Unlocking Exploration Potential: GeoMark & GIS-Pax

A Transformational Integration for Petroleum System Understanding and YTF Evaluation

In today's competitive exploration landscape, identifying remaining hydrocarbon potential requires more than just data—it requires integrated insight. By combining GeoMark's industry-leading geochemical and fluid property database (RFDbase®) with GIS-Pax's powerful spatial analytics (Player™) and Portfolio Opportunity Ranker's (POR - a joint product of GIS-Pax and S&P Global) global yet-to-find (YTF) database, operators can spatially visualize, quantify, and rank prospective plays with higher confidence and technical clarity.

Together, we deliver a comprehensive exploration toolkit that bridges geoscience, engineering, and economics—enabling you to identify and assess YTF opportunities globally.

GIS PAX
PORTFOLIO OPPORTUNITY RANKER

S&P Global
Commodity Insights

- Gis-Pax's spatial play-based evaluation software
- Real-time creaming curves & volumetric stats
- Supports prospect-level and basin-wide portfolio analysis
- YTF resource modeling including **25,000+ global prospects** from POR (joint product of GIS-Pax and S&P Global)
- Geological, commercial, and economic risk evaluation at multiple price decks from POR

GEOMARK

- **World's largest** standardized **geochemistry**, and **PVT database**
- Seamless integration of client proprietary data
- High-resolution geochemical interpretation and oil family classification
- Characterize petroleum systems from source to reservoir
- Identifies source rock types and oil families across margins

Key Benefits of the Combined Solution

Map Your Geochemical Story:
Load and spatialize RFDbase outputs in Player to analyze oil families, source rock contributions, migration pathways, and GLRs in map view.

Benchmark Fluid Properties Regionally:
Visualize API gravity, GOR, saturations, and PVT variability across basins and plays to define play-based development strategies.

Analyze Play Maturity and Sweet Spots:
Overlay discovered and yet-to-find volumes with source rock type, physiography, and stratigraphy to target high-potential leads.

Unlock Shared and Unique Petroleum Systems:
Use GeoMark's oil family typing to link discoveries across conjugate margins and distinguish unique hydrocarbon signatures.

