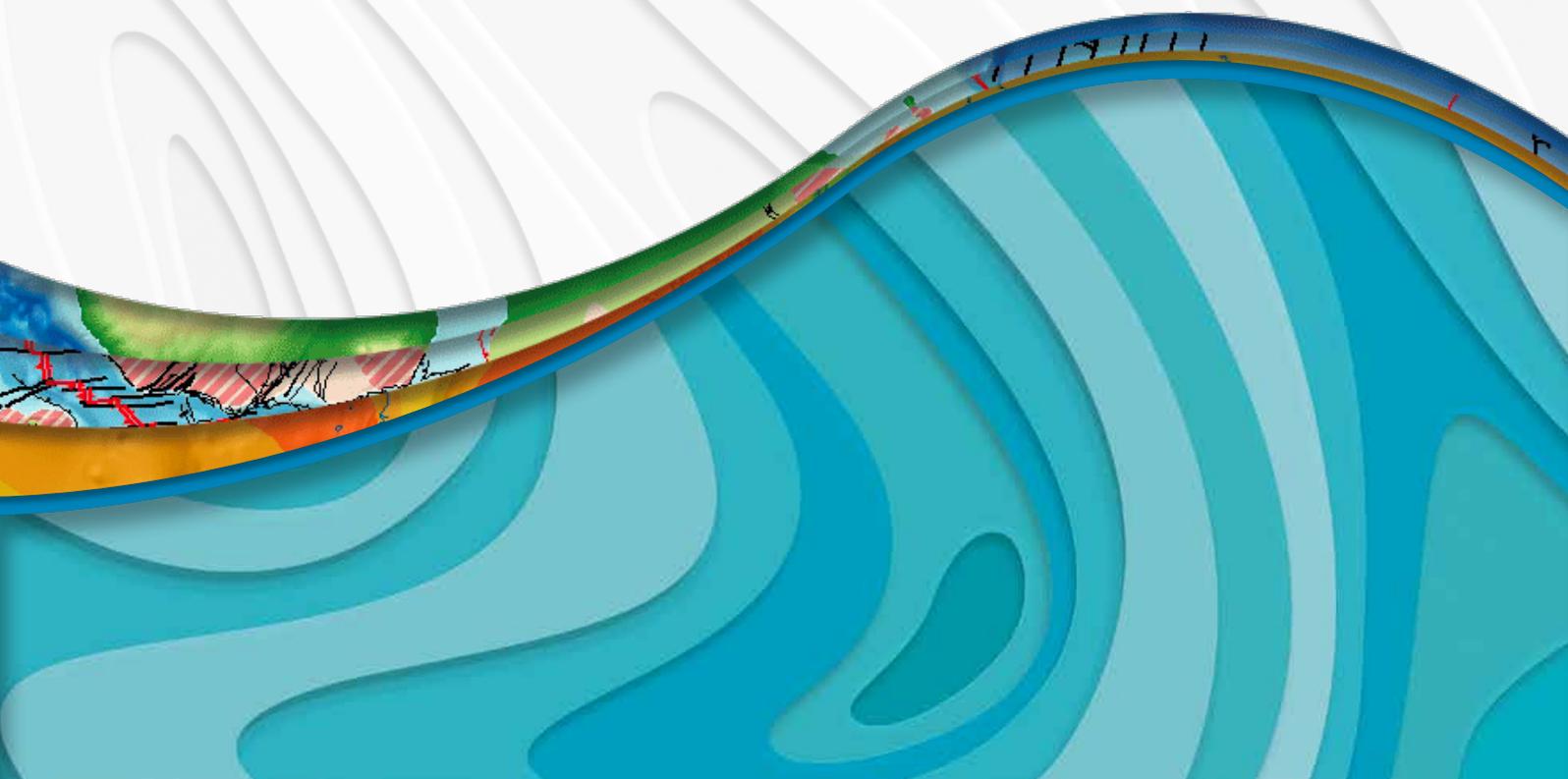


getech

Regional
Reports
Catalogue
2015



Overview

For over 25 years, we've been using our data and geoscience expertise to help the oil and mining industries locate the Earth's natural resources. Underpinning our work is the world's most extensive commercial library of gravity and magnetic data and *Globe*, our flagship New Ventures platform. Our *Regional Reports* build on this world-leading resource of data, global models and interpretations.

