

Distribution and Characters of Gas Hydrate Offshore of Southwestern Taiwan

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ABSTRACT

Bottom simulating reflector (BSR) is a key indicator for the presence of gas hydrate beneath the sea floor. Widely distributed BSRs have been observed in the area offshore of southwestern Taiwan where the active accretionary complex meets with the passive China continental margin. In order to better understand the distribution and characters of the gas hydrate in the region, closely spaced (1.86-km line spacing) multichannel seismic reflection surveys have been conducted in recent years under the support of the Central Geological Survey, ROC. Over 10000 km of multichannel seismic reflection profiles have been collected that cover an area of about 10000 km² offshore of southwestern Taiwan. BSRs can be identified along 50% of the seismic profiles that we collected. A newly compiled BSR distribution map suggests that gas hydrates are distributed both in the passive margin of the China continental slope as well as in the submarine Taiwan accretionary wedge, from water depths of 500 to over 3000 m. Gas hydrates are most concentrated underneath anticlinal ridges in the accretionary wedge, and underneath the slope ridges of the passive continental margin that were formed due to sedimentary processes. Active fluid activities are evident from various features observed on seismic reflection and chirp sonar profiles, such as mud volcanoes, gas plumes and gas charged shallow sedimentary layers. Fluid migration model has been established from a set of pseudo 3D seismic reflection data. The predicted locations of high fluid

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