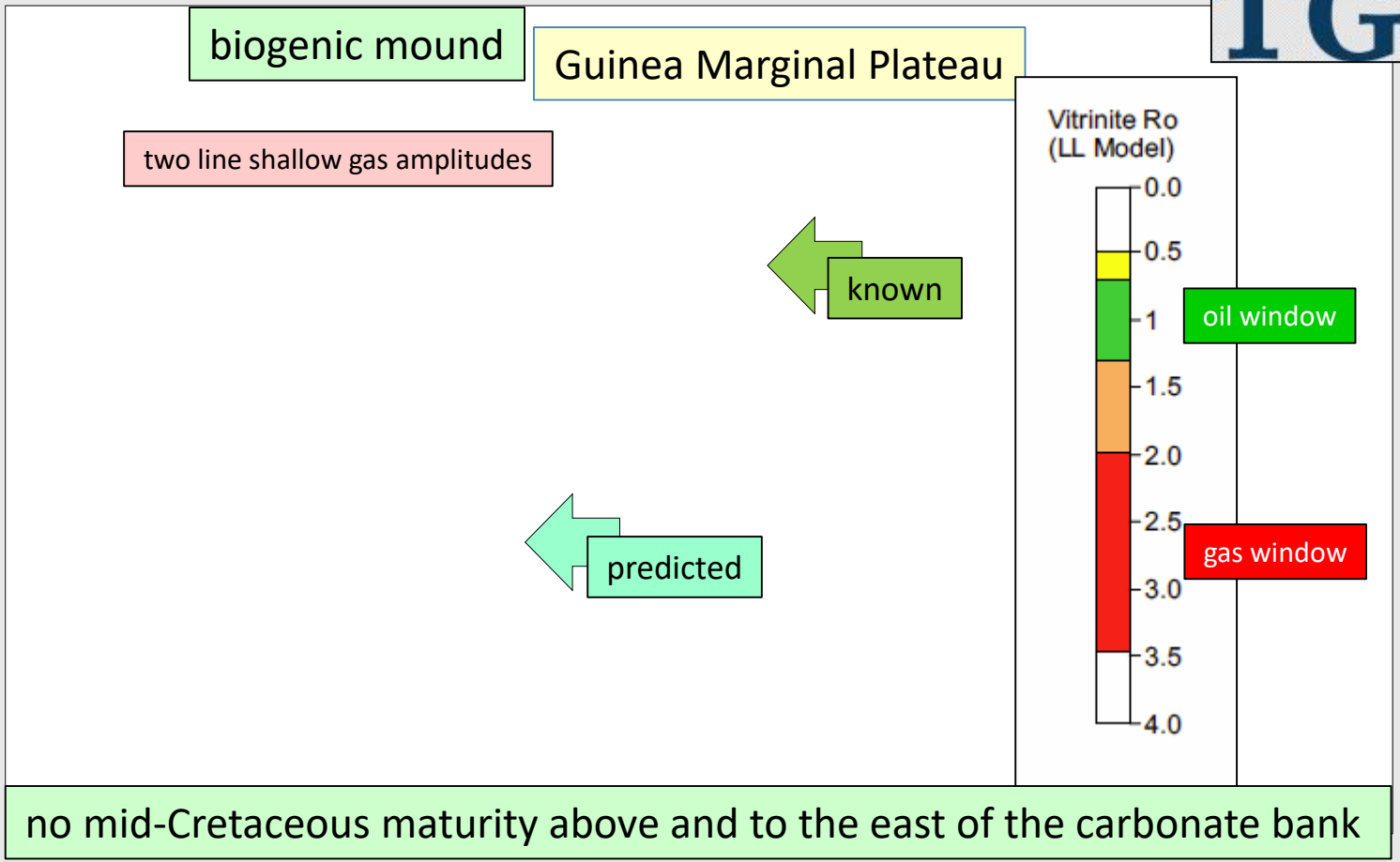
Representative line (GEO ExPro, 2/17)