It gives us great pleasure to present our *Regional Reports* and global geophysical reports for 2015.

Regional Reports

Getech's *Regional Reports* provide focussed assessments of the exploration risks and opportunities in the world's frontier and under-explored basins. If you are a member of a New Ventures or asset team within an oil and gas company, these reports will enable you to quickly identify the main issues requiring further investigation and the geological context of any block or given region. They are designed to be used at a variety of scales, from continental to sub-basin.

The *Regional Reports* are built on Getech's *Globe* New Ventures platform of detailed plate modelling, gravity and magnetic interpretation, palaeogeographic mapping and climate modelling. Thus, whilst being detailed reports of the regions themselves, the interpretations contained within them are framed within a truly global consideration of tectonic and landscape evolution.

Getech has *Regional Reports* in the following regions:

- Africa
- Central and South America
- Europe, the Arctic and the Middle East
- Southern Asia
- Southeast Asia

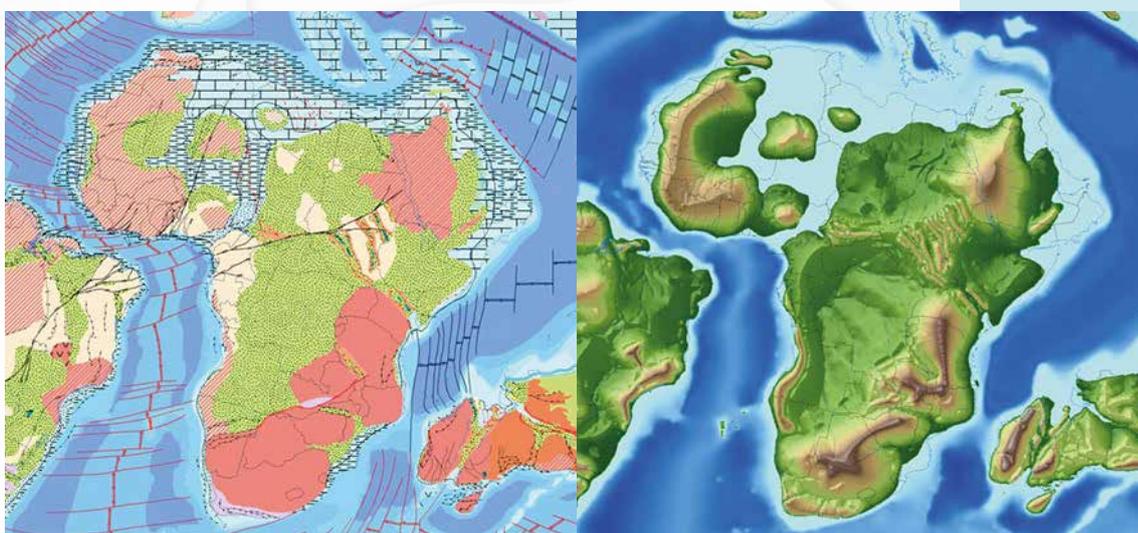
Delivery Format

The reports are delivered as:

- Esri ArcGIS 10.x project* including:
 - File Geodatabase(s)
 - One or more MXDs
- Reports and enclosures, in hardcopy and/or PDF format.

All products are supplied subject to Getech's standard Licence Agreement.

* older versions of ArcGIS, ArcReader maps and other formats are available upon request.



Turonian palaeogeography for Africa. The map shows the gross depositional environments (areas below base-level) and tectonophysiographic terranes (areas above base-level where erosion occurs); hatching corresponds to the age of each tectonophysiographic terrane relative to the timeslice.

