技术应用

SAR与光学影像融合在宁陕地区明长城探测中的应用研究

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摘要：

宁夏和陕西地区的明长城在遭到自然与人为双重破坏后日渐退化，有的区段已消失于地表。本文采用了SAR与光学影像像素

级融合方法——HIS变换融合和PC主成份变换融合，通过比较2种方法的融合效果，最终选定PC主分量变换融合的结果作为自动提取

该区明长城信息的基础。通过"骨架"算法实现了对该区明长城空间位置的自动提取，最终获得了较为清晰的明长城信息。该区明

长城准确而完整的空间位置，可为进一步研究该区明长城沿线环境变化及古环境演变提供精准的研究范围和研究基础。

关键词： 遥感考古； 影像融合； HIS变换融合； PC变换融合； 骨架算法

THE APPLICATION OF THE IMAGE FUSION BETWEEN SAR AND OPTICAL IMAGE TO THE DETECTION OF THE MING GREAT WALL IN NINGXIA AND SHAANXI

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Abstract:

The Ming Great Wall in Ningxia and Shaanxi area was so considerably destroyed by natural and man

activities that a part of the wall disappeared from the Earth's surface and was buried by sand. Therefore, it is

very important to detect the spatial location and trend of the Ming Great Wall by remote sensing technology,

especially by combining the SAR method which can penetrate the Earth's surface and the optical remote sensing

method. The authors used pixel image fusion between SAR image and optical image which were HIS transform fusion

and PC transform fusion respectively. After comparing the fusion result between HIS and PC, the skeleton method

was used to extract the Ming Great Wall automatically based on the PC fusion image and thus acquired satisfactory

results. The spatial location of the Ming Great Wall was eventually detected.

Keywords: Remote sensing archaeology　Image fusion　HIS transform fusion　PC transform fusion skeleton method

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