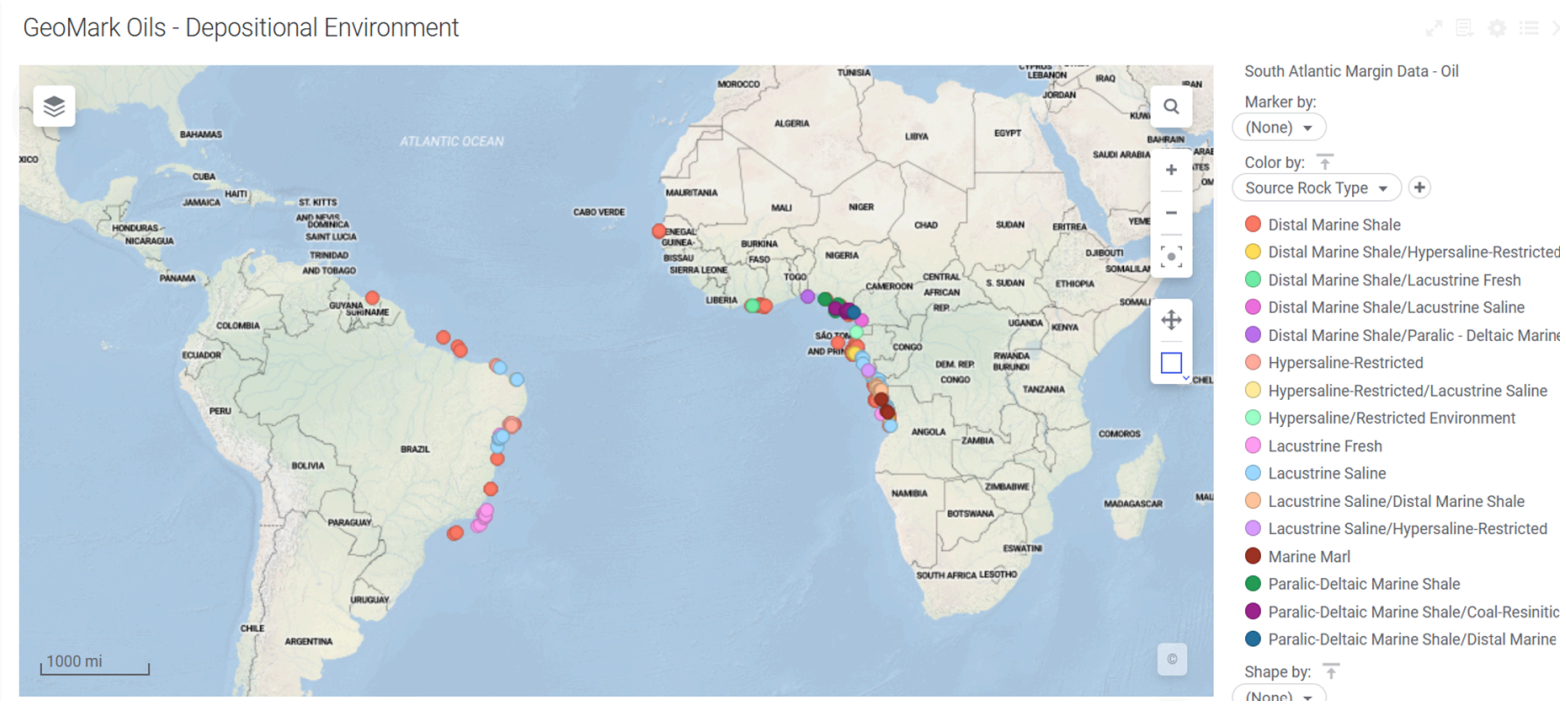
Derisk Faster, Explore Smarter:
With integrated statistics and visualizations (e.g., creaming curves, oil family maps), quickly assess exploration risk and success case uplift.

Cross-Validate with Global Datasets:
Integrate S&P Global as well as other 3rd party and internal datasets into one geospatial workflow with Player and RFDbase.