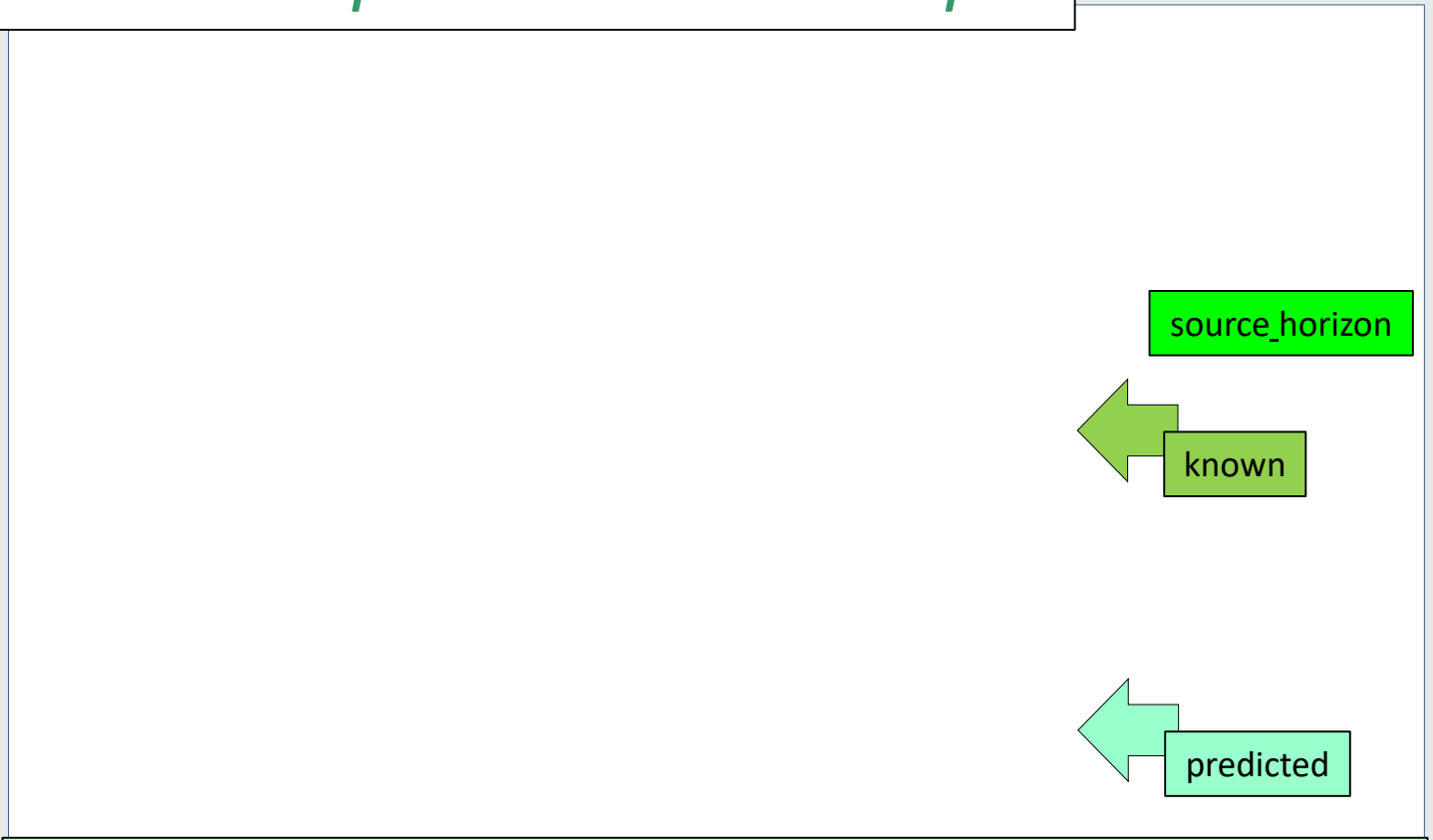
The GEO ExPro line modelled



A critically significant outcome



Sinapa Basin: a pseudowell example

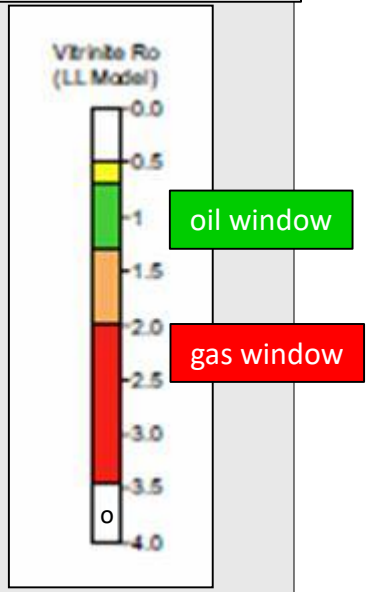


Sinapa Basin minimal known source maturity

Sinapa Basin: Ro versus depth (metres)