Turonian topography and bathymetry modelling results for Africa, based on the palaeogeographic mapping shown in the figure to the left.

New for 2015...

Tectonic Evolution of Mexico

See page 8 for more information.

Tectonics and Source Rock Potential of the Southern Caribbean Margin

See page 8 for more information.

Getech's Equatorial Atlantic: 2014

Getech's South Atlantic: 2014

Getech's East Africa: 2014

Update to be released in December 2015, see pages 3 and 4 for more information.

Getech's Equatorial Atlantic: 2014

Getech's South Atlantic: 2014

Getech's East Africa: 2014

These reports will be updated annually and released each December. They replace Getech's previous *Geodynamics and Petroleum Geology* reports for these regions. The reports describe the implications of tectonics and hinterland evolution history on the petroleum potential of the marginal basins. All reports use an advanced knowledge of the tectonostratigraphic evolution of the margins to address the key issues of source, reservoir and seal development and maturation history. The reports incorporate:

- **Geological Framework** – based on Getech's unique gravity and magnetic databases, SRTM topography and Landsat-7 imagery.
- **Crustal Architecture** – identification of crustal types and boundaries, 2D gravity and magnetic profile modelling, depth-to-basement and depth-to-Moho (and thus sediment and crustal thickness maps).
- **Plate Tectonic Modelling** - built within the framework of *Getech's Global Plate Tectonic Model*.
- **Palaeogeographic Mapping** – tectonophysiographic terranes, depositional environments, palaeotopography and palaeobathymetry maps for thirteen key timeslices:

Middle Miocene	Turonian *	Barremian
Late Oligocene	Cenomanian	Berriasian
Early Eocene	Albian *	Tithonian
Maastrichtian	Late Aptian	
Campanian	Early Aptian *	

* available for the South and Equatorial Atlantic margins only.

- **Palaeodrainage and Landscape Analysis** – drainage basin geometry and evolution through time.
- **Petroleum Systems Analysis** – basin-by-basin review of the tectonostratigraphy and each proven and potential element of the petroleum systems. Source rock evaluations include burial history and maturity modelling and correlation with known hydrocarbons.

The Structural Framework, Crustal Architecture and Plate Tectonic Modelling components of each report may be licensed as a separate *Tectonic Evolution Report*.

Getech's Equatorial Atlantic: 2014

African basins: *Senegal-Guinea Plateau, Sierra Leone-Liberia, Côte d'Ivoire, Saltpond-Central and Benin.*

South American basins: *Guyana-Suriname, Foz do Amazonas, Marajó, Para-Maranhão, São Luís, Barreirinhas, Ceara and Potiguar.*



Getech's South Atlantic: 2014

African basins: *Anambra, Niger Delta, Cameroon, Rio Muni, Gabon, Lower Congo, Congo Fan, Kwanza, Namibe, Walvis, Ludertitz and Orange.*

South American basins: *Sergipe-Alagoas, Reconcavo, Camamu-Almada, Jequitinhonha, Cumuruxatiba, Espirito Santo, Campos, Santos, Pelotas, Salado, Colorado, Valdez, Rawson, San Jorge, San Julian, Magallanes, Malvinas and North Falkland.*