Real World Application: Atlantic Conjugate Margin Case Study

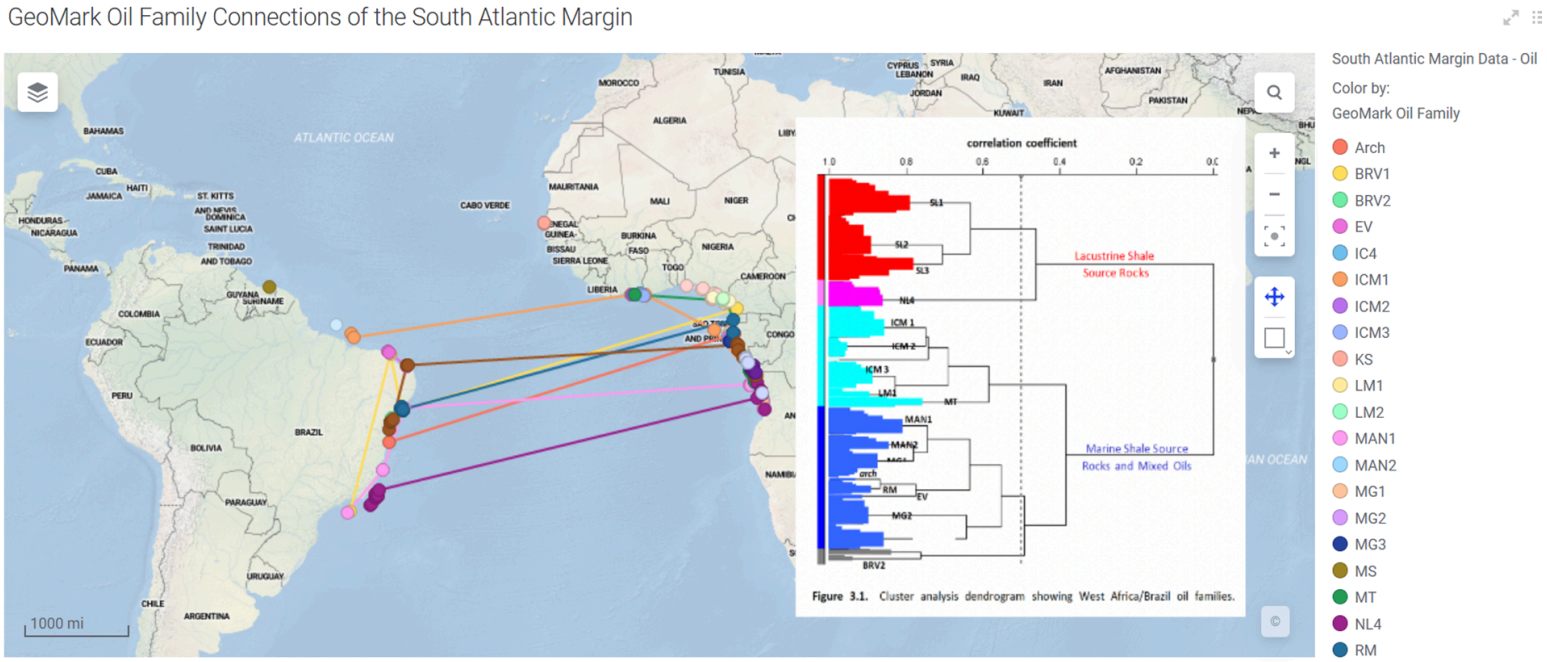
In this collaborative study, GeoMark Research and GIS-PAX combined their strengths to unlock new exploration insights. GeoMark's RFDbase contributed over 600 physically measured oil samples, delivering high-resolution geochemical fingerprints, including biomarker ratios and oil family classifications. These results were seamlessly integrated into GIS-PAX's Player platform, enabling spatial visualization and correlation of geochemical interpretations with third-party datasets such as Portfolio Opportunity Ranker's (joint product of GIS-Pax and S&P Global) basin and play information. This integrated workflow allowed play-based evaluation of proven and frontier areas, spanning multiple stratigraphic intervals and petroleum system elements—including source rock type, age, and basin physiography—to identify and assess yet-to-find potential.

This case study begins with GeoMark's extensive oil data library and geochemical interpretations across the South Atlantic Conjugate Margin. Using detailed biomarker data, GeoMark has identified the source rock types responsible for oils across the margin and established cross-boundary oil families. While some oil families are unique to either South America or West Africa, others occur on both sides of the Atlantic, reflecting shared petroleum system histories. The upper figure illustrates the interpreted source rock types, while the lower figure maps the distribution of GeoMark oil families across the margin, accompanied by an HCA plot showing the correlation coefficients between these families.