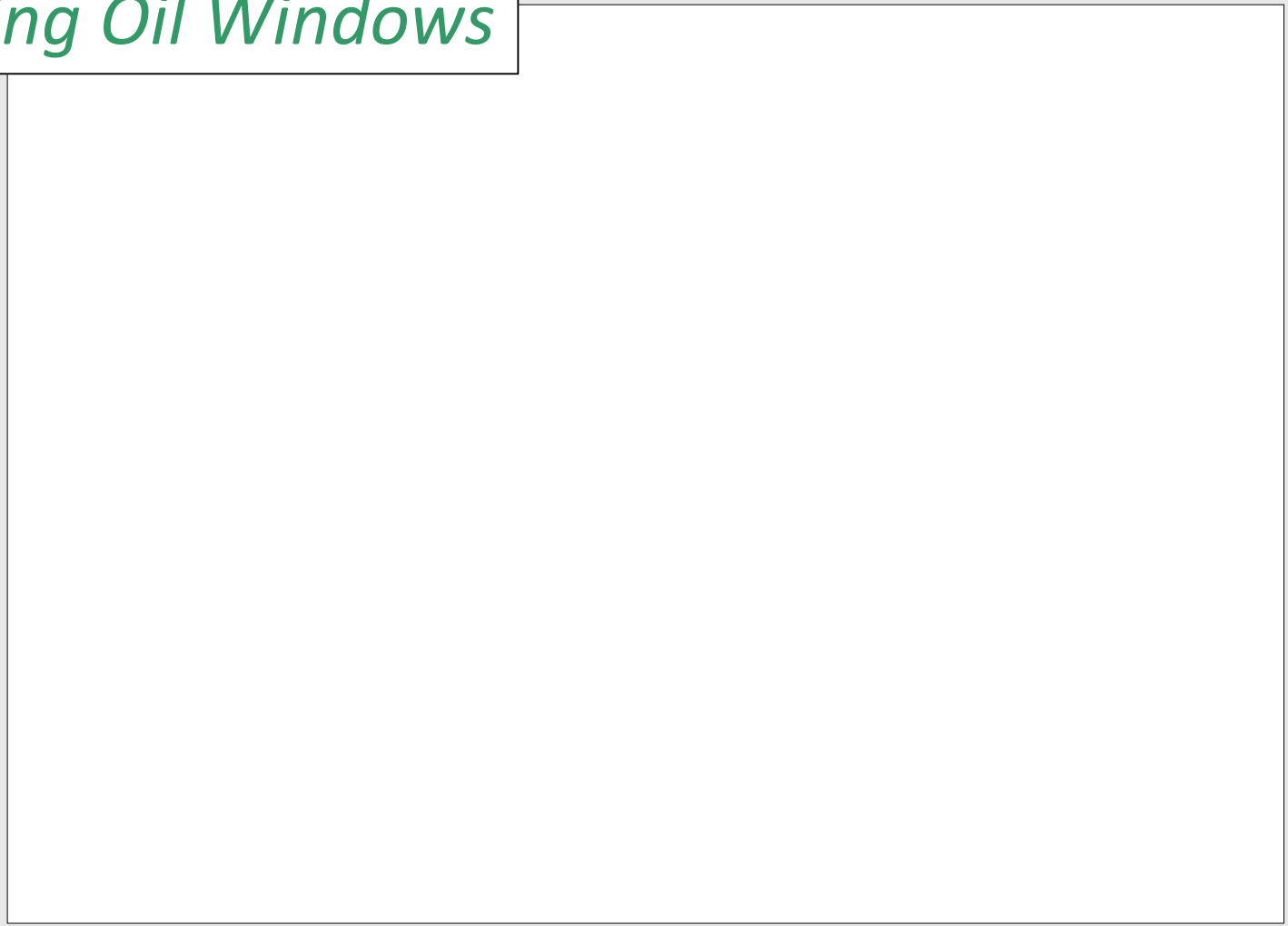
GMP pseudowell maturities presented on horizon maps

maturity
(modelled Ro%)



