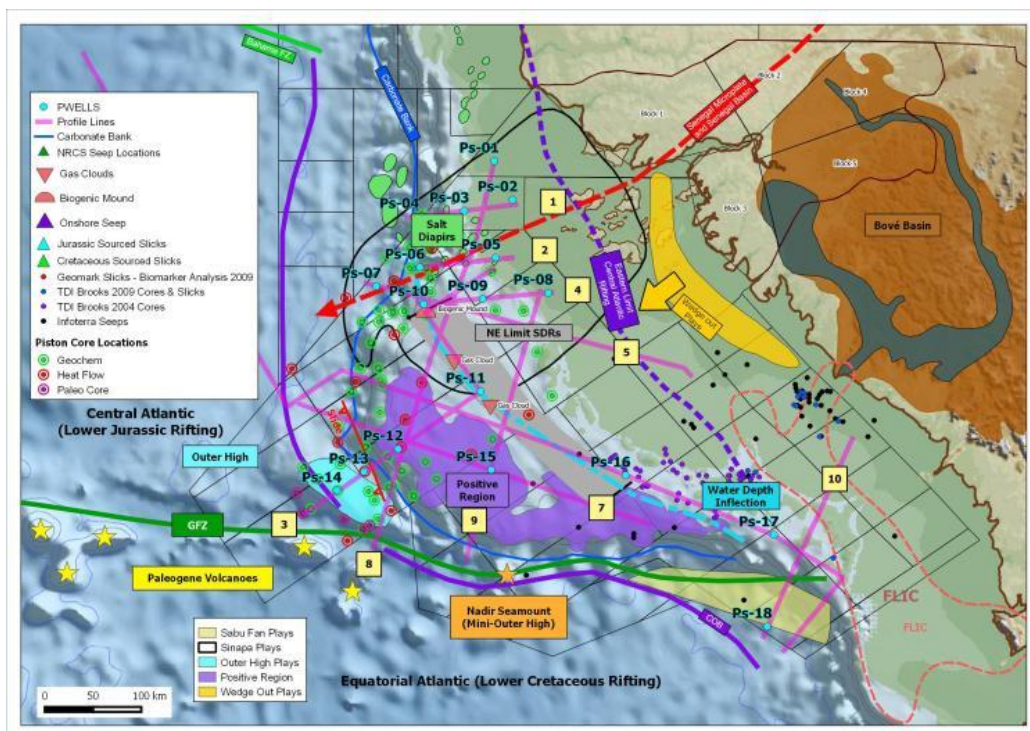


## ***The Southwards Pursuit of Senegal's Success:*** **MATURE PETROLEUM SYSTEMS DEFINED** **IN THE GUINEA MARGINAL PLATEAU** **(GUINEA-BISSAU AND GUINEA)**

**First Exchange Corporation (FEC)** have extended southwards, in-conjunction this time with PetroGuin, ONAP, Geolnsight Ltd., Advanced Geochemical Systems Ltd., Subterrane Ltd., TGS and Rock Solid Images (RSI), our 2016 Northern MSGBC study ***The Geology and Geochemistry of Offshore / Nearshore Senegal*** to include all of Guinea-Bissau and Guinea. Our in-house regional seismic interpretation based on FEC's own dense grid of reprocessed lines, plus TGS' WAAM2012 regional survey and public domain gravmag supplied the core of the understanding required to assess the evolution of the Guinea Marginal Plateau. Using this interpretation and the knowledge gained from a previously unrecorded oil seep in onshore Guinea-Bissau, FEC have created the source distribution and maturity models necessary to fully evaluate the petroleum geology of the Guinea Marginal Plateau. To compliment this work, Rock Solid Images have analyzed four wells, including Sabu-1, to provide the rock properties needed to tie the well's source and reservoir properties to seismic. Information from TDI-Brooks' earlier piston core survey, together with the accompanying Acoustic Impedance study, provide additional support.

The FEC interpretive team, Nick Cameron (Geolnsight, geology), Dr. Andrew Carr (AGC, geochemistry) and Andrew Long (Subterrane, gravmag), is unchanged.



