热带海洋学报
JOURNAL OF TROPICAL OCEANOGRAPHY

热带海洋学报 » 2012, Vol. 31 » Issue (3) :28-34 10.3969/j.issn.1009-5470.2012.03.004

南海北部洋陆转换带地震反射特征和结构单元划分*

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摘要 张裂大陆边缘和盆地主要通过岩石圈的伸展作用形成, 被动大陆边缘岩石圈的减薄导致了岩浆的减压熔融, 最终形成了洋壳和减薄的转换带。处理和分析了2010年中国科学院南海海洋研究所“实验2”号采集的南海北部地球物理调查的多道地震数据(MCS2010-1), 总结了南海北部洋陆转换带的地震反射特征。转换带主要由北部裂陷期下沉区段, 中部海山或埋藏海山隆起带和靠近海盆一侧的掀斜断块带组成。通过对比以前南海北部采集的反射地震数据和折射地震波速度模型, 圈定了洋陆转换带的分布范围, 洋陆转换带的宽度在南海东北部是225km, 中部是160km, 西北部是110km。依据零星的大于6级地震震中分布, 揭示了南海北部洋陆转换带目前仍是一个地震构造活跃带。

关键词： 被动大陆边缘 洋陆转换带 南海北部 多道地震调查 地震反射

Abstract： Rifted continental margins and basins are mainly formed by the lithospheric extension. Thinned lithosphere of passive continental margins leads to decompression melt of magma and created oceanic crust as well as thinned ocean-continent transition zone. A multi-channel seismic Line MCS 2010-1 in the northern South China Sea, acquired by the R/V "Shiyan 2" of the South China Sea Institute of Oceanology in 2010, is processed and analyzed in this study. Reflection characteristics of a continent-ocean transition (COT) zone are summarized and outlined. Results show that the COT zone is mainly composed of the northern syn-rift subsidence zone, central volcanic or buried volcanic uplift zone, and tilt faulted blocks near the South China Sea basin. Compared to the previous seismic reflection data and refraction velocity models, the range of the COT zone is outlined, from about 225 km wide in the northeastern South China Sea, 160 km wide in the central to 110 km in the northern-central South China Sea. Epicenter distributions of sporadic and larger than 6 magnitude earthquakes suggest that the COT zone in the northern South China Sea is still an active seismic zone.

Keywords： passive continental margins, continent-ocean transition zone, northern South China Sea, multi-channel seismic investigation, seismic reflection

收稿日期: 2011-08-25;

基金资助:

中国科学院南海海洋研究所青年人才领域项目(SQ200910); 国家自然科学基金项目(41006030, 41176054); 国家自然科学基金与广东省联合基金项目(U0933006)

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* 感谢 “实验2”号的全体船员和船上科学家为采集地震测线MCS2010-1数据所付出的劳动。感谢中国科学院地质与地球物理研究所常旭研究员和劳累公司的程大祥对Geometrics StrataVisor NZⅡ地震记录仪的帮助和指导。

引用本文:

朱俊江, 丘学林, 徐辉龙等 .南海北部洋陆转换带地震反射特征和结构单元划分*[J] 热带海洋学报, 2012,V31(3): 28-34

SHU Dun-Jiang, QIU Hua-Lin, XU Hui-Long etc .Seismic reflection characteristic and structure unit division of a continent-ocean transition zone in the northern South China Sea[J] Journal of Tropical Oceanography, 2012,V31(3): 28-34

链接本文:

http://www.jto.ac.cn/CN/10.3969/j.issn.1009-5470.2012.03.004 或 http://www.jto.ac.cn/CN/Y2012/V31/I3/28

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