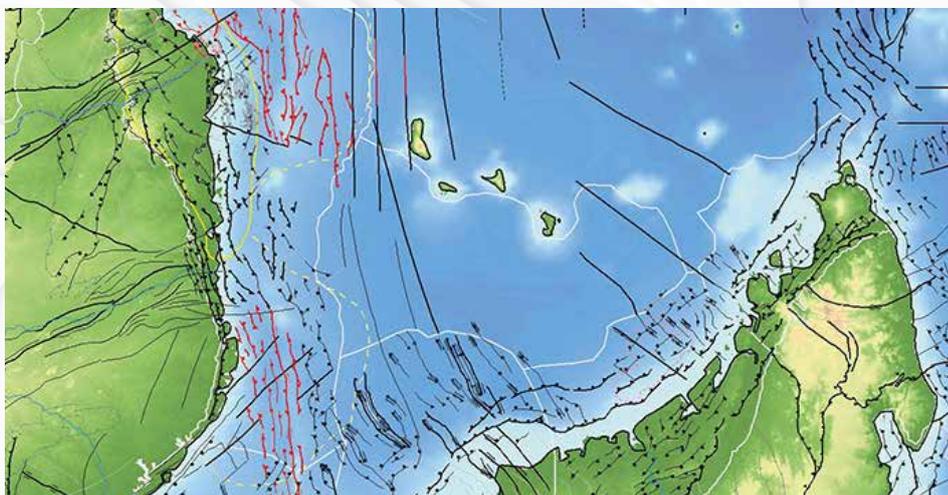
Getech's East Africa: 2014

Basins: *Somali Coastal, Lamu, Anza, Tanzania Coastal, Rovuma, Mozambique, Morondava and Majunga.*



Update Schedule: 2015

These Regional Reports are updated annually and released in December.



Structures of the East African margin; red structures are active, black are inactive.

Africa



*Getech's Equatorial Atlantic: 2014**

- This new report for 2014 covers the *Senegal-Guinea Plateau, Sierra Leone-Liberia, Côte d'Ivoire, Saltpond-Central and Benin Basins*.
- A report on the *Tectonic Evolution of the Equatorial Atlantic* is also available.
- Please see page 3 for further details.



*Getech's South Atlantic: 2014**

- This new report for 2014 covers the *Anambra, Niger Delta, Cameroon, Rio Muni, Gabon, Lower Congo, Congo Fan, Kwanza, Namibe, Walvis, Ludertitz and Orange Basins*.
- A report on the *Tectonic Evolution of the South Atlantic* is also available.
- Please see page 3 for further details.



*Getech's East Africa: 2014**

- This new report for 2014 covers the *Somali Coastal, Lamu, Anza, Tanzania Coastal, Rovuma, Mozambique, Morondava and Majunga Basins*.
- A report on the *Tectonic Evolution of the East African Margin* is also available.
- Please see page 3 for further details.



Prospectivity of the East African Rift System

- A detailed structural and geological interpretation using principally Landsat-7 imagery and SRTM topography.
- Major and minor structures identified within the Cenozoic rifts and the surrounding basement.
- Catalogues individual rift basins, examining the prospectivity and the main risks of each.

** These Regional Reports are updated annually and released in December.*

Assessment of Potential Sediment Provenance of the Sierra Leone-Liberia and Côte d'Ivoire Basins

- Assessment of the potential provenance of Cretaceous sediments in the *Sierra Leone-Liberia* and *Côte d'Ivoire Basins*.
- Impact on reservoir quality by comparison of potential hinterland sources, palaeodrainage and palaeoclimate.
- Review of public domain geology and petrographic, mineralogic and isotopic data.
- Palaeogeographic maps, palaeoclimate and palaeoceanography modelling, and Present Day drainage and landscape analysis.



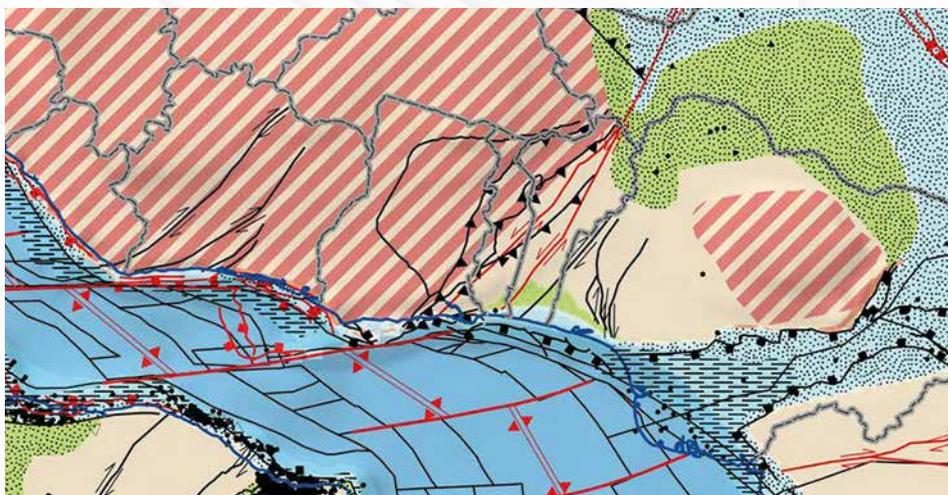
Petroleum Systems of the Algerian Saharan Platform