The Study Area and selected results



advanced  
geochemical  
systems

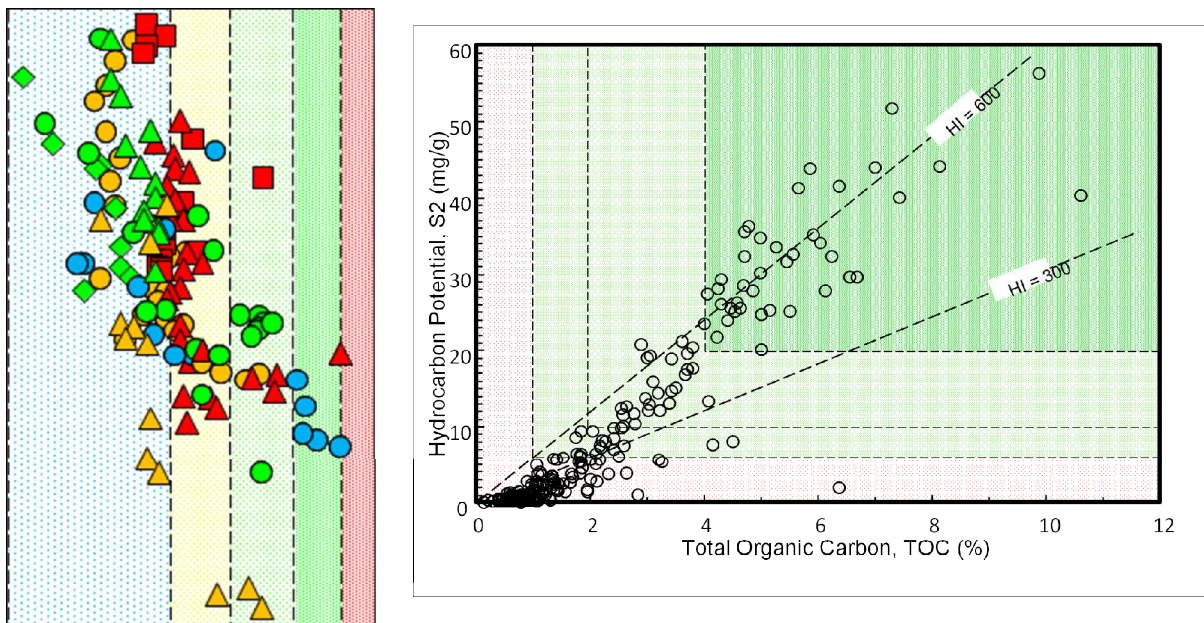


In relation to the basin modeling, the Study provides detail on:

- 1) The evolution of the Guinea Marginal Plateau and its Outer High relative to the Central Atlantic Jurassic opening / the Cretaceous evolution of Equatorial Atlantic
- 2) The now seismically visible syn-rift section
- 3) The Middle Albian tectonism
- 4) The extent and potential of the Middle to Lower Jurassic source system
- 5) The extent and potential of the Turonian to Aptian source system
- 6) Current source maturity and the history of generation
- 7) Generation volumes of oil and gas
- 8) The Sinapa area hydrocarbon sources
- 9) The onshore oil seep in Guinea-Bissau
- 10) The resulting current areas of hydrocarbon generation

Background information on FEC's interpretation of the deep geology of the Guinea Marginal Plateau was released in early May:

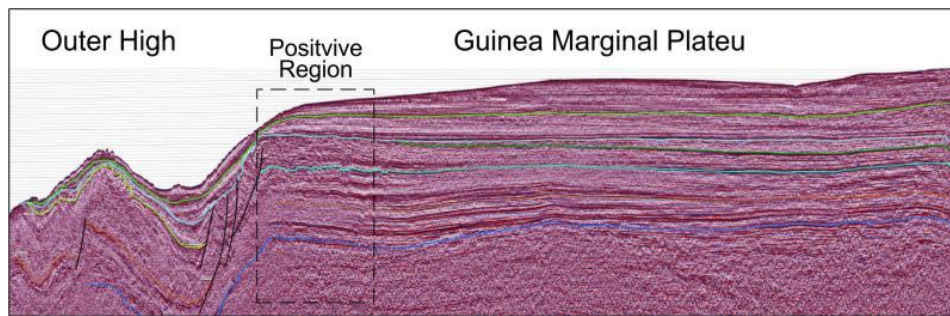
Long A. J., Cameron N. R. and Sayers B, 2018. The Guinea Marginal Plateau: correlations from seismic and potential fields. Global Analogues for the Atlantic Margin. American Association of Petroleum Geologists European Regional Conference, 3-4 May 2018, Lisbon, Portugal (abstract available for the conference).



Example of the Included Source Rock Maturity and Quality

The MIDDLE to LOWER JURASSIC PETROLEUM SYSTEM opens multiple new play possibilities in both Guinea-Bissau and Guinea. Our seismic and modeling suggests this source is regionally present and is believed to be the origin of the Jurassic carbonate attributed slicks in Guinea and the newly analyzed onshore seep in Guinea-Bissau.





Dip line illustrating the fabric of the Guinea Marginal Plateau and the Outer High.

The improved quality of the seismic utilized for this study may be seen in the introductory article written by FEC/TGS in GEO ExPro for February 2017, pages 20-24. The entire length of this line is considered to host the Middle to Jurassic Lower Jurassic source section, some of which is modeled to be still within the Peak Oil Window.