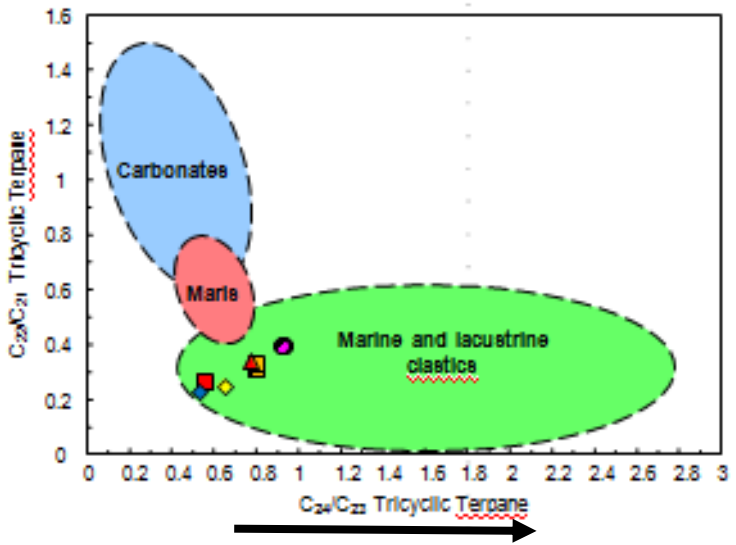
o = overmature

Resulting Oil Windows

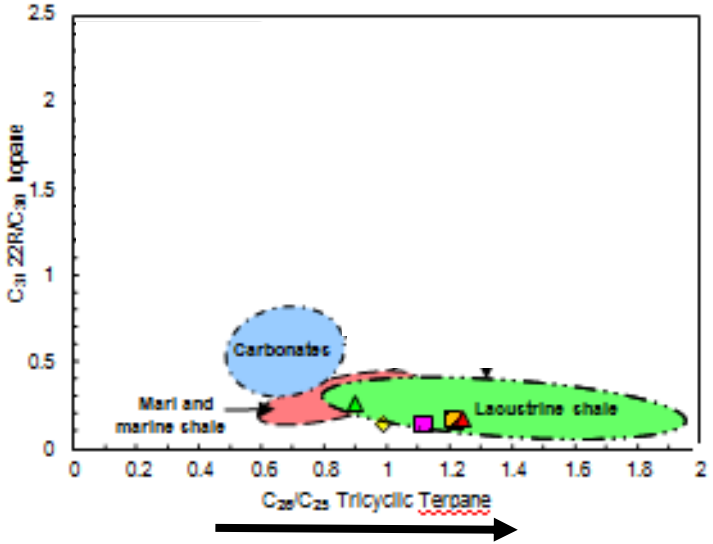


Biomarkers indicate marly lacustrine settings (Senegal to Guinea-Bissau)