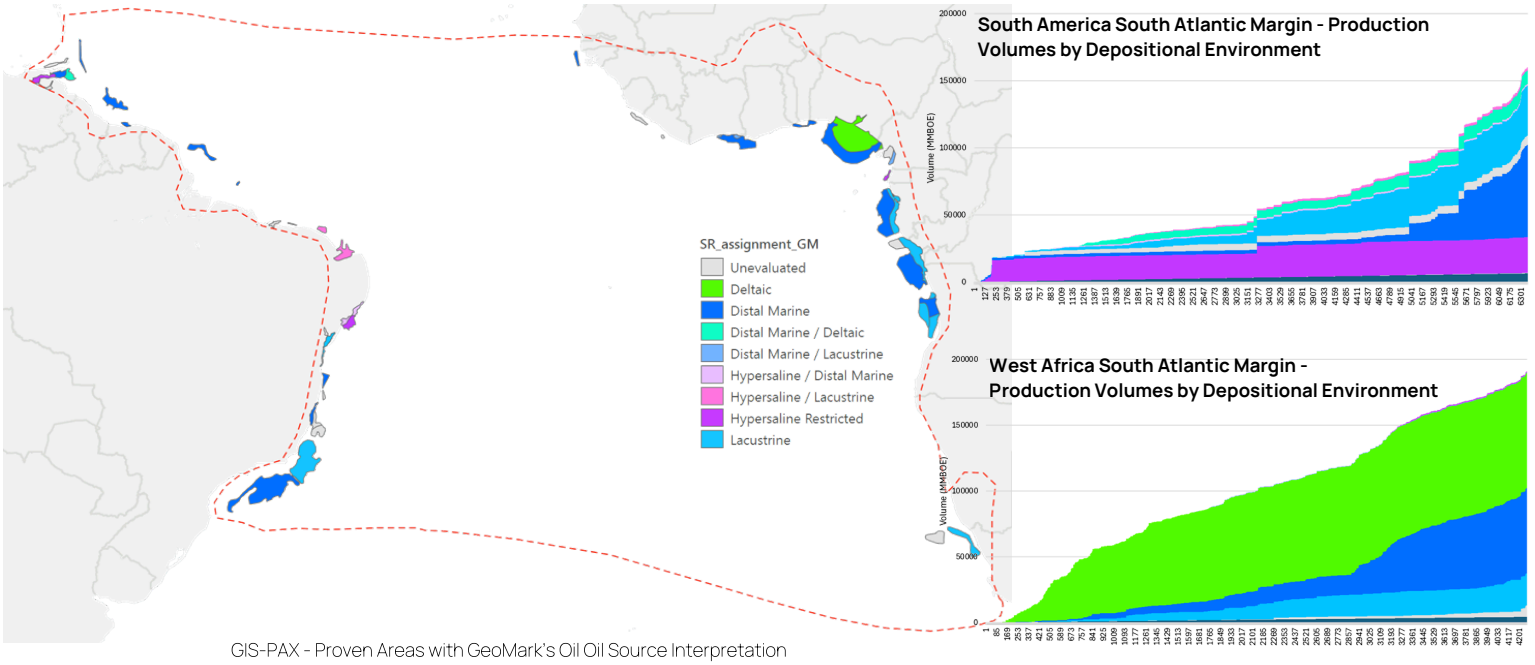
Oil Family Mapping: Simplified and advanced oil family classifications revealed shared oil families across the South Atlantic Conjugate Margins—connecting discoveries in Brazil with similar families offshore West Africa, and pointing to a common source rock heritage.

Unique Petroleum Systems: Distinct oil families were also identified in both regions, enabling operators to isolate locally derived petroleum systems for targeted exploration and focused development strategies.



The next step involved plotting GeoMark's dominant oil source rock types onto areas with proven hydrocarbon systems within GIS-PAX's Player platform. This mapping revealed variations in source rock deposition within S&P Global's defined basins, which are color-coded by their dominant source rock type. A complementary figure shows the dominant GeoMark oil family assigned to each basin or field, clearly linking source rock origin to oil family distribution.

