地球物理学报 » 2011, Vol. 54 » Issue (8) :2102-2109

引用本文:
单竞男, 张功成, 吴景富, 唐晓音, 赵长煜, 宋阳, 胡圣标.南海北缘琼东南盆地热结构与莫霍面温度[J] 地球物理学报, 2011,V54(8): 2102-2109,DOI: 10.3969/j.issn.0001-5733.2011.08.017

SHAN Jing-Nan, ZHANG Gong-Cheng, WU Jing-Fu, TANG Xiao-Yin, ZHAO Chang-Yu, SONG Yang, HU Sheng-Biao.Thermal structure and Moho temperature of Qiongdongnan Basin, Northern Margin of the South China Sea.Chinese J.Geophys. (in Chinese),2011,V54(8): 2102-2109,DOI: 10.3969/j.issn.0001-5733.2011.08.017

南海北缘琼东南盆地热结构与莫霍面温度

单竞男[1,2], 张功成[3], 吴景富[3], 唐晓音[1,2], 赵长煜[4], 宋阳[1,2], 胡圣标[2]*

1. 中国科学院研究生院,北京 100049;
2. 中国科学院地质与地球物理研究所岩石圈演化国家重点实验室,北京 100029;
3. 中海石油(中国)有限公司北京研究中心,北京 100027;
4. 中国地质大学(北京)地球物理与信息技术学院,北京 100083

Thermal structure and Moho temperature of Qiongdongnan Basin, Northern Margin of the South China Sea

SHAN Jing-Nan[1,2], ZHANG Gong-Cheng[3], WU Jing-Fu[3], TANG Xiao-Yin[1,2], ZHAO Chang-Yu[4], SONG Yang[1,2], HU Sheng-Biao[2]*

1. Graduate University of Chinese Academy of Sciences, Beijing 100049, China;
2. State Key Laboratory of Lithospheric Evolution, Institute of Geology and Geophysics, Chinese Academy of Sciences, Beijing 100029, China;
3. CNOOC Research Center, Beijing 100027, China;
4. School of Geophyscis & Information Technology, China University of Geosciences, Beijing 100083, China

摘要 | 参考文献 | 相关文章

Download: PDF (634KB) HTML 1KB Export: BibTeX or EndNote (RIS) Supporting Info

摘要 相对于大陆地区,洋壳或海陆过渡区目前较缺乏岩石圈热结构方面的研究.本文依据琼东南盆地现有热流数据和相关岩石热物性参数,沿分布于盆地内不同位置的4条地震测线计算了不同圈层的热流分配关系(即热结构)及莫霍面温度.计算时根据最新的P-波速度变化分析将该区地壳分为四层,分别为沉积盖层、上地壳、下地壳及下地壳高速层.结果表明:琼东南盆地地幔热流由浅水区向深水区逐渐增加,是控制盆地现今海底热流分布的主要因素;其占海底热流平均比例为76.3±7.0%,具有典型的"冷壳热幔"的岩石圈热结构特征;莫霍面温度范围500~700℃,存在一个低温区和两个高温区,其整体分布与盆地基底以下地壳伸展减薄及断裂发育有关.

关键词: 琼东南盆地 岩石圈热结构 地幔热流 莫霍面温度

Abstract: There have been a number of studies on lithospheric thermal structure in continent, but few in oceanic or continent-ocean transition zones. Based on submarine heat flow data and related petrological thermal properties available in Qiongdongnan Basin, we calculate the constitution of heat flow and deep temperature of different layers along four distinct seismic profiles. The crustal structure in this area is divided into four layers based on latest analysis of P-wave velocity variation, that is sediments.upper crust,normal lower crust and anomalous lower crust with high velocity, respectively.The results demonstrate that mantle heat flow increases from shallow water to deep water, which is the predominant factor in the current distribution of submarine heat flow in Qiongdongnan Basin. Besides, its contribution to submarine heat flow is 76.3±7.0% on average, suggesting a typical feature of "Cold Crust and Hot mantle" lithospheric thermal structure. In addition, Moho temperature beneath the Qiongdongnan Basin is mostly in the 500~700℃ range with a lower temperature region and two higher temperature regions, which is primarily ascribed to the extent of the lithospheric thinning of the northern margin and well-developed faults of the South China Sea.

Keywords: Qiongdongnan Basin Lithospheric thermal structure Mantle heat flow Moho temperature

Received 2010-12-21;

Fund:

国家科技重大专项"大型油气田及煤层气开发"子课题(2008ZX05025-02-03)资助.

About author: 单竞男,女,1980年生,构造地质学博士,E-mail:shanjn@mail.iggcas.ac.cn

链接本文:
http://www.geophy.cn/CN/10.3969/j.issn.0001-5733.2011.08.017 或 http://www.geophy.cn/CN/Y2011/V54/I8/2102