Mapping of Basement and Sedimentary Horizons in the Offshore Andaman Sea Basin of Myanmar, using Marine Magnetic and Gravity Data

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ABSTRACT

Marine magnetic and gravity data, acquired with a regional 2D seismic survey in 2010 over an area of 15,000 sq km in the deep water Andaman Sea Basin, was interpreted using spectral methods. The gridded magnetic and gravity data was analysed in two stages: Stage-1, Horizon Detection, and Stage-2, Detailed Mapping. In Stage-1 the ESA- MWT method (Kivior et al., 2012) was used to detect magnetic and density contrasts which were laterally merged and correlated to crystalline and economic basement, and an inter-sedimentary Tertiary erosional event. The detection of the contrasts was conducted on a regular mesh of 8.5 x 8.5 km using ESA-MWT. The optimal data window sizes determined in Stage-1 were used to interpret the final depth on a 6 x 6 km mesh in Stage-2. The Detailed mapping of each horizon was conducted following this procedure. Application of the spectral methods to magnetic and gravity data proves to be a useful and robust approach in mapping deep crystalline basement, economic basement and shallower sedimentary horizons in the deep waters of the Andaman Sea Basin. The interpreted horizons show good correlation with corresponding seismic events as well as with the known tectono-structural configuration of the area and the surrounding geology.