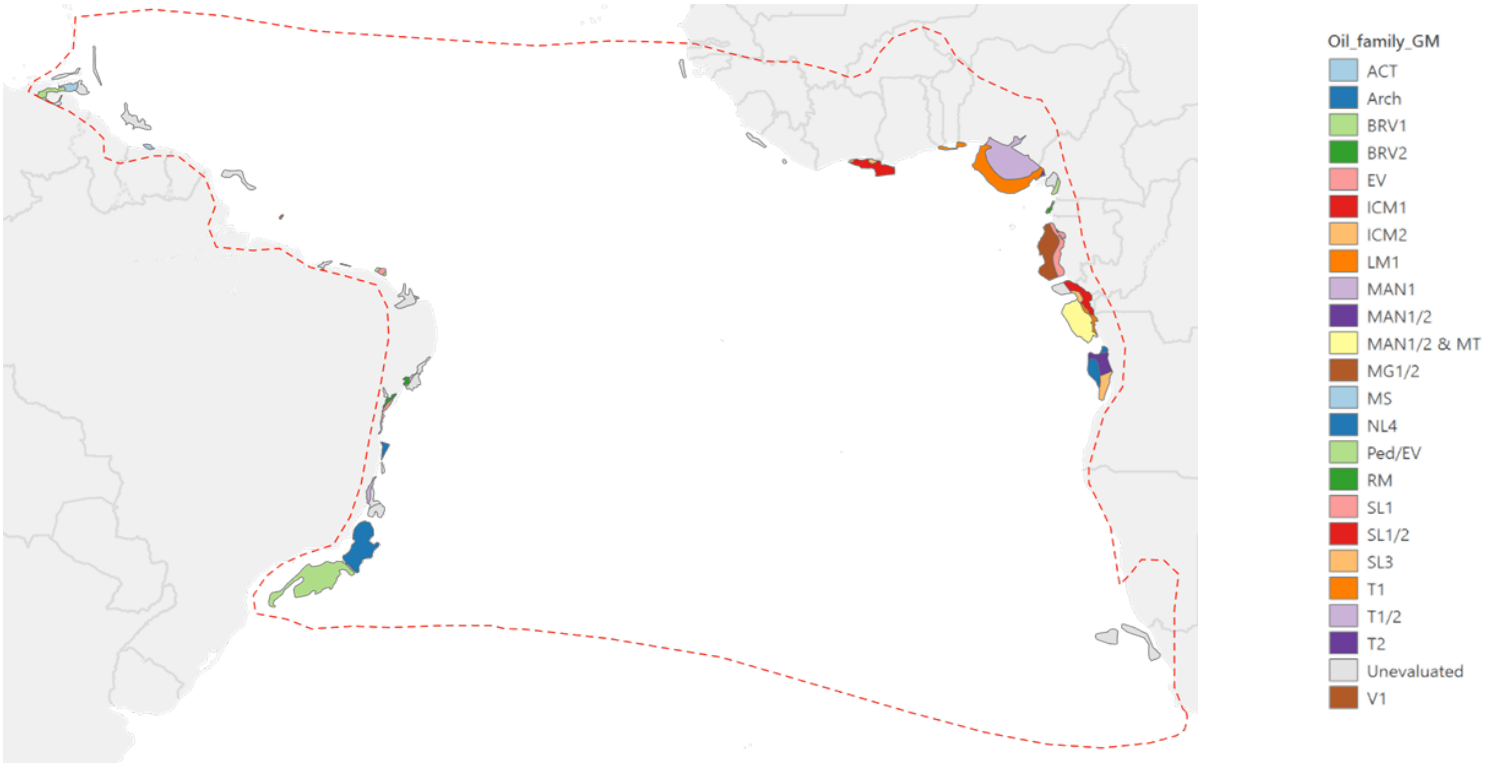
We then assigned source rock types to discovered resources, via the Portfolio Opportunity Ranker database, on both sides of the margin. In South America, production is dominated by Hypersaline Restricted, Distal Marine (more recently), and Lacustrine source rocks. In contrast production in West Africa is primarily from Deltaic source rocks (Niger Delta), with more recent discoveries being charged by Distal Marine sources.



GIS-PAX - Proven Areas with GeoMark's Oil Oil Source Interpretation

Source Rock Attribution: Oil-source correlations indicated contributions from multiple source rock types, including:

