Rothwell

Plate Tectonic Reconstruction Software

The Power to Value Exploration Potential

PaleoGIS

In the ever accelerating global race to discover new hydrocarbon or mineral deposits, do you have the technology to dynamically visualize, risk assess and accurately value exploration potential ahead of costly field techniques?

Business Problem

For petroleum and mineral geoscientists and business analysts the pressure is on to not only discover new deposits but accurately value their collection of existing claim assets. In today's cost focused and highly competitive business environment this analysis must be carried out in the most efficient fashion possible and hopefully long before physical on-location measures such as 3D seismic are undertaken. Unraveling regions with complex plate boundaries is critical to understanding deposit formation over time. Exploration companies are actively seeking technology that allows them to integrate and dynamically manipulate available global and regional data models, spatial information, age data, sediment subsidence, heat flow history plus a wide range of other variables including proprietary internal data to gain a precise assessment of exploration potential. For most, the knowledge of where not to explore is just as valuable as the next find.

Benefits

Modeling plate tectonics is a powerful tool for reconstructing and/or predicting geological environments throughout the Earth's history. Fundamentally, the careful reassembly of continental blocks prior to deformation of crust, strata and plates assists geoscientists gain invaluable insights into complex basin forming processes and mineralization events that influence the formation of hydrocarbon and ore deposits including the key elements required to make it a productive "play". Some of these elements are the characteristics of source rocks, subsidence history of key sediments, salt formation, reservoir potential, migration pathways, plume development and heat flow histories.

Traditionally, exploration scientists had to painstakingly create reconstruction maps by hand. Even with GIS tools, incorporating the vast amounts of available data, this is a mammoth and time-consuming task. Furthermore, these maps are static and offer no capabilities to dynamically test and validate assumptions, integrate real-time data inputs or precisely manipulate the historical time perspective; all vital dependencies for calculating formation or enrichment potential.

Today, geoscientists can leverage the power of PaleoGIS to completely automate this analysis as well as augment their risk mitigation processes. The business value to oil and gas and mineral exploration firms is substantial in terms of cost savings and employee efficiently. Other benefits include:

- Provide for the integration of any data source and dynamic manipulation of reconstructions throughout the past 600 million years and beyond achieving highly subtle analysis and discovering never before realized deposit formation.

- Significantly reduce the dependence on costly 3D seismic and other field techniques by narrowing down the location of deposit formation through a more accurate understanding of the key elements that define a productive play.

- Allow business analysts to more correctly value and potentially re-prioritize the corporation's claim or play assets; a critical activity for publicly traded firms.

- Eliminate the need to build or outsource the creation of static plate tectonic maps thereby greatly increasing the productivity of the organizations' geologists and GIS professionals.

Solution Components

The Rothwell Group's PaleoGIS suite of products is built on the industry leading ESRI's ARCMap and ARCGIS platforms and is provided as a fully integrated extension.

The PaleoGIS suite is available in two versions. The powerful desktop application is designed for scientists that want to take the extra analytical step of fully editing, or even recreating, a plate data model. Many organizations have found this capability invaluable when deconstructing plates into finer grain subplates to better view basin formation. A robust web enabled application can distribute all but plate editing functionality across the entire enterprise placing the power of data collaboration and plate reconstruction in the hands of regional explorers and business analysts.

PaleoGIS is a rigorous, integrated digital reconstruction application designed to make it easy for a modeler to dynamically define plates, incorporate any geological, geophysical and climatic data, and make tectonic, gross depositional and palinspastic reconstruction maps. Once a model has been authenticated by the modeler, it can become the foundation for further stratigraphic, paleogeographic, paleoclimatic, paleobiogeographic, resource, and geodynamic analysis.

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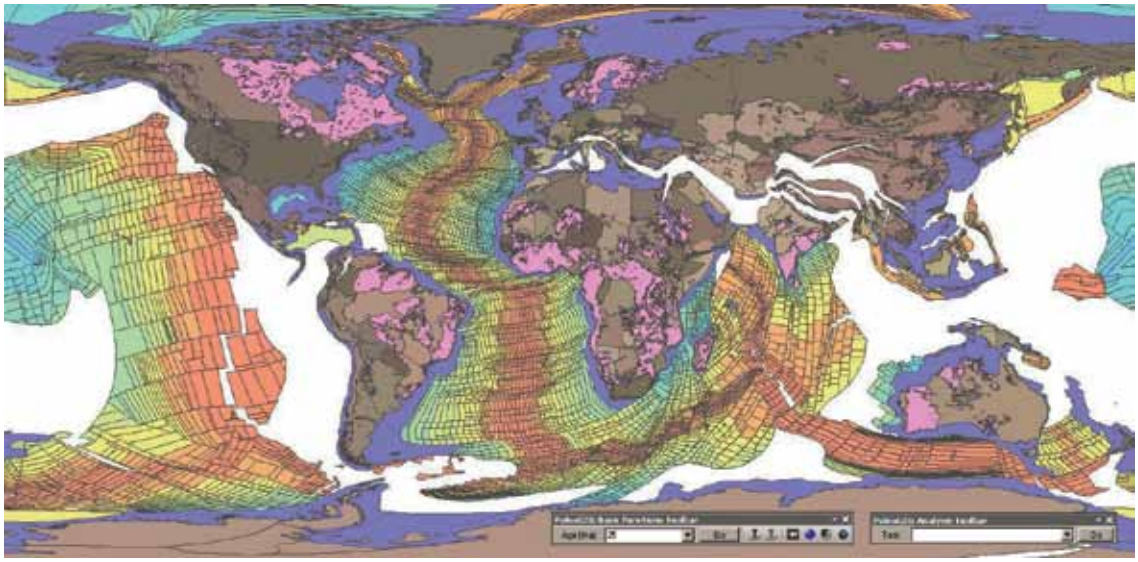

Dynamic Features

- Leverage one or all of the available plate data models as a part of the analysis process
- Incorporate proprietary and third party data sources including raster images into the reconstruction models
- Create animations that integrate data overlays, validate model assumptions and provide management with simplified views of migration pathways
- Rapidly recalculate the reconstructed time period to any period supported by an available plate data model in order to accurately estimate rift or other crustal change that occurred between static time periods
- Edit or recreate plate models to reconstruct subtle tectonic or sediment behavior at any given geologic period and validate the accuracy of static plate reconstructions
- Break down primary plates into their sub-plate components for finer granularity of formation potential

About The Rothwell Group

The Rothwell Group is a software engineering and process optimization company. The company collaborates with its clients to transform their complex business workflows into simplified and tailored solutions that drive operational efficiency, manage costs and increase employee productivity.

The company's geosciences application, PaleoGIS, revolutionized the effectiveness of tectonic modeling with the introduction of dynamic plate reconstruction analysis and visualization with its release in 2007. Today, the company continues to set the standard as the most technologically advanced and widely used platform for plate reconstruction modeling in the petrochemical and mineral industries including 20 of the largest global oil & gas and mineral exploration companies.