

Eagle Ford Shale Study

Objective

Earthfield Technology in conjunction with Gravity Map Service is offering a gravity and magnetic analysis over the Eagle Ford Shale trend of south Texas. The objectives of this study are to define structural and fracture influences on the Eagle Ford Shale and to map in detail, the basement depth and structure along the Eagle Ford Shale fairway. To achieve these objectives magnetic, gravity, and topographic data have been rigorously analyzed. Interpretation techniques include an exhaustive profile based Werner deconvolution analysis of the magnetic data coupled with qualitative mapping of the gravity, magnetic and topographic data to provide additional control. The study will also include a lineament analysis consisting of linears interpreted from the topographic maps, from various gravity residuals and from the basement surface. These interpreted lineaments will also be displayed as lineament density maps and lineament intersection maps which should be helpful in the identification of areas with the greatest fracture potential.

Data

The study consists of 18,301 total Bouguer gravity stations with 1,203 being Mexican gravity stations at no charge and 17,098 gravity to be licensed from Gravity Map Service. The magnetic data will be extracted from Earthfield's proprietary compilation of public domain data. Digital Elevation Model (DEM) data will be used to provide the topographic maps.

Deliverables

Topography

- Topographic map
- Residual topographic map

Gravity

- Bouguer gravity map
- Various residual gravity maps

Lineament Analysis

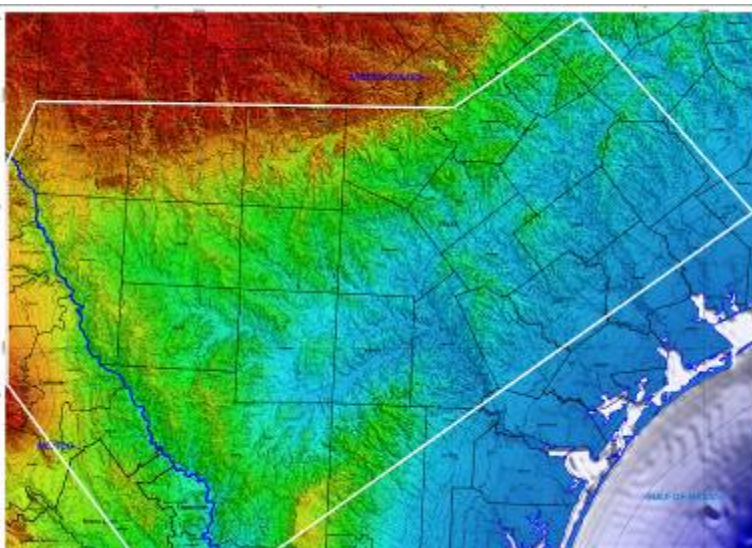
- Lineations from topography, gravity and magnetics
- Lineament density
- Lineament intersection density

Magnetics

- Total magnetic intensity map
- Various residuals of the TMI

Interpretation

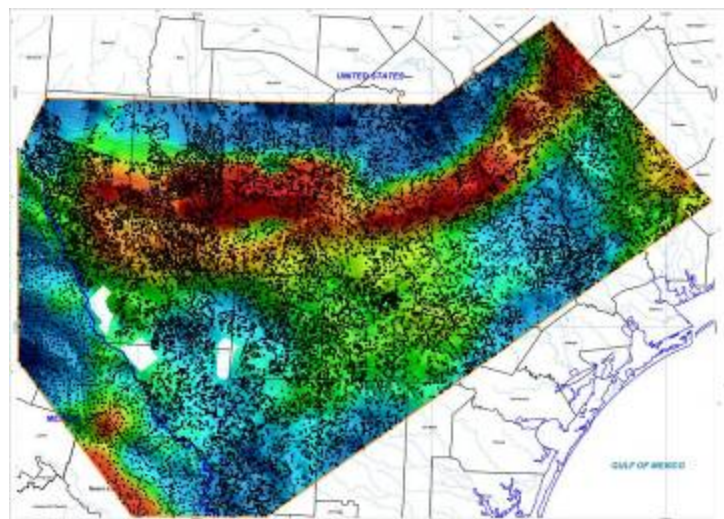
- Depth to basement interpretation
- Residual basement surface