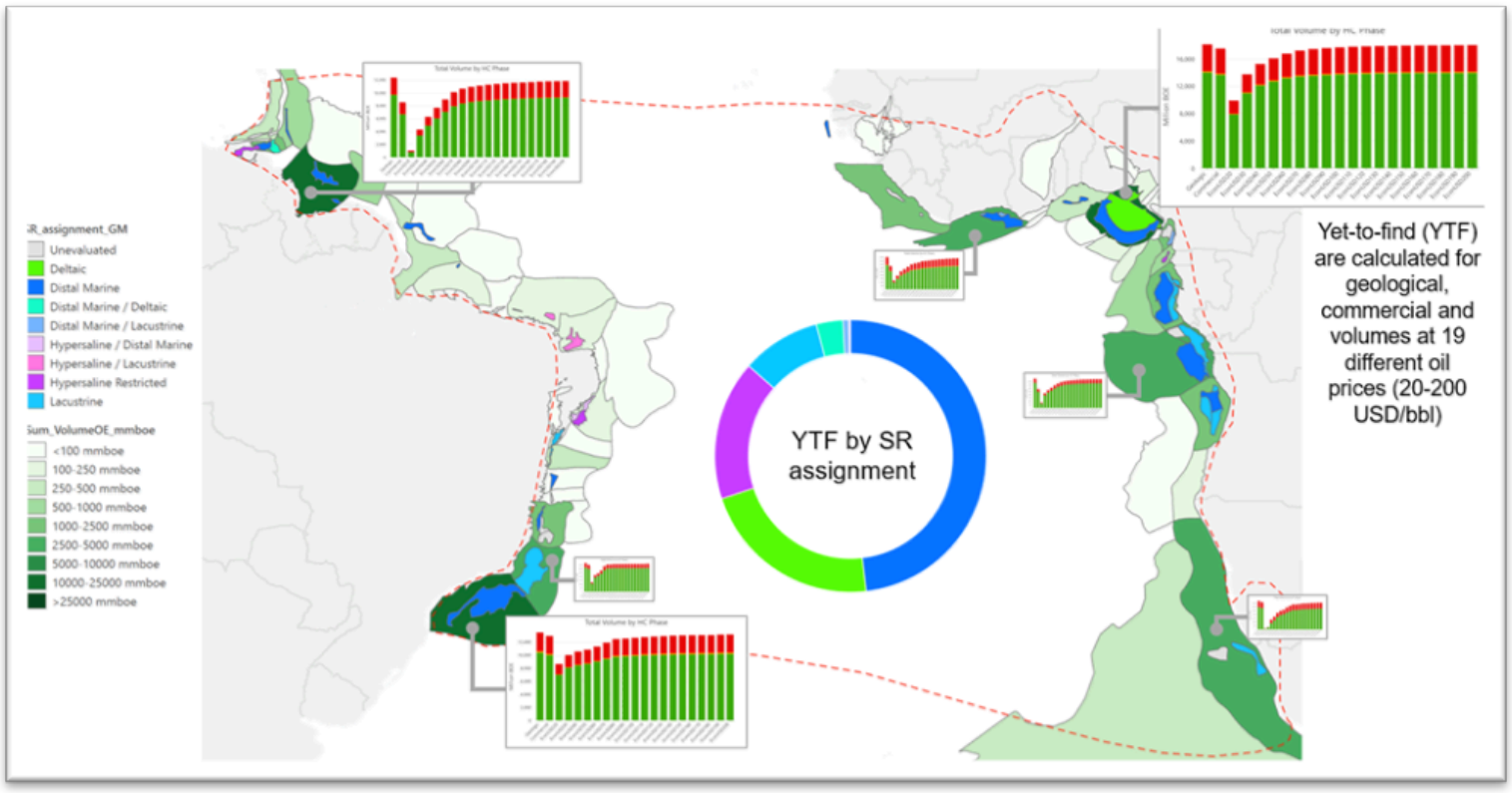
- Distal marine (major contributor to large Deepwater discoveries),
- Lacustrine (associated with inland rift systems),
- Hypersaline (niche contributor but high-quality charge).