increasingly carbonate sources

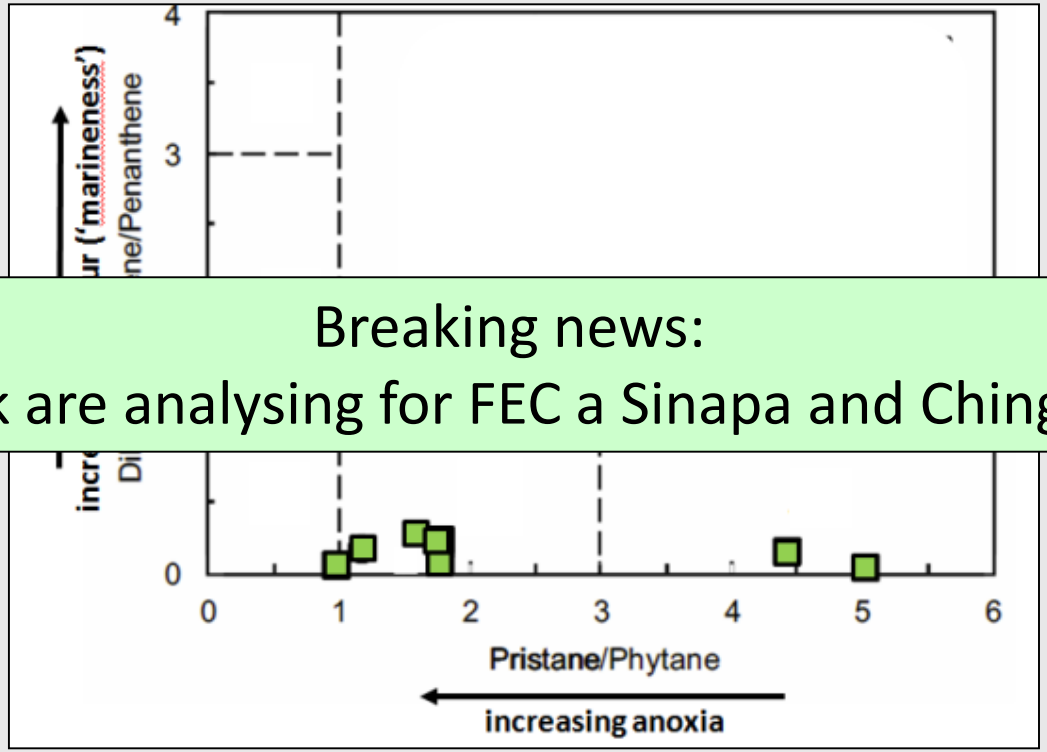


decreasingly carbonate sources



increasingly lacustrine sources

No evidence for fully marine settings



Breaking news:
GeoMark are analysing for FEC a Sinapa and Chinguetti oil

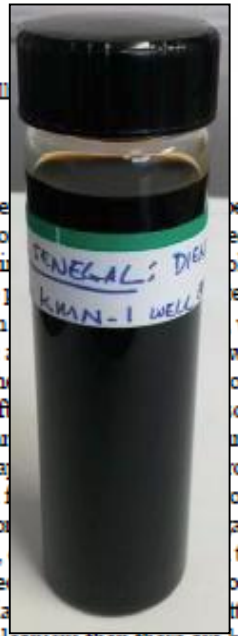
these facies do not match the palaeogeography
of the established mid-Cretaceous, fully marine sources

Jurassic oil / condensate examples from Senegal

Petroleum Geochemistry of Hydrocarbons in Gadiaga Field, Senegal: A New Lower Jurassic Lacustrine Source Rock and Play Identified

