

地球物理学报 » 2011, Vol. 54 » Issue (3) : 747-755

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CHEN Shun-Yun, LIU Pei-Xun, LIU Li-Qiang, MA Jin, CHEN Guo-Qiang, HU Xiao-Yan. Comparative analysis between land surface temperatures obtained by field measurement and satellite remote sensing and its implication in earthquake research. Chinese J. Geophys. (in Chinese), 2011, V54(3): 747-755, DOI: 10.3969/j.issn.0001-5733.2011.03.014

遥感与实测地表温度的对比分析及在地震研究中的意义

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Comparative analysis between land surface temperatures obtained by field measurement and satellite remote sensing and its implication in earthquake research

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摘要

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摘要 伴随着空间观测技术的发展, 卫星热红外遥感在地震领域受到越来越多的关注, 同时存在许多基础性工作亟待完善. 本文以由卫星遥感影像与实际测量两种不同方法获取的地表温度为基础, 选取2006年3月~2008年2月近2年的数据, 进行遥感与实测地表温度之间的对比研究. 分析结果表明遥感与实测地表温度之间: 夜间差值比白天要小, 白天的相关性比夜间相关性差; 无论是白天还是夜间, 长周期信号相关性比短周期要好, 对于几十天以上的变化, 两者相关程度均极高. 意味着分析地表温度的长周期变化时, 选用白天或者夜间数据产品没有实质性区别. 通过本文分析, 初步明确了遥感地表温度与实测地表温度之间的相关性, 有助于选取合适的遥感资料开展地震研究.

关键词: 地表温度 天地对比 相关性 MODIS

Abstract: The satellite thermal infrared remote sensing is getting more and more attention in earthquake science, for satellite remote sensing has a significant advantage of the space information. Meanwhile, there exist many key basic problems which should be solved, for instance, what data are suitable for the corresponding research. In this paper, the relationship between two kinds of land surface temperatures obtained by field measurement and satellite remote sensing is studied, based on data from March, 2006 to February, 2008. Our results indicate that: (1) as for the two kinds of land surface temperatures, the difference at night is smaller than that of day, and correlation at night is more significant than that of day; (2) No matter whether it is day or night, the correlation between long period components of the two kinds of land surface temperature is more significant than that between short period components. This means that there is essentially no difference between day and night when analyzing temperature component of long period. In summary, the relationship between the two kinds of land surface temperatures is obtained preliminarily, which is helpful to data selection.

Keywords: Land surface temperature Comparative analysis Correlation MODIS

Received 2010-02-08;

Fund:

地震动力学国家重点实验室自主课题(LED2009A07)、中国地震局地质研究所基本科研业务专项(DF-IGCEA-0608-2-6)、地震行业专项(200808011)和国家自然科学基金(40872129, 40902095)共同资助.

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