GIS-PAX - Proven Areas with GeoMark's Oil Family Interpretation

Yet-to-Find (YTF) Analysis

In the final stage of the workflow, Portfolio Opportunity Ranker's stochastic volumetric YTF evaluation was combined to the integrated dataset of GeoMark geochemistry and GIS-PAX spatial play mapping. This analysis identified over 100 billion BOE of yet-to-find resources across key stratigraphic intervals—such as the Upper Cretaceous and Miocene—and targeted play fairways. By combining source rock and oil family mapping with basin-scale petroleum system interpretations, the analysis highlights where remaining hydrocarbon potential is most likely to be realized on both sides of the South Atlantic Conjugate Margin.



This integrated workflow between GeoMark's RFDbase®, GIS-Pax's Player™ and Portfolio Opportunity Ranker™ represents a new era in exploration intelligence—one where data is no longer siloed, and insight is no longer delayed.

By uniting high-resolution geochemical interpretations with spatially-driven play analytics, explorers are now empowered to:

Derisk frontier acreage with confidence by leveraging proven analogs and shared oil family signatures across conjugate and divergent margins.

Pinpoint high-value, underexplored opportunities in areas previously overlooked due to data limitations or uncertainty.

Strengthen petroleum systems models, from source rock to trap, using real measured data—not assumptions.

Prioritize plays not only on geologic potential, but on commercial viability, infrastructure compatibility, and strategic alignment.

But this is more than just a technical integration—it's a competitive advantage.

Whether you're:

- Evaluating a bid round in a new basin
- Screening M&A opportunities
- Building a regional petroleum systems model
- Challenging assumptions on your existing portfolio

We invite you to leverage the combined power of **GeoMark + GIS-Pax** to go beyond conventional workflows and unlock the full potential of your subsurface data.

Critical Insights

Integrate RFDbase seamlessly within industry's play-based mapping solution of choice	Load RFDbase export directly into Player and combine your geochemical data with Portfolio Opportunity Ranker (POR) party data sources.
Combine RFDbase with Spatial capabilities in Player	Spatialize RFDbase, combine it with other datasets and interpret your plumbing system and source rock and/or oil & gas characteristics in map view
Analyze your AOI based on geochemical interpretations	Analyze discovered volumes based on source rock type, location, physiography and other parameters. Cross-check your source rock assignment based on prevailing Gas Liquid Ratios (GLRs)
Utilize POR's YTF capabilities in combination with RFDbase to focus your portfolio	Calculate YTF for basins, countries or license blocks. Assess the highest potential for oil and/or gas based on your spatial source rock assignment for geological, commercial and volumes at 19 different oil prices

In a world where exploration risk is high and capital is constrained, the ability to spatially connect molecules to barrels—and barrels to business decisions—has never been more important. The GeoMark, GIS-Pax & S&P Global solution delivers that clarity.

We invite you to leverage the combined power of GeoMark, GIS-Pax & S&P Global to go beyond conventional workflows and unlock the full potential of your subsurface data.

The future of exploration is integrated. And it starts here.

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GIS-PAX – Company Overview

GIS-PAX is an Australian company specializing in play-based exploration software for the global oil and gas industry. With over 150 years of combined geological and GIS expertise, the team has developed industry-leading tools—Player, PlayHouse, and in collaboration with S&P Global Portfolio Opportunity Ranker—that integrate geological, geochemical, and spatial datasets to evaluate exploration potential from regional to prospect scale.

Since its first license in 2010, GIS-PAX has served 30+ international E&P companies, geological surveys, and government agencies worldwide, helping clients assess petroleum systems, identify high-potential plays, and support licensing strategies.

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GeoMark Research – Company Overview

GeoMark Research is a leading geochemical and PVT laboratory with over 30 years of experience delivering high-quality fluid and rock analyses to the global energy industry. Backed by one of the industry's most comprehensive proprietary databases—RFDbase®—GeoMark provides oil, gas, source rock, PVT, mud gas, and advanced water analyses alongside expert interpretation.

Since its establishment in 1991, GeoMark Research has been a trusted analytical laboratory for industry, geological surveys, and academia—providing high-quality geochemical and PVT data to support exploration and development for the majority of the world's leading exploration and production companies.