

Insights into regional structural geology using gravity and magnetic data

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Global databases of gravity and magnetic data allow us to define the structural framework for most parts of the world. Potential field anomalies allow us to identify faults, basement highs and lows, and distribution of igneous bodies. Structural information derived in this way can be combined with depth to basement estimations in order to improve our understanding of basin morphology and evolution. The data can also prove valuable in identifying structural continuity between well locations and seismic profiles.

Examples of the use of gravity and magnetic data in understanding the distribution of crustal types and calculation of crustal stretching at continental margins will be shown. These profiles assist us in refining plate tectonic reconstructions and put new constraints on the dynamics and rifting processes at continental margins.

Combining the interpretations of gravity and magnetic data with control from seismic horizons helps resolve ambiguities in the Cuu Long and Nam Con Son Basins, offshore Vietnam; where granitic basement (generally a local gravity 'low') often, but not always, lies at the base of structural grabens.

Recent in-house research within GETECH has involved new methodologies for restoring the stretched continental crust of passive margins to their pre-rift positions; crucial for developing an accurate global plate model using deformable plates.