- A systematic review of the petroleum systems of the *Illizi-Berkine*, *Qued Mya-Mouydir*, *Timimoun-Ahnet* and *Tindouf-Reggane Basins*.
- Analyses source rock, reservoir and seal distribution and quality issues based on an understanding of the tectonostratigraphic evolution of the region.



Geodynamics and Petroleum Geology of the Taoudenni Basin

- Structural mapping and depth-to-basement.
- Over 100 unpublished well and field section logs provide a comprehensive analysis of the tectonostratigraphic evolution, geodynamics and petroleum geology of this intracratonic frontier basin.
- The distribution and TOC of the two principal source rock horizons: the Neoproterozoic shales and the Silurian black shales. Each plays a key role in the prospectivity of the basin.



Turonian palaeogeography for Africa. The map shows the gross depositional environments (areas below base-level) and tectonophysiographic terranes (areas above base-level where erosion occurs); hatching corresponds to the age of each tectonophysiographic terrane relative to the timeslice.



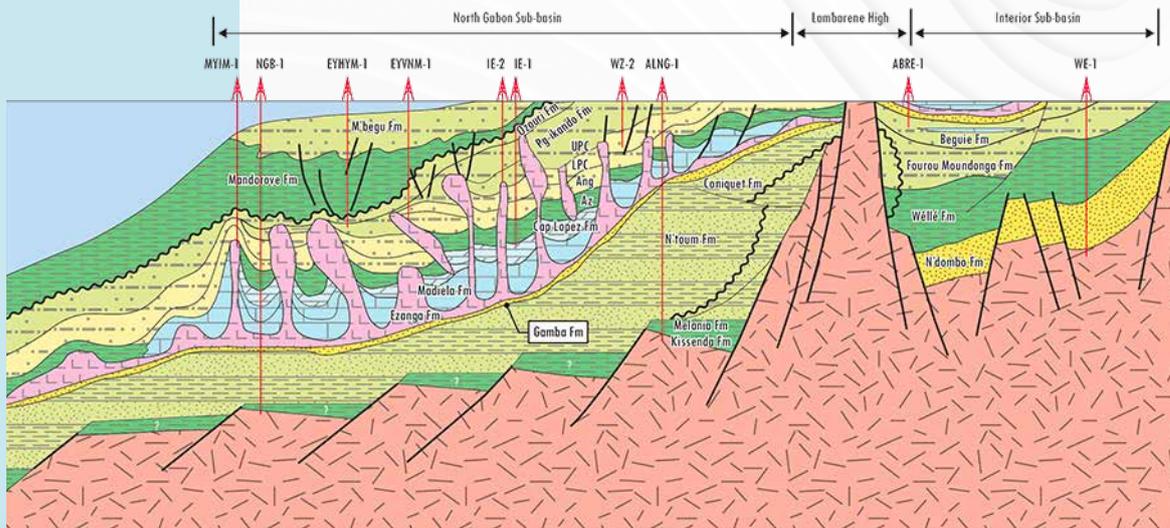
Cretaceous Rift System of Western Central Africa

- Fifteen 2D gravity and magnetic profile models with control from seismic and well data.
- Depth-to-basement from inversion of gravity and magnetic data.
- Appraisal of the poly-phase tectonic evolution of the basins related to the opening of the South Atlantic.
- Covers the *Logone Birni, Bongor, Doseo, Doba, Salamat, Upper Benue, Gongola, Yola-Garoua, Termit, Lake Chad, N'gel Edjl, Tedifet, Ténééré, Grein, Bilma* and *Kafta Basins*.