Since FEC's original Guinea-Bissau studies were completed in 2002, industry developments include:

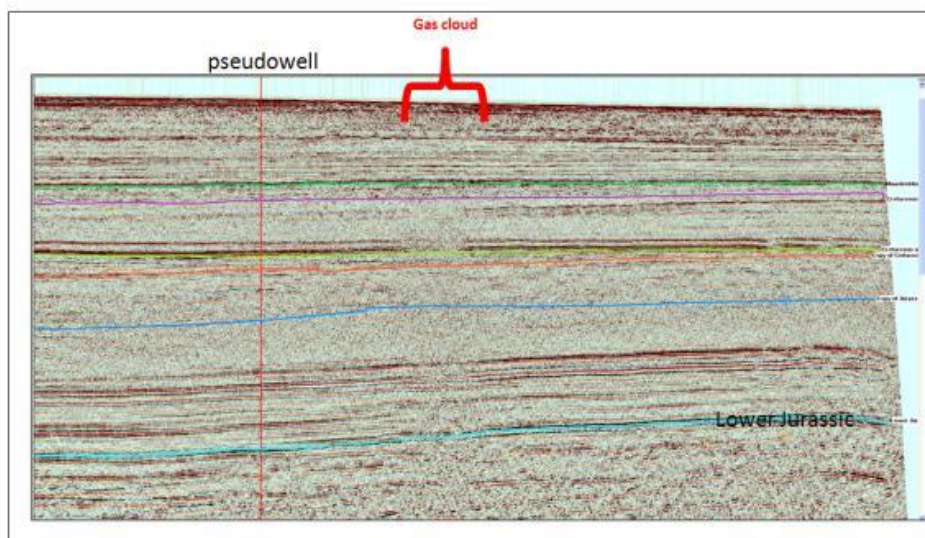
- The encouragement provided from four wells in Guinea-Bissau by Premier Oil between 2002 and 2007 relating to the prospectivity of the Albian reservoirs and the generated volume of hydrocarbons.
- The encouragement revealed by new 3D data for improved reservoir opportunities in the Sinapa diapir region.
- The encouragement for the crestal region of the shelf -edge bank to the west provided by the SNE discovery wells in Senegal.
- FAR are to spud Samo-1 in The Gambia on trend to SNE in late 2018.
- The strong indications, in addition to the established mid-Cretaceous source systems, of a regional Middle to Lower Jurassic Petroleum System following Fortesa's analyses of their oils in Senegal. More details on this emerging source system may be found in:

Carr A. D, N .R. Cameron and R. E. Beall, 2017. Petroleum geochemistry of hydrocarbons in Gadiaga Field, Senegal: A new Lower Jurassic lacustrine source rock and play identified. AAPG/SEG International Conference & Exhibition, London, 15-18 October 2017.

[http://www.searchanddiscovery.com/pdfz/abstracts/pdf/2017/90310aapg/abstracts/ndx\\_carr.pdf.html](http://www.searchanddiscovery.com/pdfz/abstracts/pdf/2017/90310aapg/abstracts/ndx_carr.pdf.html)

Cameron N. R., R. E. Beall and A. D. Carr, 2017. A novel oil opens up a new play beneath the Gadiaga Gas Field, Senegal. AAPG Hidden Potential in Mature Basin: Play Analogs and Best Practices, Bandung, Indonesia, 13-14 September 2017.

[http://www.searchanddiscovery.com/pdfz/documents/2017/20407cameron/ndx\\_cameron.pdf.html](http://www.searchanddiscovery.com/pdfz/documents/2017/20407cameron/ndx_cameron.pdf.html)



Gas cloud in an undrilled region of the Guinea Marginal Plateau near one of the pseudowells and considered, following the basin modeling, to originate from the Middle to Lower Jurassic source section.

- The encouragement provided from Guinea by the shows in the Sabu-1 and Fatala-1 drilled by Hyperdynamics for an Equatorial Atlantic Petroleum System.
- Significant progress in unraveling the Petroleum Systems of the conjugate margin in Suriname and Guyana.

The study is in final draft, editing for completion by June 2018 with a publication License Fee of US\$97,750. In addition, the licensee will receive both of FEC's historical studies for Guinea-Bissau in digital PDF format, FEC5022 - Hydrocarbon Potential of the Republic of Guinea-Bissau: Part 1 - Biostratigraphic Well Correlation (2000) and FEC5024 - Hydrocarbon Potential of the Republic of Guinea-Bissau: Part 2 - The Petroleum Systems of the Casamance Salt Basin (2001).

The study contains over 165 figures and over 25 tables, plus a bibliography of 150 references and the contents include:

- Section 1. Summary.
- Section 2. Introduction.
- Section 3. The Geology of the Guinea Marginal Plateau.
- Section 4. Seismic Interpretation and Mapping.
- Section 5. Depth Maps and Geoseismic Profiles.
- Section 6. Gravity and Magnetics.
- Section 7. Source Rocks.
- Section 8. Hydrocarbon Geochemistry.
- Section 9. Petroleum System Modeling.
- Section 10. Reservoir Considerations.
- Section 11. Petroleum Systems.
- Section 12. Conclusions and Discussion.
- Section 13. References.
- Section 14. Appendices, Figures and Tables.

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