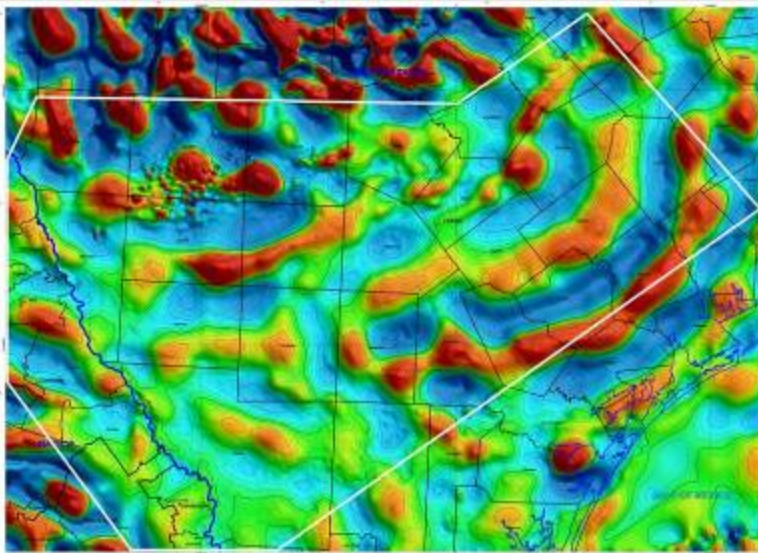
Bathymetry / Topography

Processing and qualitative mapping

The map shown to the right is a regional Bouguer gravity map with the study area outlined. There are 18,301 Bouguer gravity stations provided by Gravity Map Service. While magnetic data is the best way to map basement related anomalies due to the magnetic character of the basement rock, gravity is the preferred approach for mapping sedimentary features because of the wide variety of densities within the sedimentary rocks. Earthfield's approach of frequency filtering the gravity data allows for the examination of regional to local sedimentary events and their relationship to basement structure fracture patterns.

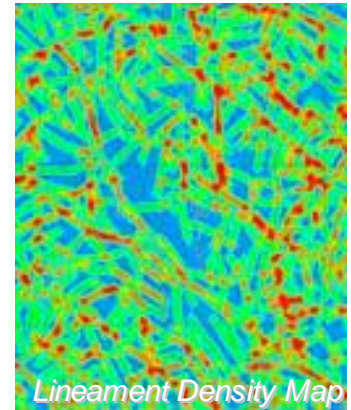


Bouguer Gravity Map – 18,301 Stations



High Pass Filtered Residual Reduction to Pole

The magnetic map shown to the left represents regional intra basement magnetic contrasts. The production of various filtered residual magnetic maps allow for the analysis of regional fabric, but basement structures must be mapped in more detail by quantitative profile based interpretation methods.

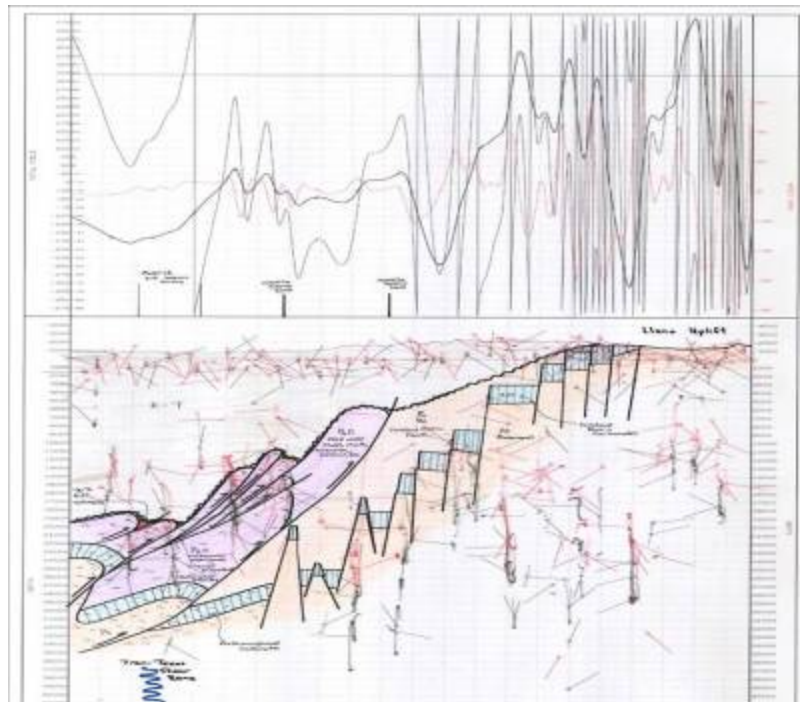


The map shown to the right is an example of a lineament density interpretation.

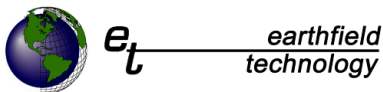
Lineament Density Map

Data Interpretation

The interpretation of basement depth and structure using magnetics is possible due to the consistent and well established relationship between a magnetic anomaly wavelength and the depth to its causative body. For years, these calculations were made by hand. Today we are able to provide a computerized approach called Werner deconvolution. The picture on the right shows a Werner profile coming off the Llano uplift and extending through the Eagle Ford Shale trend. Werner is a two dimensional inversion technique that iteratively evaluates the various waveforms present along a magnetic profile yielding the depth, dip and apparent susceptibility of causative bodies. This example demonstrates a series of depth solutions and the interpreters analysis of these solutions. When an entire series of profiles have been interpreted they are presented as a contour map of the basement depth and structure.



Werner Deconvolution Profile



Earthfield Technology, located in Houston, Texas has been supplying the oil and gas industry with state of the art integrated gravity and magnetic interpretation since 1985. Our staff of professionals brings over 100 years of interpretation experience to the project.

For additional information please contact:

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