Landscape Analysis of the Equatorial Atlantic Margin of Africa

- Analysis of the Present Day drainage and landscape to identify evidence for past changes in the river networks, and to understand the impact of tectonics and surface processes on landscape evolution and ultimately the petroleum systems of the region.

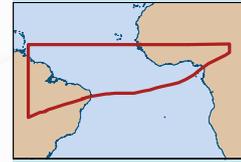


Stratigraphic cross-section of the northern part of the Gabon Basin, showing the distribution of the halites of the Ezanga Formation, modified from Chen et al. (2013).

Central and South America

*Getech's Equatorial Atlantic: 2014**

- This new report for 2014 covers the *Sergipe-Alagoas, Reconcavo, Camamu-Almada, Jequitinhonha, Cumuruxatiba, Espirito Santo, Campos, Santos, Pelotas, Salado, Colorado, Valdez, Rawson, San Jorge, San Julian, Magallanes, Malvinas* and *North Falkland Basins*.
- A report on the *Tectonic Evolution of the Equatorial Atlantic* is also available.
- Please see page 3 for further details.



*Getech's South Atlantic: 2014**

- This new report for 2014 covers the *Guyana-Suriname, Foz do Amazonas, Marajó, Para-Maranhão, São Luís, Barreirinhas, Ceara* and *Potiguar Basins*.
- A report on the *Tectonic Evolution of the South Atlantic* is also available.
- Please see page 3 for further details.



Tectonic Evolution of Mexico

- Structural framework and tectonic analysis.
- Depth-to-basement, depth-to-Moho and derived sediment and crustal thickness maps.
- New plate model for the opening of the Gulf of Mexico.
- New insights into the petroleum prospectivity of the deepwater, shallow-water and onshore conventional plays and unconventional systems, including the extension of the Eagle Ford Play into Mexico.



Landscape Analysis of the Equatorial Atlantic Margin of South America

- Analysis of the Present Day drainage and landscape to identify evidence for past changes in the river networks, and to understand the impact of tectonics and surface processes on landscape evolution and ultimately the petroleum systems of the region.



Tectonics and Source Rock Potential of the Southern Caribbean Margin

- A structural framework and tectonic analysis based on Getech's unique gravity and magnetic data.
- Depth-to-basement, depth-to-Moho and derived sediment and crustal thickness maps.
- Examines and tests the radically different tectonic models proposed for the Caribbean.
- Impact of new structural mapping and plate modelling on ideas concerning the deposition, preservation and maturation of Late Cretaceous and Cenozoic source rocks. Includes new 1D source rock maturity modelling.



* These Regional Reports are updated annually and released in December.

Europe, the Arctic and the Middle East



Source to Sink of the Eastern Mediterranean

- An assessment of the impact of the evolution of hinterland, drainage and climate on clastic reservoir distribution and quality.
- Answers questions on the sediment source for proven Lower Miocene reservoir facies in the *Levant Basin*.



Geodynamics and Petroleum Geology of the Circum Arctic

- A major analysis of the tectonic framework and petroleum potential of the principal basins of the Arctic.
- Covers the *Chukchi Sea, North Slope Alaska, Beaufort Sea, MacKenzie Delta, Sverdup Basin, West and East Greenland, Norwegian Arctic, Barents Sea, Kara Sea, Laptev Sea and East Siberian Sea Basins*.
- Eight regional 2D modelled gravity and magnetic models generated to help control a new plate tectonic model.
- Six palaeogeographic reconstructions (palaeoenvironments, tectonophysiographic terranes and lithologies).



Landscape Analysis of Greenland

- A sub-ice landscape analysis of Greenland, incorporating correction for flexural isostasy.
- Present Day topography, ice thickness, derived sub-ice topography and cultural data.
- Palaeogene drainage evolution.



