

引用本文(Citation):

张光学, 徐华宁, 刘学伟, 等. 2014. 三维地震与OBS联合勘探揭示的神狐海域含水合物地层声波速度特征. 地球物理学报, 57(4): 1169-1176, doi: 10.6038/cjg20140414.

ZHANG Guang-Xue, XU Hua-Ning, LIU Xue-Wei, et al. 2014. The acoustic velocity characteristics of sediment with gas hydrate revealed by integrated exploration of 3D seismic and OBS data in Shenhu area. Chinese Journal Geophysics, 57(4): 1169-1176, doi: 10.6038/cjg20140414

## 三维地震与OBS联合勘探揭示的神狐海域含水合物地层声波速度特征

张光学<sup>1</sup>, 徐华宁<sup>1</sup>, 刘学伟<sup>2</sup>, 张明<sup>1</sup>, 伍忠良<sup>1</sup>, 梁金强<sup>1</sup>, 王宏斌<sup>1</sup>, 沙志彬<sup>1\*</sup>

1. 国土资源部海底矿产资源重点实验室, 广州海洋地质调查局, 广州 510075;
2. 中国地质大学(北京)地球物理与信息技术学院, 北京 100083

The acoustic velocity characteristics of sediment with gas hydrate revealed by integrated exploration of 3D seismic and OBS data in Shenhu area

ZHANG Guang-Xue<sup>1</sup>, XU Hua-Ning<sup>1</sup>, LIU Xue-Wei<sup>2</sup>, ZHANG Ming<sup>1</sup>, WU Zhong-Liang<sup>1</sup>, LIANG Jin-Qiang<sup>1</sup>, WANG Hong-Bing<sup>1</sup>, SHA Zhi-Bin<sup>1</sup>

1. MLR Key Laboratory of Marine Mineral Resources, Guangzhou Marine Geological Survey, Guangzhou 510075, China;
2. School of Geophysics and Information Technology, China University of Geosciences(Beijing), Beijing 100083, China

摘要

参考文献

相关文章

Download: [PDF](#) (5290 KB) [HTML](#) (1 KB) Export: [BibTeX](#) or [EndNote](#) (RIS) [Supporting Info](#)

**摘要** 以三维高分辨地震与海底高频地震仪(OBS)联合勘探数据为基础,获得海底之下沉积层的地震反射成像剖面及多波信息,并以此确定研究区含天然气水合物沉积层的纵、横波速度的变化特征.根据走时反演获得的横波速度与纵波速度对比分析发现,研究区海底之下500 m深度范围内的某些沉积层具有较高的纵横波速度,这一纵波速度升高区域与水合物稳定带对应,而纵波速度下降并且横波速度变化较小的区域,可能与游离气的存在相关.游离气的可能存在与基于这一区域2007年钻探测井结果的普遍认识不完全相符.

**关键词** 神狐海域, 联合勘探, OBS, 天然气水合物, 声波速度

**Abstract:** Based on integrated data acquired with 3-D seismic survey and OBS, both the images of subsurface formation and the information of P/S-wave velocities are obtained, which help to make certain the variation of P/S-wave velocity within the gas-hydrate bearing sediments in the study area. Comparison with the results of P/S-wave velocity calculated from travel time inversion indicates that some sediments have relatively high P/S-wave velocity within the depth of 500 m below seafloor. The abrupt rising of P-wave velocity means the presence of gas hydrate and the high velocity interval corresponds to the hydrate stable zone apparently, but the P-wave velocity decreasing as well slight S-wave velocity decreasing is very likely related to the occurrence of free gas. The presumed occurrence of free gas in the area does not agree with the viewpoints deduced from drilling and coring results within limited depth in this area in 2007.

**Keywords** Shenhu Area, Integrated exploration, Ocean bottom seismometer, Gas hydrates, Acoustic velocity

Received 2013-04-23;

**Fund:** 国际科技合作项目(2010DFA21630-2)、国家重点基础研究发展计划(973计划)(2009CB219)和国家青年科技基金(41206047) 联合资助.

### Service

- [把本文推荐给朋友](#)
- [加入我的书架](#)
- [加入引用管理器](#)
- [Email Alert](#)
- [RSS](#)

### 作者相关文章

- [张光学](#)
- [徐华宁](#)
- [刘学伟](#)
- [张明](#)
- [伍忠良](#)
- [梁金强](#)
- [王宏斌](#)
- [沙志彬](#)