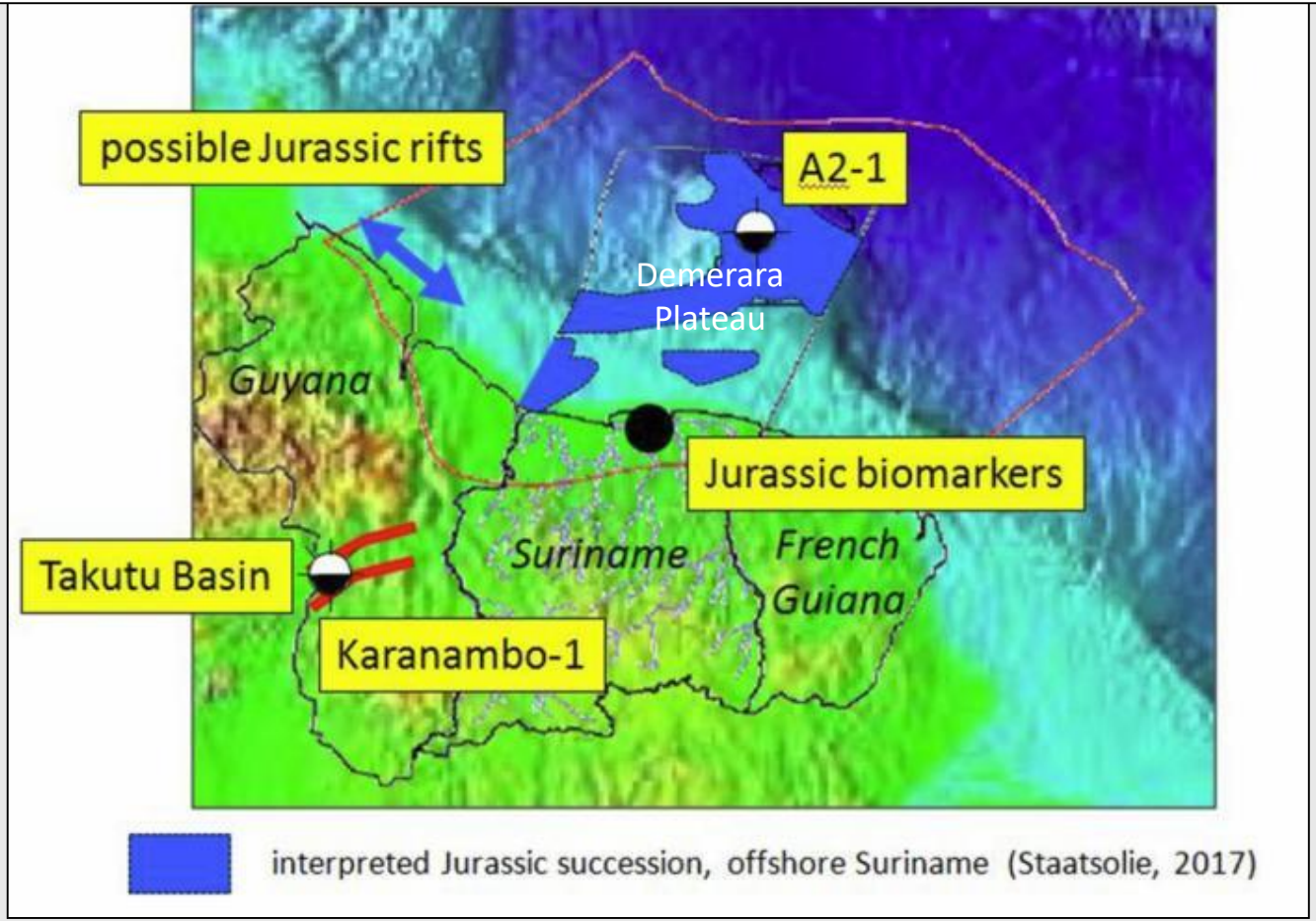
Andrew D. Carr[4]

[4]Geochemistry and Modell



The Gadiaga Field, Se Gadiaga Field located to the no nd exhumation plays an i y considered to have generated the p Cretaceous-Turonian section as in acustrine late Permian-Triassic s he hinge line has problems eith ian being too deeply buried. Rift assic and with additional Tertiar o remain viable source rocks ca that the dry gases were generated f while ratios derived from such bio ive fraction. The oils contain TPP, the littoral marine Upper Cretace e Lower Jurassic is the potentia can Rift. Given the Tertiary volcanism then there are bo condensates with the appropriate maturities. The main difficulty arises from the n. The prospects of this source rock for the remainder of Senegal will be discussed

Jurassic oil records from Guyana and Suriname



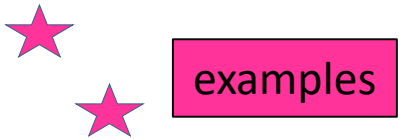
Piston core support

Objective to examine whether the 2001 TDI-Brooks piston core results would validate the basin modelling

(full access approved June 2018:

a tense time followed)

