

Distribution of Gassy Sediments and Mud Volcanoes Offshore Southwestern Taiwan

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ABSTRACT

This study presents the results from recent intense marine geophysical surveys conducted offshore of southwestern Taiwan. Mud volcanoes and gassy sediments have been identified along chirp sonar and seismic reflection profile data. The distribution of gassy sediments and mud volcanoes has been compiled, showing these features extending from the accretionary wedge to the passive China continental margin. Submarine mud volcanoes could be grouped into four main clusters in the accretionary wedge province: offshore Kaohsiung, adjacent to the Kaoping Submarine Canyon, near the head of the Fangliao Submarine Canyon and along the Yung-An Lineament. Each cluster is composed of a few to more than 10 submarine mud volcanoes. Their origin could be related to gas hydrate dissociation with rising high-pressure fluid along faults or mud diapir piercing the seafloor. These gassy sediments and mud volcanoes could be formed by fluids escaping from dewatering sedimentary layers of mud diapirs, or along faults and fractures where free gases or gases dissociating from hydrates migrate to the seafloor.

(Key words: Gassy sediment, Mud volcano, Fluid migration, Offshore southwestern Taiwan)

1. INTRODUCTION

The occurrence of gassy sediments and submarine mud volcanoes has been reported in both coastal and deep-water environments (Yun et al. 1999; Fleischer et al. 2001; Lee and Chough 2003). The origin of gassy sediments has been attributed to the upward migration of biogenic and/or thermogenic gases from deeper parts of sedimentary layers (Lee and Chough 2003; Oung et al. 2006). Submarine mud volcanoes are created by lateral tectonic compres-

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