

# structure and tectonics of north africa



GETECH

STUDIES

STRUCTURE AND TECTONICS

GETECH's global series of **Structure and Tectonics** studies will re-evaluate, region-by-region, the fundamental structural and tectonic framework that underpins oil and gas exploration. The studies are based on Landsat imagery, radar topography data and GETECH's best available gravity and magnetic data. The ultimate goal is a series of detailed, kinematically realistic, **structural maps** and an **original global plate tectonic model**.



## project rationale *and scope*

Each study integrates two technical approaches:

- **Structural mapping:** ground-truthing of current interpretations; new interpretations from remote sensing imagery and potential field data; 2D gravity and magnetic profile modelling to accurately identify the limit of unstretched continental plates.
- **Plate modelling:** a new PaleoGIS plate tectonic model utilising the results of the structural mapping to quantify plate motions and constrain basin evolution.

The North Africa module incorporates Egypt's Western Desert, south to the onshore sedimentary basins of northern Sudan, west to the Taoudenni basin and north to the southern foothills of the Atlas Mountains. **This scope of study has not been attempted previously, either at this scale, level of detail, or by utilising such comprehensive and continuous gravity, magnetic and topographic datasets.**

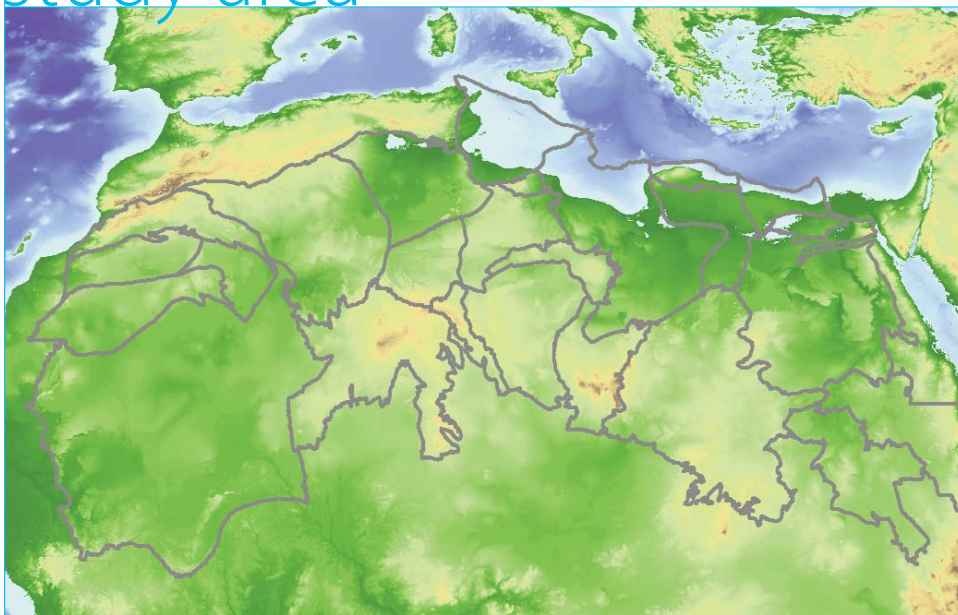
Some key issues addressed in the study include:

- Redefinition of the major structural and tectonic elements
- Plate boundary definition and crustal characterisation
- Basin definition and geometry
- Modern day tectonophysiographic terrains and depositional systems: better understanding the link between tectonics and landscape

Main datasets utilised:

- GETECH's best available gravity and magnetic data
- Satellite gravity data
- At least six 2D gravity and magnetic profile models
- Landsat imagery
- SRTM3 & SRTM30 topography
- Published observations and interpretations
- Modern earthquake observations
- Published seismic
- Geological maps

## study area



# deliverables

The study is delivered as:

**A4 report (hardcopy and PDF format)**  
**Structure and tectonics map of North Africa (hard copy and PDF format)**  
**GIS project (ArcGIS 9.x)**  
**Other digital images and animations**

