



The distribution and characteristics of the igneous complexes in the northern East China Sea shelf basin and their implications for hydrocarbon potential

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This study presents results of two-dimensional seismic mapping of the northern East China Sea Shelf Basin. Various igneous features such as sills, volcanic edifices and stocks were identified by the geophysical exploration. The sills are most common, and are observed at more than 90 locations. Most mapped sills in the study area are characterized by high-amplitude continuous reflections with distinct terminations. Saucer- and cup-shaped sills are observed locally. The stocks are discordant (nearly vertical) igneous bodies and they are characterized by seismic transparency, with upturned host rocks and uplifted overburden. The volcanic edifices and/or necks consist of irregular mounds and peaks and are characterized by strong positive top reflections with chaotic internal facies. The oldest igneous activity in the northern ECSSB is late Cretaceous (123.3 ± 3.7). This igneous activity coincides with those observed in eastern China which has been related mainly to the subduction of the Pacific Plate beneath Eurasia Plate. The Miocene igneous activity is well constrained based on seismic stratigraphic relationships within the folded stratigraphy, age dating, and the occurrence of igneous sills. The timing of this intrusion is coincident with the intensive igneous activity as previously suggested for the eastern China.

Igneous rocks can produce hydrocarbon traps, reservoirs and they can act as a seal, and therefore are of great importance in petroleum study.