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## 四川盆地钻孔温度测量及现今地热特征

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Borehole temperature logging and characteristics of subsurface temperature in Sichuan Basin

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摘要

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**摘要** 基于四川盆地9口钻孔的稳态测温资料和297块岩石样品的热导率数据, 报道了9个高质量的大地热流数据, 提出了沉积地层岩石热导率系列柱。结合前人的数据资料, 绘制了地温梯度和大地热流等值线图。四川盆地沉积地层的岩石热导率变化主要由岩性控制, 与现今埋藏深度没有明显的相关性。盆地的地温梯度为17.7~33.3℃/km, 平均值为22.8℃/km。盆地的大地热流为35.4~68.8 mW/m<sup>2</sup>, 平均值为53.2 mW/m<sup>2</sup>, 具有典型克拉通型盆地中低热流特征。在区域分布上, 大地热流明显受基底构造控制, 表现为川中及川西南地区较高, 川北地区较低。

**关键词:** 钻孔温度测量 地温梯度 热导率 大地热流 四川盆地

**Abstract:** Based on temperature logging of 9 boreholes and thermal conductivity measurement of 297 samples in Sichuan Basin, 9 terrestrial heat-flows are reported with high quality and thermal conductivity stratigraphic column is suggested as well. The contour maps of geothermal gradient and heat flow are presented by the combination of existed data. The variation of thermal conductivity of sedimentary rocks in Sichuan basin is mainly controlled by the lithology, rather than the current burial depths. At present, the geothermal gradient ranges from 17.7 to 33.3 °C/km with the average of 22.8 °C/km in the basin and the heat flow ranges from 35.4 to 68.8 mW/m<sup>2</sup> with the average of 53.2 mW/m<sup>2</sup>. It has the craton-basin characteristics with middle-low heat flow values. In regard to the distribution of heat flow in Sichuan basin, it is relatively higher in the southwest and central parts than in the north part. It is significantly dependent upon tectonic settings of the basement.

**Keywords:** Borehole temperature logging Geothermal gradient Thermal conductivity Terrestrial heat flow Sichuan Basin

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