Hits south of the Cretaceous Oil Window

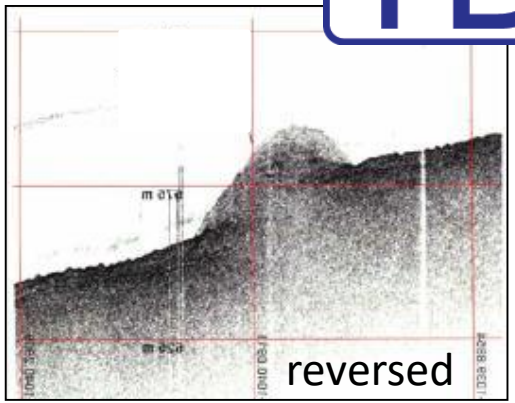


results tested against seismic

The biogenic mound anomaly

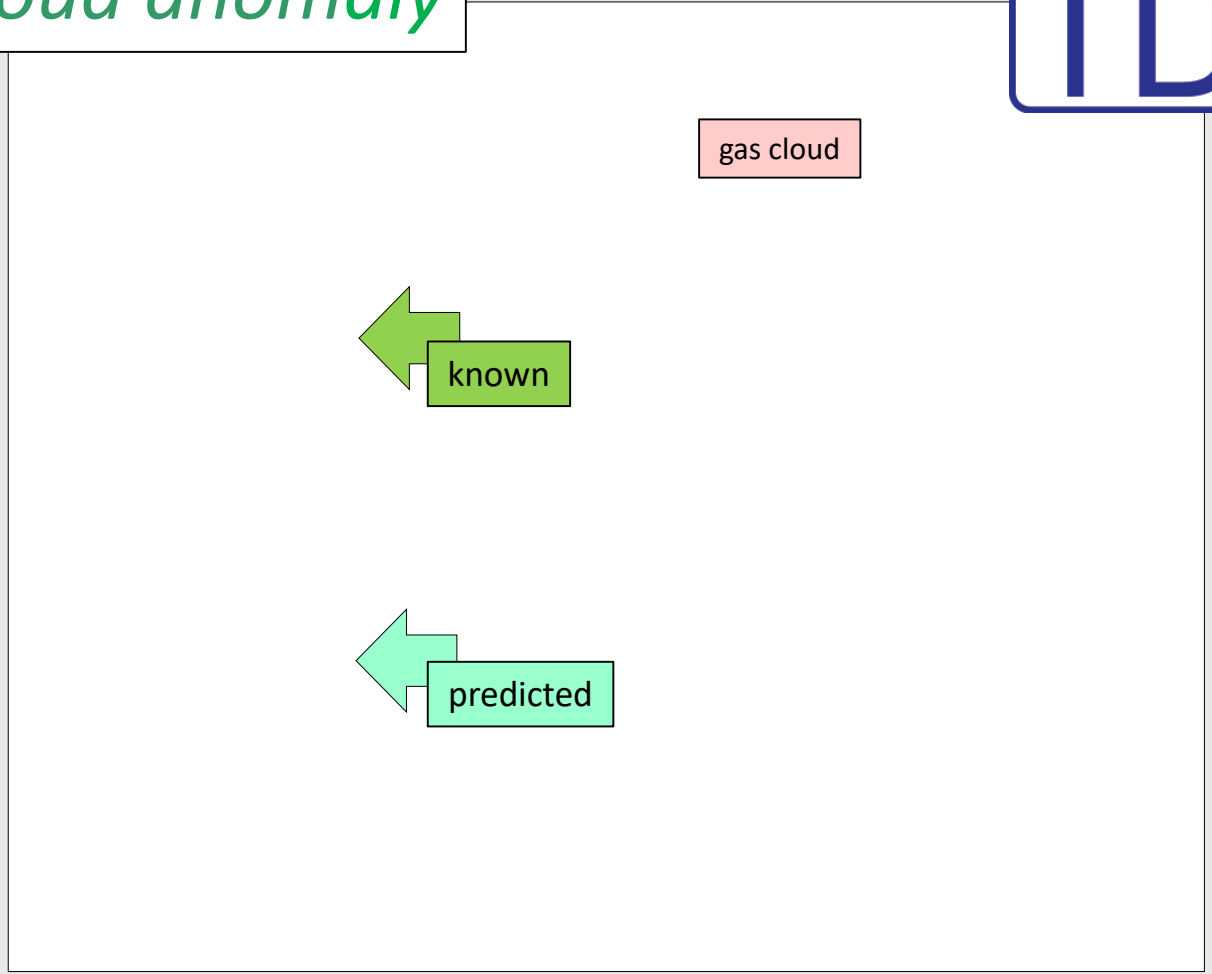
two line shallow gas amplitude

known



predicted

The gas cloud anomaly



Outcome strengthened plays

sandstones

carbonates

Carbonate pay possibilities

basal Cretaceous unconformity, caved karst in the Atlas

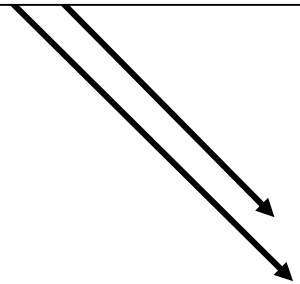
107 Ma

Soft intervals in interpreted carbonates below the 107 Ma unconformity (acoustic impedance study, 2002)

To conclude

New voluminous mature source proven

Huge closures above the source



Emerging giant claim justified