The Present Day, sub-ice topography of Greenland and surrounding bathymetry. One of the deliverables of the Landscape Analysis of Greenland Report is a flexural isostatic corrected DEM that enables assessment of Neogene drainage systems.

Southern Asia

Structure and Tectonics of Southern Asia

- Structural framework from regional gravity and magnetic data, SRTM topography and Landsat-7 imagery.
- Five 2D gravity and magnetic profile models, with seismic and well control to help define areas of stretched, transitional, continental and oceanic crust.
- New regional plate model constrained by the structural framework, new crustal architecture and testing of published models.



Geodynamics and Petroleum Geology of the West Indian Margin

- Systematic investigation of the petroleum systems of the *Offshore Indus, Kutch, Mumbai and Konkan-Kerala Basins*.
- Eight palaeogeographic (palaeoenvironments, tectonophysiographic terranes and lithologies) and palaeolandscape maps.
- Palaeoclimatic and palaeoceanographic analysis of India for each timeslice.



Geodynamics and Petroleum Geology of the Western Bay of Bengal

- Analysis of the petroleum systems of the *Bengal Fan, Mahanadi, Krishna-Godavari* (including the *Palar Basin*), *Cauvery* and *Mannar Basins*.
- Contains a review of the geochemical literature, new geochemical modelling, a synthesis of the stratigraphic framework and basin-by-basin petroleum systems review.
- Palaeolandscape reconstruction and palaeoelevation interpretation for each timeslice.



Landscape Analysis of...

... the Eastern Margins of India

... the Western Margins of India

... the Ganges and Brahmaputra

... the Greater Indus

- Analysis of the Present Day drainage and landscape to identify evidence for past changes in the river networks, and to understand the impact of tectonics and surface processes on landscape evolution and ultimately the petroleum systems of each region.



Southeast Asia



Structure and Tectonics of Southeast Asia

- Structural framework from regional gravity and magnetic data, SRTM topography and Landsat-7 imagery.
- Nineteen 2D gravity profile models with seismic and well control to help define areas of stretched, transitional, continental and oceanic crust.
- New regional plate model constrained by the structural framework, new crustal architecture and testing of published models.

Landscape Analysis of Borneo

- Network drainage analysis of Present Day river networks to uncover the inherited drainage trends influencing sediment dispersal.
- SRTM3 derived stream network and drainage basins.

Petroleum Systems Reports in Indochina

These four integrated *Regional Reports* re-evaluate the structural development of the Indochinese Peninsula and implications for the tectonic development of the region. They contain an analysis of the Present Day drainage, a review on the landscape evolution and likely effect on sediment dispersal, geochemical literature review and new geochemical modelling to generate new insights into the petroleum systems of the region. They comprise:

- Images of regional gravity and magnetic data, and their derivatives.
- 2D gravity and magnetic profile models to help define crustal architecture.

The modelled landscape of Indochina during the Late Oligocene. Note the outfall of the palaeo-Mekong at this time into the Phu Khahn Basin, to the east of Vietnam.



- Seven palaeogeographic reconstructions (palaeoenvironments, tectonophysiographic terranes and lithologies) for the key Wordian–Middle Permian, Norian–Late Triassic, Hauterivian–Early Cretaceous, Late Palaeocene, Middle Eocene, Late Oligocene and Middle Miocene timeslices.
- 1D geochemical modelling
- Analysis of source rock, reservoir and seal distribution and quality issues by establishing the development of the petroleum systems and understanding its tectonostratigraphic evolution.

