

Southeast Asia Gravity and Magnetics Interpretation

Bird Geophysical and Gibson Consulting teamed up on this speculative interpretation project showing the advanced application of gridding, mapping and interpretation techniques to data sets over Southeast Asia.

Using recent high-quality, satellite-derived free air gravity data, and magnetic data compiled by the Geologic Survey of Japan, Bird and Gibson combined primary scientific research with real-world petroleum exploration applications. These include providing a regional plate tectonic framework for planning hydrocarbon exploration. The work provides special insight into:

- Regional detail of rifts
- Depocenters
- Carbonate buildups and platforms
- Major structures and accommodation zones
- Distribution of volcanics
- Depth to magnetic basement
- Definition of oceanic fracture zones and their interaction with prospective continental margin areas

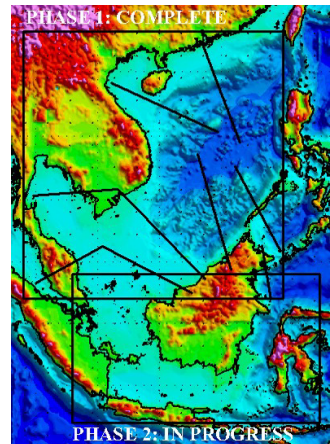
Phase 1 covers sedimentary basins from the Thai Basin east to the Philippine island of Luzon, and the Natuna Sea north to China. The study area is 100° to 120° East by 2° to 23° North, or about the same size as the entire Gulf of Mexico or North Sea.

Basins interpreted include: Beibu Wan, Hoang Sa, Malay, Mekong, Nha Trang, Outer, Pearl River, Sabah, Sokang, Song Hong, Tarakan, Thai, West Natuna, and Yang Ghe. Other important regions interpreted include: Baram Delta, Luconia Platform, McClesfield Bank, Paracel Islands, Reed Bank, and Spratly Islands area.

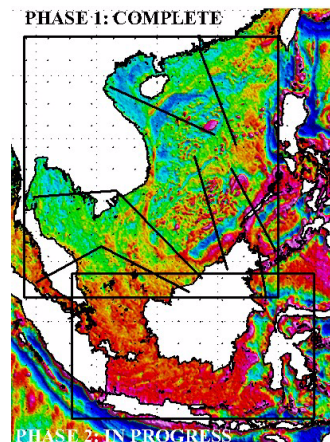
In addition to interpretation maps, nine mega-regional modeled cross sections are used to support the interpretation. All data are converted to GIS format for use with ArcInfo™ and ArcView™. Products include: two sets of gravity, magnetic, topography and interpretation maps (16 total); two sets of modeled cross sections at two vertical exaggerations (36 total), two copies of a comprehensive report, and a CD-ROM disk of all digital data. Digital data consists of ASCII and GIS files of all grids and interpretation vector files. Bird and Gibson used a variety of software systems to achieve high-quality results including the Oasis montaj™ Mapping and Processing system and NGA's GM-SYS™ modeling system.



Gibson Consulting



Free air gravity anomalies. Grids and interpretation maps were created in the oasis montaj™ mapping and processing system.

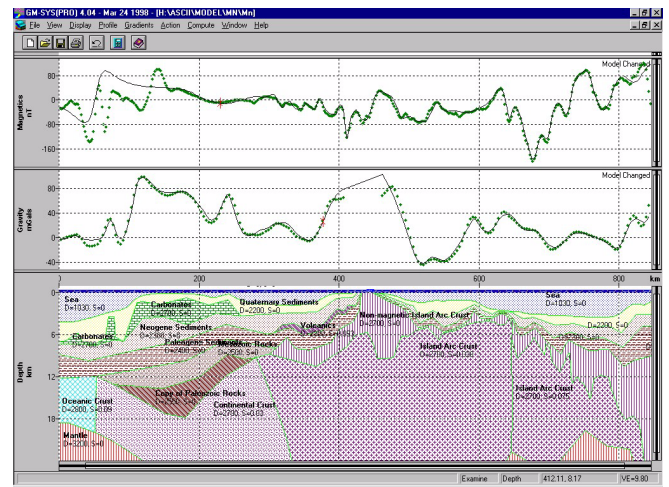


Southeast Asia bathymetry. The study covers numerous basins in one of the most tectonically complex regions in the world.

Results from the initial study, which has now been extended into Phase 2, can be applied in a number of tangible roles:

- Creating new plays, or extending existing plays;
- Providing a different way of looking at geological parameters that may impact exploration, such as source-rock depocenters locations;
- Identifying previously unknown (or little studied) features and investigating their effects on the prospective section, and;
- Planning exploration strategy and providing an inter-basin as well as intra-basin view of the tectonics of this region.

Phase 2 is now in progress and covers the following basins of Natuna and Java Seas and Makassar Strait: Sunda, West Java, Billiton, Baweau Trough, East Florence, Kangean, Bali, North and South Makassar, South Celebes Sea, Gorontalo, Peleng, North Banda, and Bone. Products for Phase 2 will be the same as Phase 1.



Gm-sys™ was used to create nine megaregional modeled cross sections to support interpretations. This figure shows a section covering part of the south china sea, Palawan island and the Sulu sea.



Bird Geophysical.
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