## the report

Executive Summary and Introduction  
Data Utilised  
Methodologies  
Geophysical Interpretation  
Including at least six gravity and magnetic profiles for key transects  
Structure and Tectonics  
Plate Modelling  
GIS Contents and Legend  
Comprehensive Bibliography

## the structure and tectonics map of north africa

1:5,000,000 scale map of the modern day

## the GIS project

Images of satellite gravity and Landsat data  
Modern day structural and tectonic elements  
Tectonic plate definitions  
Horst and graben outlines  
Basin geometry and definition  
Crustal type and extent  
Basement geology  
Elevation and bathymetry  
Ocean age  
Tectonophysiographic terrains  
Depositional systems

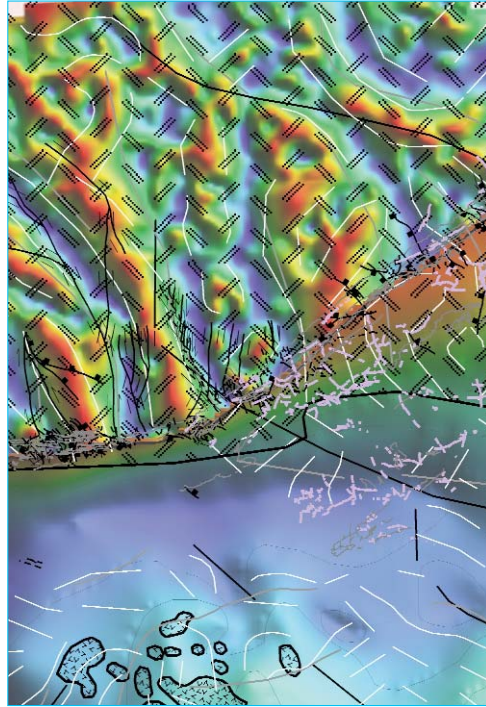
### Plate modelling outputs

An ArcGIS project illustrating the plate positions for each stratigraphic stage from the Cretaceous to the present day (32 stages) and for each epoch from the Cambrian to the Cretaceous (24 epochs)

## other digital images and animations

Images of plate positions for each stratigraphic stage covered by plate modelling, 56 in all (PDF format)  
Plate kinematics animation (MOV format)  
Plate tectonic model file (MDB format)

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## other products

### petroleum systems studies in southern asia

GETECH is also undertaking two studies which examine the petroleum systems of the Western Indian Margins and the Western Bay of Bengal. The studies will assist oil companies exploring in the region through integration of key gravity and magnetic data and the expertise of GETECH's team of geoscientists.

### structure and tectonics programme

Please contact us for details of areas covered by this programme.

### gravity and magnetic data

The underlying digital grids of gravity and magnetic data which have been utilised in our studies are also available separately or as a complementary dataset to the study.



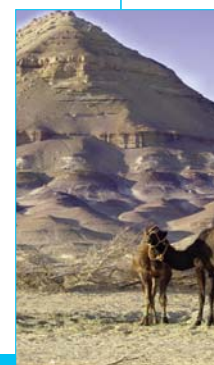
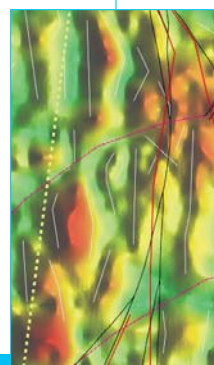
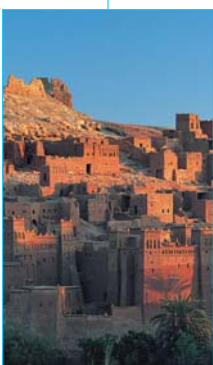
Multi-disciplinary teams of technical experts



Including the world's largest gravity and magnetic library



A global portfolio of focussed exploration reports



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GLOBAL EXPLORATION  
STARTS HERE