Thailand & the Gulf of Thailand

- Malay Basin
- Pattani Basin
- Khmer Trough
- Greater Thai Basin Province
- Onshore Tertiary basins
- Khorat Plateau Province

Offshore East Vietnam

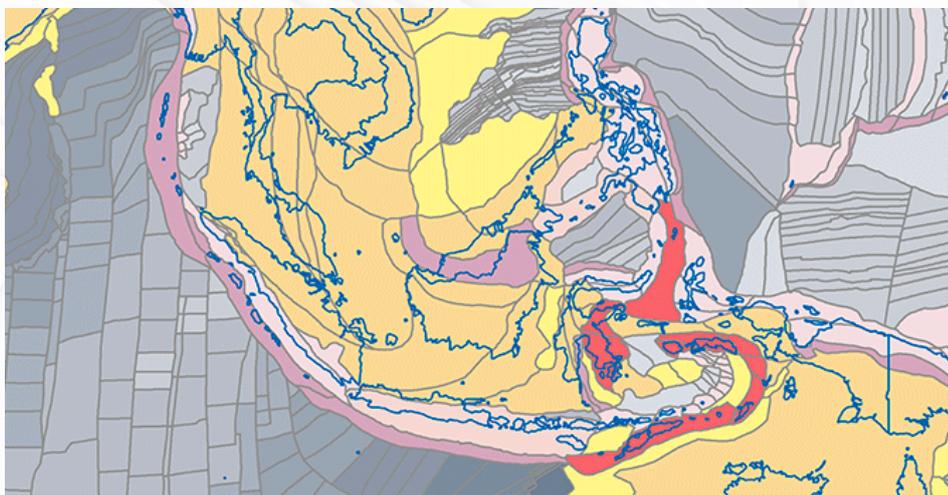
- Beibu Gulf
- Song Hong and Phu Khanh Basins, with geochemistry analysis of the Yacheng wells in Qiongdongnan Basin

Southern Indochina

- Nam Con Son
- Cuu Long
- Tonle Sap basins

Offshore Southeastern China

- Beibu Gulf Basin
- Pearl River Mouth Basin
- Qiongdongnan Basin



Crustal types of Southeast Asia

Global Gravity and Magnetic Data

Getech has been collating, managing and processing gravity and magnetic data for over 25 years. Our global compilations are based on thousands of magnetic surveys and millions of gravity stations covering all the continents and continental margins of the world. They incorporate all of Getech's continental-scale regional compilations of terrestrial data, with satellite and public domain data where appropriate.

The compilations are the core data components of our *Globe* platform, and underpin Getech's *Global Plate Tectonic Model* and global structural database. Our strong relationships with many organisations around the world provide us with a large number of higher resolution surveys, for example covering the offshore Russian Arctic Shelf, Iraq, Tanzania and several countries in Europe and South America.

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Globe

Globe is our live GIS earth platform, created to help our partner clients in their New Ventures and asset-based exploration. The platform can be used on its own or alongside your in-house data, and Getech's *Globe* team is here to help you with each step in the process. *Globe* is fuelled by our unrivalled global gravity and magnetic data, and delivers state-of-the-art palaeogeographic reconstructions, source to sink characterisation, fully auditable structural solutions and our cutting-edge *Global Plate Model*.

Globe is now available on a regional basis.

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Commissions

Getech provides bespoke solutions to our clients in every region of the world, including depth-to-basement studies, block evaluations and training courses. All commissioned work is carried out by our team of over 60 geophysicists, structural and petroleum geologists and geodynamicists to ensure that our integrated studies are presented in a robust geological and tectonic context.

We have over 15 years of worldwide experience in interpreting gravity and magnetic data controlled by seismic and well data. Using either our own unique gravity and magnetic databases, or a client's proprietary survey, our team of interpretation specialists will help guide your early stages of exploration.

For further details please contact Dr Anne C. Raymond:
Email: anne.raymond@getech.com

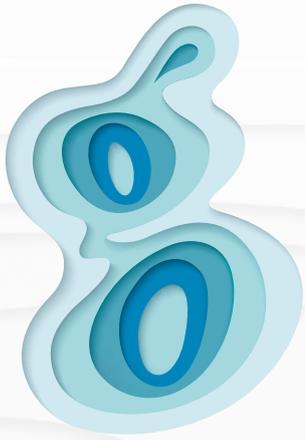
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